Decoding Central Bank Communication: Evidence from AI-Based Tone Analysis

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This paper investigates the potential of Large Language Models (LLMs), specifically ChatGPT-5 in a zero-shot setting, to decode the tone of central bank communication. Analyzing 201 documents from the Federal Reserve and the European Central Bank between 2019 and 2024, the study covers a critical period of pandemic-induced easing and subsequent inflation-driven tightening. We systematically compare LLM-based assessments against traditional Bag-of-Words (BoW) benchmarks. Unlike BoW methods which often miss context, ChatGPT effectively interprets nuanced central bank language and rhetorical shifts. A key innovation of this study is the implementation of three controlled knowledge scenarios to evaluate model sensitivity: document-only, knowledge up to publication, and full knowledge access.

Our findings indicate that ChatGPT captures directional tone changes up to six months before actual policy rate adjustments and significantly outperforms dictionary-based approaches. The LLM-derived scores demonstrate a stronger alignment with interest rate decisions and macroeconomic trends, suggesting that modern AI models offer a superior and transparent tool for analyzing expectation management in monetary policy. The results show that ChatGPT-derived tone aligns more closely with policy adjustments and inflation dynamics, indicating that LLM-based analysis can improve the interpretation of forward guidance and enhance forecasting and expectation frameworks that rely on central bank communication.

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