Lessons for Monetary Policy Communication: Communication, Getting Through and Expectation Formation

Michael McMahon

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RBA Annual Conference

This Talk

2 Questions

1. "I think monetary policy is 98% talk and 2% action, and communication is a big part."
   What should a central bank communicate about monetary policy?
2. Central banks are trying to talk to the public.
   How do they best get through?

Answers

Answers come in the form of 13 non-comprehensive lessons that draw on my research, and that of others in the room.

Textbook NK communication I

Some features of Standard NK Models

- Full Information
- Rational Expectations
- Commitment (even to discretion) / Fixed Reaction Function

$\Rightarrow$ Builds in a lot of communication automatically and often implicitly

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- Phillips curve and 'Dynamic IS curve' in terms of output gap:

$$\hat{\pi}_t = \beta \mathbb{E}_t \hat{\pi}_{t+1} + \kappa \hat{y}_t$$
$$\hat{y}_t = \mathbb{E}_t \hat{y}_{t+1} - \sigma(\hat{r}_t - \hat{\bar{r}}_t)$$

- Depends on 'real interest gap' $\hat{r}_t - \hat{\bar{r}}_t$ with $\hat{r}_t = \hat{i}_t - \mathbb{E}_t \hat{\pi}_{t+1}$

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- Key is current and expected future real interest rate 'gaps':

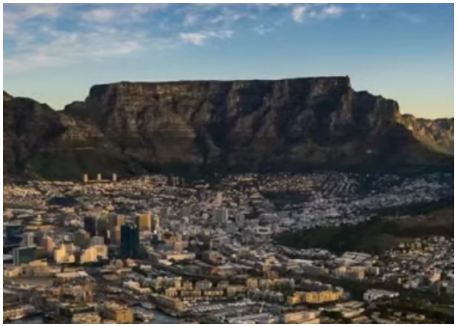
$$\hat{y}_t = -\sigma \sum_{\ell=0}^{\infty} \mathbb{E}_t \left[\hat{i}_{t+\ell} - \hat{\pi}_{t+1+\ell} - \hat{\bar{r}}_{t+\ell} \right]$$

$$\hat{\pi}_t = \kappa \sum_{\ell=0}^{\infty} \beta^{\ell} \mathbb{E}_t \hat{y}_{t+\ell}$$

Monetary Policy Strategy

$$\hat{\pi}_t = \kappa \sum_{\ell=0}^{\infty} \beta^{\ell} \mathbb{E}_t \hat{y}_{t+\ell} \qquad \hat{y}_t = -\sigma \sum_{\ell=0}^{\infty} \mathbb{E}_t \left[\hat{i}_{t+\ell} - \hat{\pi}_{t+1+\ell} - \hat{\bar{r}}_{t+\ell} \right]$$

Monetary Policy Strategy



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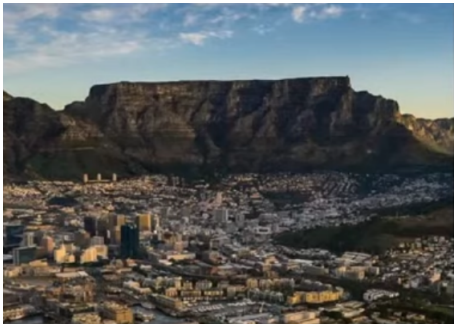

- Risk of doing too much - e.g. FS concerns
- Risk of not doing enough - e.g. non-linearities / tail risk model
  - Benefits of front-loading come from world of lack of commitment

A Stylised Reality of Monetary Policy Decision Making - Byrne et al (2022)

1. $\Omega_m^{CB} = g_m\left(X_m^{CB}\right)$

   Map data into a vector of beliefs about the state of the economy - "*Assessment*"

   - Includes forecast about where we are going
   - Macro models typically don't focus on time-varying $g_m(.)$

2. $i_m = f_m\left(\Omega_m^{CB}\right)$

   Select the appropriate interest rate as a function of this state - "*Preferences*"

   - Time variation $\Rightarrow$ No MP shock

Communication lessons from theory meeting reality

Lesson 1

Clear communication of reaction function is vital.

