Title: Analysis of FOMC Communication Sentiment and its Impact on Treasury Yields

1. Introduction

The Federal Open Market Committee (FOMC) plays a crucial role in economic policymaking, and its communications significantly influence financial markets. This report analyzes the hawkish and dovish sentiments within FOMC Meeting Minutes, Press Releases, and Statements, aiming to correlate these sentiments with Treasury yield spreads. This analysis employs two methods: the Factor-Similarity Method and the Word List Method, to evaluate sentiment and determine which approach provides a more insightful measurement of market reactions.

2. Methodology

2.1 Factor-Similarity Method

The Factor-Similarity Method utilizes sentence embeddings obtained through FinBERT, a transformer model specialized for financial texts. Each sentence's meaning is represented in a high-dimensional vector space, allowing for the calculation of cosine similarities between sentences and defined hawkish and dovish reference statements. The average similarity scores across documents reflect their overall sentiment.

Advantages:

- Captures nuanced meanings and contextual relationships.
- Efficiently handles variations in language and usage of financial terms.

Disadvantages:

- Dependent on the quality of the embeddings and requires significant computational resources.
- May struggle with out-of-domain text or phrases not well represented in the training data.

2.2 Word List Method

In contrast, the Word List Method quantifies sentiment based on predefined lists of keywords associated with hawkish and dovish sentiments. Each score is weighted by

the term frequency-inverse document frequency (TF-IDF), indicating the importance of terms within the context of the document. This method calculates a sentiment score for each document by applying a simple linear combination of weights for included terms.

Advantages:

- Simple to implement and understand.
- Requires less computational power and no complex model training.

Disadvantages:

- Can oversimplify or misinterpret context due to reliance solely on keywords.
- Lacks the ability to understand nuances or sentiments conveyed through complex sentences.

3. Comparison of Results

Both methodologies were applied to FOMC communications, yielding various regression results that assess the relationship between sentiment scores for hawkish and dovish keywords and the Treasury yield spread.

Regression Results Overview:

- Factor-Similarity Approach Results: The regression analysis showed that sentiment scores derived from the factor similarity method produced low R-squared values, indicating a minimal explanatory power regarding Treasury yields. However, some results showed borderline significance, especially in FOMC Press data, suggesting some potential market reaction to hawkish communications.
- Word List Method Results: Comparatively, the Word List Method yielded similarly low R-squared values, indicating weak relationships with Treasury yield spreads across all file types. Remarkably, both methods failed to produce convincing evidence that sentiment scores were statistically significant predictors of market movements.

Differences in File Types:

- FOMC Press Releases: The results from the regression analysis on Press Releases indicated slightly stronger relationships for hawkish terms, suggesting

that press communications may be more impactful on market expectations than Minutes or Statements.

- FOMC Meeting Minutes and Statements: Analysis from these documents consistently illustrated that the hawkish and dovish sentiments did not yield statistically significant results. This could suggest that the detailed context provided in these communications may not directly translate to immediate market reactions, possibly due to the complex natures of economic data interpretation.

4. Conclusion

In summary, both the Factor-Similarity and Word List Methods provided important insights into analyzing FOMC communications, but their effectiveness in explaining market behavior was limited. The Factor-Similarity approach, while more sophisticated and capable of measuring contextual nuances, resulted in similar predictive limitations as the Word List Method, which offered simplicity but at the cost of depth. Furthermore, while the Press Releases contained stronger correlations with Treasury yields, overall market responses to FOMC communications revealed a nuanced interaction influenced by broader economic conditions and investor sentiment. Future analyses could benefit from integrating additional market indicators and applying more advanced econometric techniques.