

Windham Capital Management, LLC



# **Deciphering FedSpeak: The Information Content of FOMC Meetings**

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## Summary

- Application of the Latent Dirichlet Allocation (LDA) model to Fed minutes.
- In a nutshell, principal components on words (sort-of).
  - Reducing dimensionality of document.
  - Finds  $K$ -meaningful word groupings, topics, in corpus (word data)
  - LDA consistently estimates topics that appear natural
- First economics paper to employ LDA for automating paragraph-level topic identification and its contemporaneous effects on the market.



## Methodology

- Collect Fed minutes, parse text
  - Remove sections that do not contain salient information
  - Remove pronouns, articles, prepositions, conjunctions, numbers, and other non-topic specific words.
- Determine number of unobserved topics (free-parameter in LDA)
  - Via bootstrapping from corpus (main sample of text)
  - Authors identifies 8 topics
- Execute the Latent Dirichlet Allocation (LDA) algorithm over minutes across time.



## Output of LDA

- (1) Frequency of keywords in each topic
  - Authors examine the top words in each topic to classify the topic.
- (2) Collection of paragraph-level topic mixture
  - Vector of weights describing the proportion of a paragraph devoted to topic  $n$ .
- Calculate tone-score for each topic over time
  - Contrast frequency of keywords against dictionaries from Harvard IV-4 Psychological Dictionary and Loughran and McDonald 2011 (finance tonal dictionary)
  - I.e. compute the fraction of positive words vs the fraction of negative words



## Analysis

- Examine the informativeness of topics as a proportion of minutes over time.
- Examine the informativeness of the tone of topics for stocks and bonds.
- Examine directional impact of tone of each topic



## Conclusion

- Significant variation in proportion of topics and tone over time.
- Recessions / High unemployment
  - Tone usually negative
- Some topics more informative than others at a macro level
  - Policy / inflation ✓
  - Trade / consumption ✗
  - i.e. invokes market directional response



## Practitioner Thoughts

- Application to higher frequency textual content for pricing short-term changes in assets.
- For subset of topics that are determined as less informative, is there added value in applications for sector or industry market response?
- What happens when linguistic style changes?
- Complement to other economic or fragility indicators
  - Reinforce directional or regime bets



## References

- Jegadeesh, N., And D. Wu. 2008. Deciphering FedSpeak: The Information Content of FOMC Meetings. *Research manuscript.*
- Hansen, S., M. McMahon, and A. Prat. 2015. Transparency and Deliberation within the FOMC: A Computational Linguistics Approach. *Research manuscript.*





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