Lesson 2

Policymakers must communication their assessment of the economic outlook, both nowcasts and forecasts, and its rationalization.

Lesson 3

Explicit forward guidance is over-emphasised in the standard models. But forward guidance does provide a way for central banks to communicate both their assessment of the likely state of the world, and their reaction function...

Policymakers' Uncertainty

Cieślak, Hansen, McMahon and Xiao (2023)

How does uncertainty affect FOMC Monetary Policy?

- Analyze impact of FOMC policymakers' higher-moment beliefs on policy stance
- Inflation PMU leads to a more hawkish response ($\neq$ Brainard's conservatism)
  - Controls for Greenbook forecasts and FOMC member economic sentiment
- Why?
  - Policymakers pursuing a risk management approach
  - If facing tail risk about loss of credibility if they lose the nominal anchor (inflation scares).
  - Nominal rates may rise but real
- Emphasis on the role of external communication

Tough Talk: The Fed and the Risk Premia

Cieślak and McMahon (2023)

Why communication matters for long-term rates and central bank goals?

- CB's *actions* + **words** → long-term rates → financial conditions → economic objectives
- Long-term rates = short-rate expectations + term premia
- Policy-induced uncertainty channel::

  Market perceptions of policy "mistakes" due to communication failures can raise term premia against policy intentions
- *Hawkish (dovish) policy stance revealed from internal Fed deliberations predicts lower (higher) risk premium in the intermeeting period*

Monetary Policy Shocks as Disagreements

"[T]he stochastic component (.) in the policy rule (.) is referred to as a monetary policy shock. It should be interpreted as a random, transitory deviation from the "usual" conduct of monetary policy as anticipated by the public, due to a change in the policymaker's preferences, a response to an unusual unanticipated event, or, simply, an error in the implementation of monetary policy." — Gali (2015)

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- Suppose the Fed and the market differ in their beliefs [Caballero, Simsek (2023)]
- Let $i_t^{mkt} = \phi_x x_t + \phi_\pi \pi_t$ be the market's ideal interest rate
  where ϕ_x, ϕ_π, x_t, and π_t represent the market assessment of those concepts
- But the market thinks the Fed sets policy as:
  $i_t = \phi_{x,t}^{cb} x_t^{cb} + \phi_{\pi,t}^{cb} \pi_t^{cb}$
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$$i_t = i_t^{mkt} + \varepsilon_t$$

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$$\varepsilon_t = \phi_{x,t}^{cb} x_t^{cb} + \phi_{\pi,t}^{cb} \pi_t^{cb} - \phi_x x_t + \phi_\pi \pi_t$$

Sources of Disagreement

Consider two sources of differences between the Fed and the market:

1. Disagreement over a specific realization of the demand shock, η_t:

$$\eta_t^{cb} = \eta_t + \breve{\eta}_t,$$

- $\breve{\eta}_t$ represents demand shock mis-judgements by the Fed, in the eyes of market participants
- $E(\breve{\eta}_t) = 0$.
- Using the IS equation: $x_t^{cb} = x_t + \breve{\eta}_t$.

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2. Disagreements in the inflation reaction function coefficient (but $\phi_x = \phi_{x,t}^{cb}$):

$$\phi_{\pi,t}^{cb} = \phi_\pi + \breve{\phi}_{\pi,t},$$

- $\breve{\phi}_{\pi,t}$ is the central bank deviation from the market view of ϕ_π.

