Communication, Monetary Policy, and Financial Markets in Mexico

Discussion by Stephen Hansen, Imperial College London 5th BIS-CCA Research Network Conference

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