More Than Words
A Textual Analysis of Central Bank Communication

Pongsak Luangaram
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Communication is really a big deal ...
... but examining the language of central banks is not easy.
'I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it'

*Baron William Thomson Kelvin*

*May 1883*
What did we study?

- Policy statements of 22 central banks, including major and IT, during 2000-2015

- Computational linguistic tools that measure:
  1. Readability
  2. Topics
  3. Tones

- Key findings:
  - Complicated nature of communication
  - Complex decision making process
  - Significant variation across central banks and points in time
Analytical Framework

Readability – the ease of reading

‘Overall consumer prices, as measured by the price index for personal consumption,'
Overall consumer prices, as measured by the price index for personal consumption expenditures, increased just 1 percent over the 12 months ending in April, up noticeably from its pace through much of last year but still well short of the Committee's 2 percent objective. Much of this shortfall continues to reflect earlier declines in energy prices and lower prices for imports.
Topics – the key themes

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7 Stylized Facts about central bank communication
S1: Central banks talk more over time

(i) Words

(ii) Words per sentence
S2: Statements require an advanced reader

The numbers are 2008-2015 averages. FK rates text on a US school grade level.
Central banks tend to use 'big words'

(i) Syntactic complexity

(ii) Academic words score

We used TextEvaluator, provided by Educational Testing Service (ETS), to calculate complexity scores.
S3: Complexity coincides with rate cuts
Topic classification by LDA algorithm
S4: Inflation targeters discussed inflation more


- **United States (Fed)**: 45%
- **European Central Bank (ECB)**: 30%
- **Australia**: 35%
- **Canada**: 30%
- **New Zealand**: 25%
- **Norway**: 30%
- **South Korea**: 40%
- **Chile**: 35%
- **Peru**: 30%
- **Poland**: 45%
- **South Africa**: 40%
- **Thailand**: 40%

Legend:
- Inflation: **Blue**
- Growth: **Orange**
- Inflation and prices: **Gray**
S5: Uncertainty words are prevalent in financial market topics
S6: Global developments become more important after GFC

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Topic evolution & Tone analysis

FOMC topic proportions

(i) Growth topics

(ii) Inflation topics

FOMC tones

(i) Growth topics

(ii) Inflation topics
FOMC topic proportions

(i) Growth topics

(ii) Inflation topics
ECB topic proportions

(i) Growth topics

(ii) Inflation topics
BOT topic proportions

(i) Growth topics

(ii) Inflation topics
FOMC tones

(i) Growth topics

(ii) Inflation topics
ECB tones

(i) Growth topics

(ii) Inflation topics

[Graphs showing time series data for growth and inflation topics]
BOT tones

(i) Growth topics

(i) Inflation topics
S7: Tone matters

- FED: Fed funds rate significantly related to net tone in economic growth topics but not inflation tone.
- BOT: Thai policy rate decision related more to inflation tone.
- ECB: The policy rate correlated significantly both to growth and inflation tones.
Concluding remarks

On communication policy design

Key requirements for effective communication:
- **Clear**: Readability of overall message
- **Informative**: Topics & Tones of central bank's assessment

On computational linguistic tools

- By using various tools, the paper demonstrated **fruitful use of textual information** for economic research.
- Other application includes: **measuring 'Uncertainty'**.
  - Economic policy uncertainty (Baker et al., 2015)
Otmar Issing (2005): “The central bank is not only obliged to fulfill its mandate, it must also provide society with convincing reasons for its actions... there must be no doubt that all communications are made to the best of its knowledge and belief.”

Jeremy C. Stein (2014): “As we evaluate our own performance in the communications department, it is probably better for us to focus on how legitimately transparent we have succeeded in being, as opposed to how much or how little our various announcements have moved markets.”
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