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$\Rightarrow$ The perceived monetary policy shock:

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$\Rightarrow$ The perceived monetary policy shock:

$$\varepsilon_t = \underbrace{\phi_x \breve{\eta}_t}_{\substack{\text{shock assessment} \\ \text{error}}} + \underbrace{\breve{\phi}_{\pi,t}\pi_t}_{\substack{\text{reaction function} \\ \text{error}}} \tag{1}$$

Variance of the monetary policy shock

- Assume that market beliefs of disagreements $(\breve{\phi}_{\pi,t}, \breve{\eta}_t)$ are
  - uncorrelated with each other
  - uncorrelated with economic conditions
- Let $V_t(z_{t+1}) = \sigma^2_{z,t}$ is the conditional variance of variable z_{t+1} assessed at time t.
- The sources of the market-perceived monetary uncertainty are:

$$\sigma^2_{\varepsilon,t} \equiv V_t(\varepsilon_{t+1}) = (\phi_x)^2 V_t(\breve{\eta}_{t+1}) + \left(V_t(\breve{\phi}_{\pi,t+1}) + E^2_t(\breve{\phi}_{\pi,t+1}) \right) V_t(\pi_{t+1})$$

Market doubts Fed's $\breve{\phi}_\pi$

- Suppose the market perceives

$$\breve{\phi}_{\pi,t+1} \sim \begin{cases} +\Delta & \text{w.p. } q_t \quad \text{(small prob of too hawkish Fed)} \\ 0 & \text{w.p. } 1-p_t-q_t \\ -\Delta & \text{w.p. } p_t \quad \text{(small prob of too dovish Fed)} \end{cases}$$

Note: $\Delta > 0$, $q_t, p_t < 0.5$; unlikely that $p_t > 0$ and $q_t > 0$ at the same time

$$E_t(\breve{\phi}_{\pi,t+1}) = (q_t - p_t)\Delta \tag{2}$$

$$V_t(\breve{\phi}_{\pi,t+1}) = \Delta^2 \left(p_t(1-p_t) + q_t(1-q_t) + 2q_t p_t\right) \tag{3}$$

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- $\frac{\partial \sigma^2_{\varepsilon,t}}{\partial p_t} > 0$ and $\frac{\partial \sigma^2_{\varepsilon,t}}{\partial q_t} > 0$ via $V(\breve{\phi}_\pi)$ and $E^2(\breve{\phi}_\pi)$

Policy-induced uncertainty

Risk premium depends on:

$$\sigma^2_{\varepsilon,t} \equiv V_t(\varepsilon_{t+1}) = (\phi_x)^2 \underbrace{V_t(\breve{\eta}_{t+1})}_{\substack{\text{Concern about} \\ \text{econ assessment}}} + \underbrace{\left(V_t(\breve{\phi}_{\pi,t+1}) + \left[E_t(\breve{\phi}_{\pi,t+1}) \right]^2 \right)}_{\substack{\text{Concern about} \\ \text{Fed type}}} V_t(\pi_{t+1}) \tag{4}$$

1. Concern about economic assessment: $V_t(\breve{\eta}_{t+1}) \uparrow \rightarrow \sigma^2_\varepsilon \uparrow$ and CRP$\uparrow$
2. Concern about Fed's type: $p_t \uparrow$ or $q_t \uparrow \rightarrow \sigma^2_\varepsilon \uparrow$ and CRP$\uparrow$

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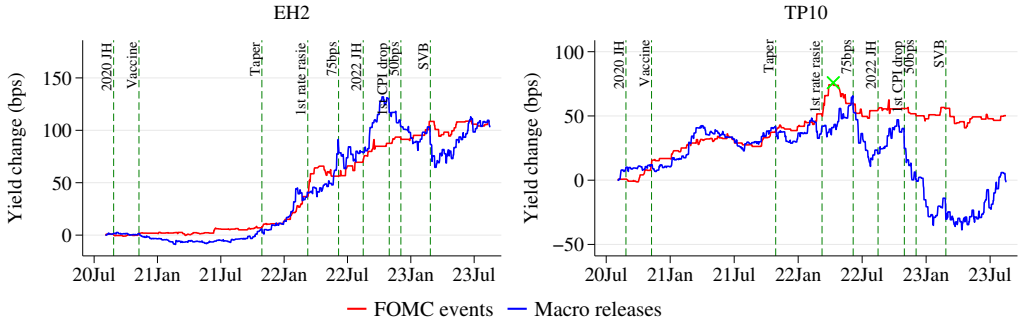
1. Concern about economic assessment: $V_t(\breve{\eta}_{t+1}) \uparrow \rightarrow \sigma^2_\varepsilon \uparrow$ and CRP$\uparrow$
2. Concern about Fed's type: $p_t \uparrow$ or $q_t \uparrow \rightarrow \sigma^2_\varepsilon \uparrow$ and CRP$\uparrow$
   - Hawkish signals ($p_t \downarrow$ or $q_t \uparrow$) lower premium if market concerned about too dovish Fed ($p_t > 0$), but they raise premium if market concerned about too hawkish Fed ($q_t > 0$)
   - Interpretation of 1987–2015 period: Forward-looking hawkish communication lowers market-perceived probability of a too-dovish mistake ($p_t \downarrow$)

