Discussion of:
Policymakers' Uncertainty
by
Anna Cieslak, Stephen Hansen, Michael McMahon, Song Xiao

Ulrike Malmendier

(UC Berkeley)

Research Question:
How does uncertainty affect FOMC decision-making?

Approach:
- Pull text of 228 transcripts of from 8/1987-12/2015
- Construct "uncertainty measure" PMU + "policy stance measure" HD
  - (i) real economy, (ii) inflation, (iii) financial markets, (iv) effects of policy actions
  - **Approach PMU**: (1) traditional list-of-words (dictionary) approach: identify words related to uncertainty via a word embedding model; (2) associate uncertainty to specific components whenever an uncertainty word appears in the same sentence as keywords for (i)-(iv).
  - **Approach HD**: (1) identify sentences about monetary policy actions (interest rate targets, asset purchases), (2) tabulate words reflective of "increase" vs "decrease".
- Relate PMU to HD:

$$HD_t = \beta_0 + PMU_t^T \beta_1 + \mathbf{x}_t^T \beta_2 + \varepsilon_t$$

Fed-driven uncertainty

Standard quadratic loss function over deviations from inflation target π* and the output gap relative to medium-term potential output y*:

$$L(\pi, y) = (\pi - \pi^*)^2 + \lambda(y - y^*)^2$$

Fed prefers raising interest rates/tightening (r = 1) over no action (r = 0) if

$$2[\overline{\delta}_\pi(\overline{\pi}_0 - \pi^*) + \lambda\overline{\delta}_y(\overline{y}_0 - y^*)] > [\overline{\delta}_\pi^2 + \Delta\sigma^2_{\pi, 0\to 1}] + \lambda[\overline{\delta}_y^2 + \Delta\sigma^2_{y, 0\to 1}]$$

Fed-driven uncertainty: choosing r = 1 generates addl uncertainty about economic conditions relative to r = 0.

→ $\Delta\sigma^2$ terms are positive → r = 1 becomes less attractive (relative to a situation in which uncertainty is unrelated to the policy action).

Intuition: policymaker dislikes volatility in output and inflation due to the quadratic loss function and so chooses policy in part to reduce uncertainty.

Findings

- Inflation PMU strongly predicts HD index (FOMC's policy stance)
  - Increased inflation uncertainty → more hawkish stance
  - Effect not explained by internal Fed forecasts or public uncertainty.
- Effect size: 34 bp cumulative change in the Fed Funds Rate over following year (8 FOMC meetings) per 1 SD increase of inflation PMU
  - Local projection using the pre-ZLB sample (or incl ZLB using shadow rate)
  - Magnitude > that of any of the Greenbook forecast variables
- Suggestive evidence: tail risk management drives the relationship rather than model parameter uncertainty.
  - Esp. concerns about preserving credibility about inflation fighting

Contribution (given prior literature constructing text-based uncertainty and policy measures)

1. Uncertainty Measure based on "non-public" conversations
   - Prior literature on text-based uncertainty indices (Baker et al. 2016; Larsen 2021; Husted et al. 2020 for monetary policy) focused on "public perception"/media
   - PMU measure independent of prior measures; procyclical
   - **Question: but should it?**

2. Policy measure based on "non-public" conversations
   - Prior literature does use FOMC transcripts → predict policy stance (Lucca and Trebbi 2009; Apel and Blix Grimaldi 2012), also using public speeches of policymakers (Malmendier, Nagel, Yan 2022) or narrative in public media (Istrefi 2019; Bordo and Istrefi 2021)
   - PMU / HD measure "from private deliberations rather than public communication, arguably more reflective of the FOMC's views"
   - **BUT: is it?**

3. Quantification: large effect as cumulated over future meetings
   - **BUT**: done with other text-based measures? (Not just Greenbook forecast variables)

4. Focus on second moment
   - **BUT**: what can we do with it – as policy makers? As researchers?

Conceptual Question re PMU Measure

- Goal: policymakers perceptions of uncertainty
- Implementation: co-occurrence of a word semantically related to "uncertain(ty)" or "risk(s)" with words related to (i)-(iv)
  - Identify the 50 nearest neighbors to the term "risk(s)", estimated from the transcripts of the economy round of the FOMC transcripts.
  - Subjective removal of "generic terms" (e.g., repercussion, challenge, possibility) and non-removal of others (e.g., dangers, threats, concerns). Tricky.
- How separate is it from public opinions / external views?
  - Why (given methodology)?
- How separate should it be from public opinions / external views?
  - Aren't they trying to assess external views, esp of market participants?
    E.g., those market participants whose external views might trigger bank runs …?
  - Does the difference maybe <u>not reflect</u> the public/private, but the goal to capture 2nd moment?
    If applied to public texts/media, might we get highly correlated measures?

Methodology Question

- **Dictionary approach**
  - Most popular approach pre-2018 in academia.
  - Known issues, as discussed in the paper (hard to catch all negation, e.g., "barely" or "unremarkable" etc.; how to deal with generic terms)
- **BERT** (Bidirectional Encoder Representations from Transformers)
  - Since 2018, most popular way for textual analysis.
  - Appears to far outperform prior approaches, also for NLP tasks. Can be trained on financial data. (Cf. huggingface library, https://huggingface.co/)
  - Compared with the dictionary approach, BERT takes into account the contextual information (different meanings in different contexts).
    - BERT bidirectionally trained: learns information from the left and right side of the text during training.
    - Example: "possibility" (nearest neighbor for "risks") can have different meanings: "This is *a real* possibility *for us*." [positive] "We have to *face this* possibility." [negative]
    - Likely reason for its high performance on SQuAD (Stanford Question Answering Dataset), SWAG (Situations With Adversarial Generations) → ability to infer common sense!, GLUE (General Language Understanding Evaluation) etc.

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Suggestions

1. Heterogeneity in "uncertainty mentions" and/or in their relation to hawkishness:

    (1) by individual characteristics (past experiences, models of belief formation: who is triggered),

    (2) by circumstances (economic conditions that year)

    - Issue: only 75 individuals

2. How can we apply it to different economic circumstances (the next SVB, First Republic bank run)?

    How can we apply it to different compositions of the FOMC?

    Mapping from external conditions / compositions → subjective beliefs (about higher-order moments) → decision-making

3. Anything on whether the FOMC is right? (1) About uncertainty? (2) About the <u>variance of future inflation outcomes</u> depending on its current policy stance?

Summary

- Important (and timely!) next step in inferring perceived uncertainty and understanding its role in policy-making

- Impressive and careful construction of measures (and very helpful precise explanations in the appendices)

- Potential of further developing the analysis towards (1) individual-specific heterogeneity and (2) situation-specific heterogeneity