Central Bank Mandates and the Financial Cycle: through the Lens of Federal Reserve Speeches*

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Abstract

The Federal Reserve has an institutional mandate to pursue price stability and maximum sustainable employment; however, it remains unclear whether it can also pursue several other objectives such as financial stability, economic equality, or climate risk mitigation. The academic literature has largely argued that it should not. We characterize the Fed's interpretation of its mandate using state-of-the-art methods from natural language processing, including a collection of large language models (LLMs) that we modified for enhanced performance on central bank texts. We apply these methods and models to a comprehensive corpus of Fed speeches delivered between 1960 and 2021. We find that the Fed perceives financial stability to be the most important policy concern that is not directly enumerated in its mandate, especially in times when the debt-to-GDP ratio is high. We discuss the implications of these findings for future research.

1. Introduction

We characterize the Fed's interpretation of its mandate using state-of-the-art methods from natural language processing, including large language models (LLMs) modified for enhanced performance on central bank texts. We apply these methods and models to a comprehensive corpus of Fed speeches delivered between 1960 and 2021. We find that the Fed perceives financial stability to be the most important policy concern that is not directly enumerated in its mandate, especially in times when the debt-to-GDP ratio is high. We discuss the implications of these findings for future research.

Finding: the Fed perceives financial stability to be the most important non-dual mandate concern.

2. Data

• Federal Reserve speeches
  – Voting and non-voting FOMC members.
  – Journal articles and working papers related to central banks.
  – Semantic Scholar Open Corpus (S2ORC), generated by Lo et al. (2020).
  – Articles from economics related to macro, monetary, and financial markets. Must be exact date available.
  – Publication outlet has at least 500 entries in overall database.
  – 328,370 articles (29,781 reference CBs).
  – Macro and financial variables
    – Output gap data from FRED, measured annually.

3. Methodologies: LLMs and Methods

1. Transformer model (BERT (Devlin et al., 2019)) and RoBERTa (Liu et al., 2019)
   • Maps sequence of embeddings to sequence of contextualized embeddings.
2. Sentence transformer model.

3. Feature extraction methods.
   • Zero-shot classification (ZSC), extractive question answering (EQA), and semantic textual similarity (STS).

Example: Classification with Zero-shot Learning

• Sequence: "Banks continue to play this role but it has become more challenging today to do so because some lenders find themselves capital constrained as a result of recent losses and/or sizable unanticipated additions to their balance sheets of formerly off balance sheet instruments." (Gary Stern 2009 speech)

• Candidate Classes: (financial stability, output, inflation, bank market).

• Scores: [0.718, 0.203, 0.048, 0.031].

Example: Extractive Question Answering

• Consider two passages from a February 1972 speech by then-President of FRB St. Louis Darryl Darnall:

  – Context 1: "The suspension of the convertibility of the dollar into gold and the imposition of a 10 percent import surcharge last summer ran the risk of mass foreign retaliation in the form of destructive trade barriers."
  – Output 1: mass foreign retaliation.

  – Context 2: "Another significant aspect of the President's new policies announced August 15 are the measures taken to reverse the deteriorating US balance of payments."

Example: Semantic Textual Similarity

• Use contextualized sentence embeddings and semantic textual similarity.

• Compare sequences from speeches with descriptions of policy objectives or preferences.
  – "Monetary policy should be used to achieve financial stability."
  – "Banking regulation should be used to achieve financial stability."

• Create indices for inflation and output growth.

5. Regression Analysis

• Determine underlying drivers and content of FS discussions at the Fed:

  \[ y_t = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \nu_t + \epsilon_t, \]

  \( y_t \) is FS content of a particular paragraph (e.g., FS index, cosine similarity).
  – \( x \) are text features, \( \nu \) are macro and financial controls.

References