Term premia or short-rate expectations? KW decomposition

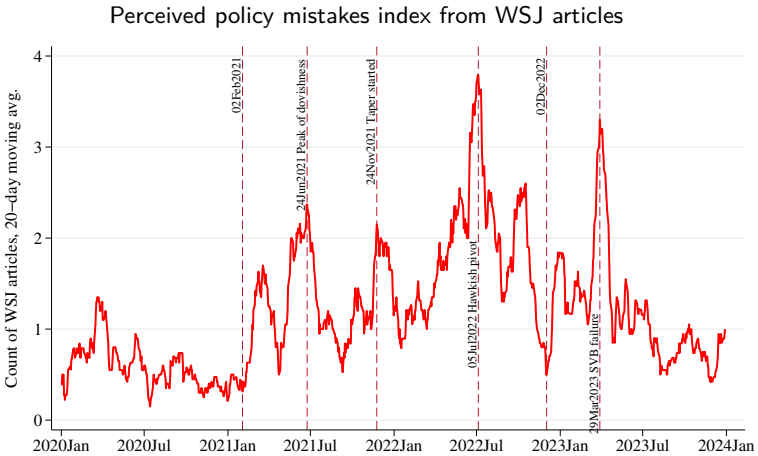


- EH (left): 2y short-rate expectations stable through late 2021, as Fed intended
- TP (right): 10y term premia cumulatively increased up to 144bps until Jun 2022
  - Fed events = 60bps↑ (× peak at 76bps on Apr 19, 2022)
  - Macro days = 66bps↑

Link yield curve movements to public perceptions of policy mistakes

- Measure time-varying public perceptions of policy mistakes from WSJ articles
  - ChatGPT: *Q: Does the article suggest that the public is concerned about possible Fed's policy mistake, error, incorrect decision?* {*Yes/No/not possible to determine*}
  - "Yes" = 17.5% of 7784 articles
- Newspaper narratives are ex-post reports of events that occurred; hence, we predict media perceptions with lagged asset prices

Link yield curve movements to public perceptions of policy mistakes

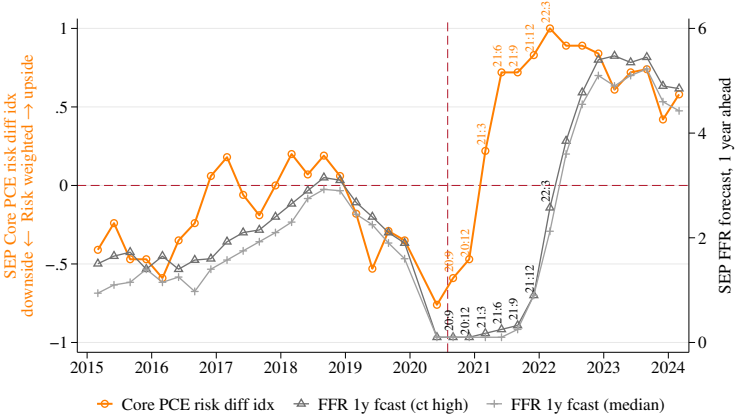


Note: vertical lines mark selected major turning points

- Term premia comove with public perceptions of policy mistakes
- Term premia decline on Fed's hawkish stance in speeches

FOMC appeared constrained by framework + FG in 2021

FOMC-perceived inflation tails vs. SEP FFR projections



- Initial building of credibility for framework and FG Sep/Dec 2020
- Diminished sensitivity to upper inflation tails
- Removing preemption weakened risk management

Note: SEP risk diffusion index: (#participants judge risk to upside of their projections) − (#participants judge risk to downside of their projections)/total # of participants; Fed's own FFR forecasts (central tendency and median).

