Communication, Monetary Policy, and Financial Markets in Mexico

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The Big Picture

• Many popular measures of monetary policy surprises use changes in asset prices around CB communication events:
  • High-frequency data eliminates other sources of news
  • Change in asset prices related to change in interest-rate expectations

• Possible limitations:
  • financial market participants ≠ general public
  • Abstracts from expectations formation process

• Examining text generated by receivers of CB communication can help address these issues
Narrative Monetary Policy Surprises

• Ter Ellen, Larsen, and Thorsrud (2020) examine the impact of CB communication on media content

• Change in media content around interest rate decisions is used to instrument changes in general public beliefs about economy

• Media surprises are independently informative on future financial and economic developments

• Aguilar and Perez-Cervantes (2021) instead construct narrative surprise measures from the texts of bank analysts in Mexico

• Generates insight into how financial professionals interpret CB communication.
Broad Overview of Paper/Comments

1. Measuring content
2. Measuring surprise given content
3. Surprise measures and financial market outcomes
Measuring Narrative Content

• Constructing narrative surprise requires first measuring content

• Following have dominated content analysis in monetary policy:
  • Dictionary counts of sentiment words (e.g. Apel and Blix-Grimaldi 2012)
  • Matrix factorization methods (e.g. Boukus and Rosenberg 2006)
  • Factors models for discrete data (e.g. Hansen and McMahon 2016)

• These approaches all rely on the so-called *bag-of-words* model in which documents are represented as histogram counts over words

• NLP has moved well beyond this and now typically works with word and document embeddings (word2vec, glove, elmo, bert, big bird).

• *Global* vs *Local* co-occurrence patterns.
Algorithm of Aguilar and Perez-Cervantes

1. Fit word embedding algorithm on corpus of Spanish Wikipedia; Mexican financial news; central bank statements; analyst reports.
2. Create sentence embeddings for analyst reports $\rightarrow$ average word vectors, remove projection onto first five principal components
3. Represent sentence in 2D space using t-SNE
4. Cluster sentences together in the t-SNE space using K-means
5. Using distribution of sentence-level cluster assignments to generate document-level frequency distribution over clusters
Comments

• Each step implements a different algorithm that might be unfamiliar to readers, so further clarification might be helpful.

• Final destination is document-level distribution over topics, how different would the analysis be using existing methods?

• Embedding algorithms typically invoked to account for semantic relationships, do those matter here?

• Demszky et. al. (2019) algorithm might be simpler starting point.

• Additional validation exercises to explore topic labels.
Measuring Surprise

- Paper computes topic distributions in analyst reports before and after (1) monetary policy decision and (2) publication of minutes
- Distance in topic distributions before and after these events used as a measure of narrative surprise
Comments

• A bit more detail about the panel structure would be useful, e.g. gap between pre- and post-event texts; balanced vs unbalanced.
• Non-expectations-based drivers of topic difference in sequential reports, e.g. from special topics or changing focus
• More to interpret drivers of narrative surprise. Rate announcement leads to increase in topic on “About the tone of CB communication” and decline on “Risk balances on inflation: short term.” Which sort of underlying expectations would drive such differences?
• Negative correlation in average change in topics across events.
Narrative Surprises and Market Outcomes

• Preliminary analysis suggests that narrative surprises correlate with changes in asset prices:
  • Minutes-related surprise helps explain 10- and 20-year bond price changes
  • Rate-decision-related surprise helps explain absolute and signed change in USD-Peso FX rate.
Comments

• Why these particular assets?
• Narrative surprise is unsigned, so should assets be unsigned?
• Is narrative surprise significant controlling for asset-price-based monetary policy surprises?
• One reading of the paper suggests that analysts act as information intermediaries but unclear whether there is yet evidence of this.
• The channel would require a financial market response to the published analyst interpretation of CB actions
Conclusion

• Paper pushes frontier of NLP methods and applies them to a new corpus of texts from analyst report
• Scope to learn about how financial professionals react to CB communication
• This can help unpack the black box of how such professional process news
• Scope to increase transparency of measurement and further develop asset price regressions