Lessons

Lesson 4

Monetary policy may be "98% talk and only 2% action" but "cost of sending the wrong message can be high" (Bernanke, 2015). With term premia involved, policymakers' "grip on the steering wheel is not as tight as it otherwise might be" (Stein, 2013).
Framework and communication need to reflect uncertainty inherent in policymaking
$\Rightarrow$ *risk management strategy*

Lesson 5

Explicit FG can be constraining; appearance of being constrained can undo intended policy.

Lesson 6

Monetary policy requires managing inflation expectations, but not micro-managing.

Communication Revolutions

Questions that guided central banks' communication strategies

Until 1990s

"Do we communicate this?"

1990s $\rightarrow$ GFC $\equiv$ 1st Revolution

"Why wouldn't we communicate this?"

Now $\equiv$ 2nd Revolution

"How should we communicate this in a way that engages a broader cross-section of society?"

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RBA: "But those benefits only accrue if we get our message across – not just to the modern descendants of those top-hatted bankers, but to the public at large." **Hauser, 8 Oct 2024**

Experiment

- Run RCT information provision experiments
- Experiments involve:
  1. Pre-treatment questions on knowledge
  2. Assess priors
  3. Randomly assign treatment
     - e.g. Monetary Policy Summary vs. Layered content
  4. Assess Posteriors

Where are we now

Lesson 7

Research has shown that non-expert public can be reached, but to a lesser extent than experts. And central banks are still learning how to communicate with the wider public. There are remaining challenges across the 3 Es: Explanation, Engagement, and Education.

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Blinder

- 2008: "It may be time to pay some attention to communication with the general public."
- 2018: "Central banks will keep trying to communicate with the general public, as they should. But for the most part, they will fail."

Getting through: Public understanding of complex CB communications

McMahon and Naylor, 2023

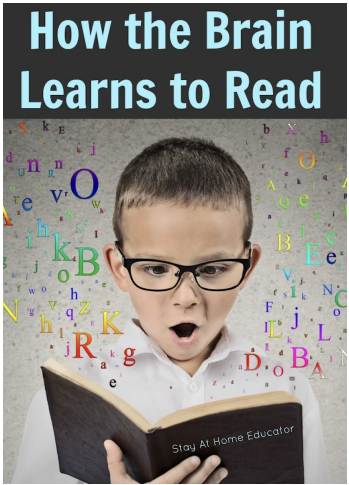
Information provision experiment on how to have messages understood

1. Efforts by the BoE to reduce complexity have focused on semantic dimensions, while evidence across conceptual dimensions is more mixed
2. Conceptual complexity matters more than semantic complexity. It reduces:
   - Perceived understanding
   - Actual understanding
   - Attitudes towards the central bank
3. This remains the case among people who have studied economics at university.

Lesson 8

On explanation, lack of understanding about the economic concepts involved in central bank policy rather than complexity of the language is the bigger problem.

Key Distinction we examine



Semantic Complexity vs **Conceptual Complexity**

BIG words

DiFfiCuLt ideas

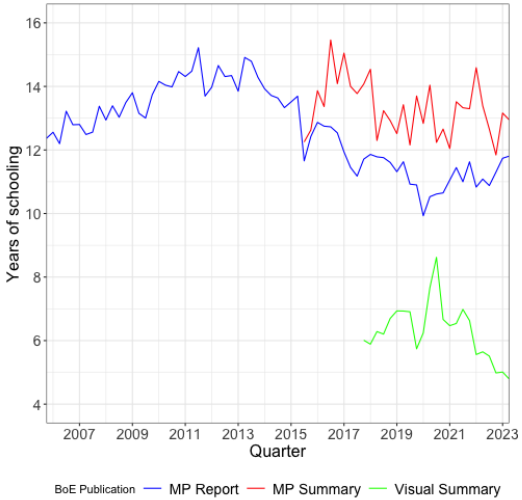
Looooooong sentences

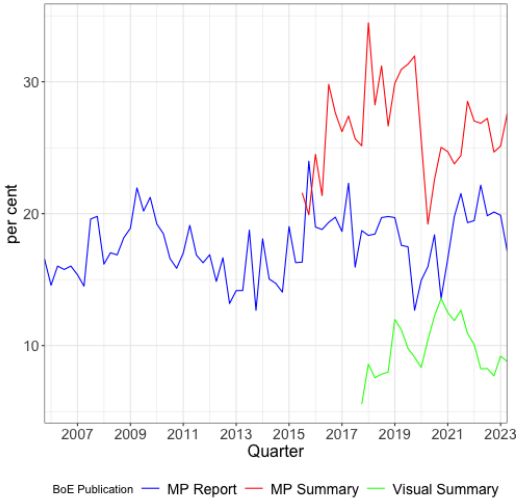
Things you have never heard of

Non-Monosyllabic words

Technical terms

Semantic vs Conceptual Complexity





Results: Understanding

And these results hold when we condition on demographic factors

	Perceived	Actual Understanding		
	Understanding	Inflation(t)	Interest Rate(t)	Pay
	(1)	(2)	(3)	(4)
Conceptual				
Medium	−0.039	−0.011	0.048	0.015
	(0.060)	(0.031)	(0.031)	(0.030)
High	**−0.791*****	**−0.079***	**−0.186*****	**−0.130*****
	(0.084)	**(0.043)**	**(0.043)**	**(0.042)**
Semantic				
Medium	0.029	−0.041	0.016	−0.040
	(0.061)	(0.031)	(0.031)	(0.031)
High	0.005	−0.001	0.019	**−0.115****
	(0.108)	(0.056)	(0.056)	**(0.055)**
Studied Econ at Uni	0.450***	−0.032	0.022	−0.048*
	(0.051)	(0.026)	(0.026)	(0.026)
Demographic Controls	Yes	Yes	Yes	Yes
Observations	1,745	1,745	1,745	1,745
R^2	0.267	0.063	0.090	0.050
Note:				*p<0.1; **p<0.05; ***p<0.01

Results: Attitudes towards CB

And these results also hold when we condition on demographic factors

	Trust	Attention	Role of BoE
	(1)	(2)	(3)
Conceptual			
Medium Conceptual	−0.009	−0.025	−0.099
	(0.058)	(0.071)	(0.067)
High Conceptual	**−0.185****	**−0.313*****	**−0.546*****
	(0.081)	**(0.098)**	**(0.093)**
Semantic			
Medium Semantic	0.057	0.004	0.053
	(0.058)	(0.071)	(0.067)
High Semantic	0.009	−0.115	0.043
	(0.104)	(0.127)	(0.120)
Studied Econ at Uni	0.118**	0.224***	0.252***
	(0.049)	(0.059)	(0.056)
Demographic Controls	Yes	Yes	Yes
Observations	1,742	1,743	1,745
R^2	0.047	0.051	0.090
Note:			*p<0.1; **p<0.05; ***p<0.01

Building Central Bank Credibility: The Role of Forecast Performance

McMahon and Rholes (2023)

Overarching Question – *Forecast Credibility*

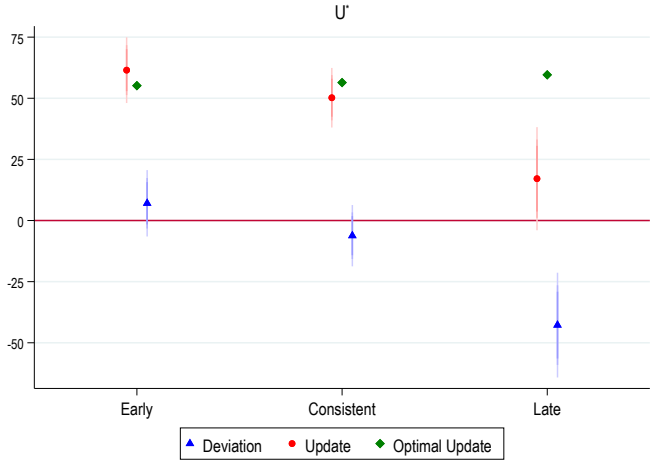
How does forecast performance affect the influence of central bank inflation forecasts on individual expectations?

1. Subjects under punish (under reward) consistently poor (excellent) performance
2. Timing of errors matters a lot - recent performance is key.
3. Communication can (partially) help offset poor recent performance.

Lesson 9

Credibility and effective engagement evolves endogenously; rebuilding credibility could be harder if errors reduce capacity of central bank to influence expectations. Communication can help somewhat.

Timing Results:



McMahon, Rholes and Rickards (2024, *WiP*)

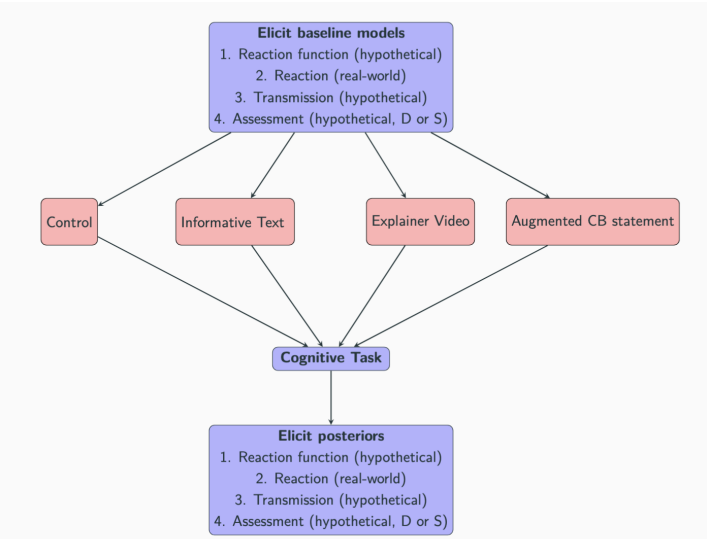
Our questions

1. To what extent is there heterogeneity in the mental models people use to assess the economy, *anticipate monetary policy decisions*, and *understand how policy impacts upon the economy*?
2. Can central banks use communication to influence and coordinate these mental models?

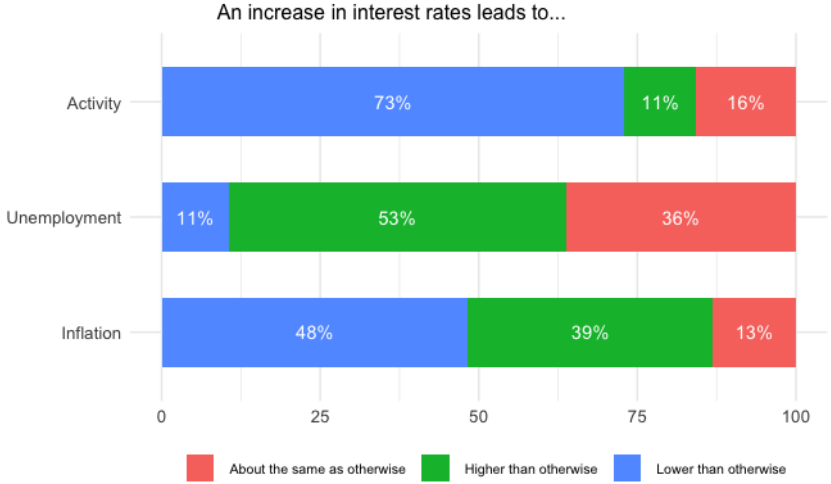
Lesson 10

There is hope that we can improve understanding (and therefore trust) with more guidance on mechanisms.

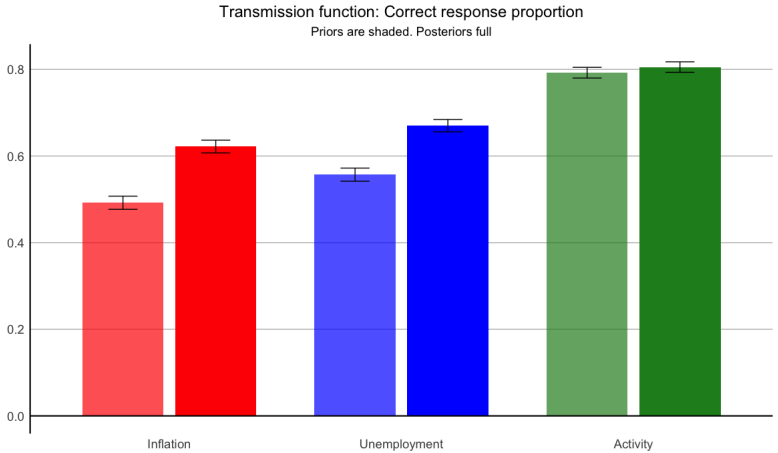
Experimental Design - An Overview



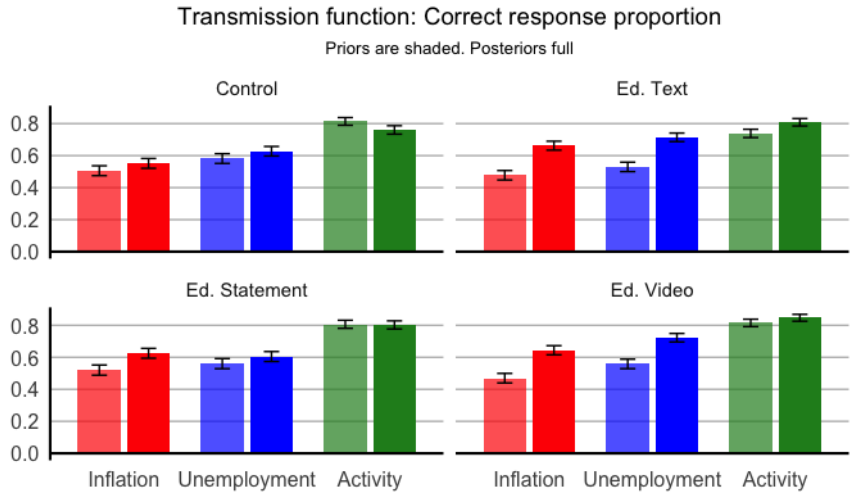
Transmission Function: Raw Priors



Transmission Function: Posteriors Correct



Transmission Function: Posteriors Correct by Treatment



Other Important Lessons

- Rickards (2023) and Gardt, Angino, Mee & Glöckler (2021):

Lesson 11

The media is the key channel for getting through to the wider public. But this comes at a cost in terms of understanding of decisions and perceptions of the bank.

- Wabitsch (2024) and D'Acunto, Fuster & Weber (2022):

Lesson 12

The messenger influences this reach and how they respond to CB communications.

- Petersen & Rholes (2020), Petersen & Rholes (2022), and Kostyshyna & Petersen (2024)

Lesson 13

Uncertainty communication is important, but difficult. Avoid a density forecast but also avoid overly precise comms!

Conclusions

- Excited to kick start this exciting (and important) conference.
- Ending with 13 lessons may be considered unlucky by some, but for us as researchers it is lucky as represents important progress.
- But still lots to do (which is also exciting for the researchers in this room.)
- Apologies again to Bruce but as always I am looking forward to hearing his thoughts!