

Pongsak Luangaram
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Communication is really a big deal ...

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Did Anyone See
This Move Coming?

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*... 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 -

'Overall consumer price index for the price index for expenditures. In months ending through much Committee's shortfall energy and

Topics - the key themes

'Overall consumer prices, as measured by the price index for personal consumption expenditures, increased just 1 percent months ending in April, up noticeably through much of last year but still well Committee's 2 percent objective. The shortfall continues to reflect earlier energy prices and lower prices for

Analytical Framework

Readability – the ease of reading

‘Overall consumer prices, as measured by the price index for personal consumption

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Topics – the key themes

‘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**.’

Tones – how positive/negative things are

‘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.’

Framework

Stability - the ease of reading

Consumer prices, as measured by the index for personal consumption, increased just 1 percent over the 12 months in April, up noticeably from its pace of last year but still well short of the 2 percent objective. Much of this was to reflect earlier declines in and lower prices for imports.

Negative things are

measured by consumption 1 percent over the 12 months, noticeably from its pace of last year but still well short of the 2 percent objective. Much of this was to reflect earlier declines in and lower prices for imports.

7 Stylized Facts about central bank communication



S2: Stability



The numbers are 2008

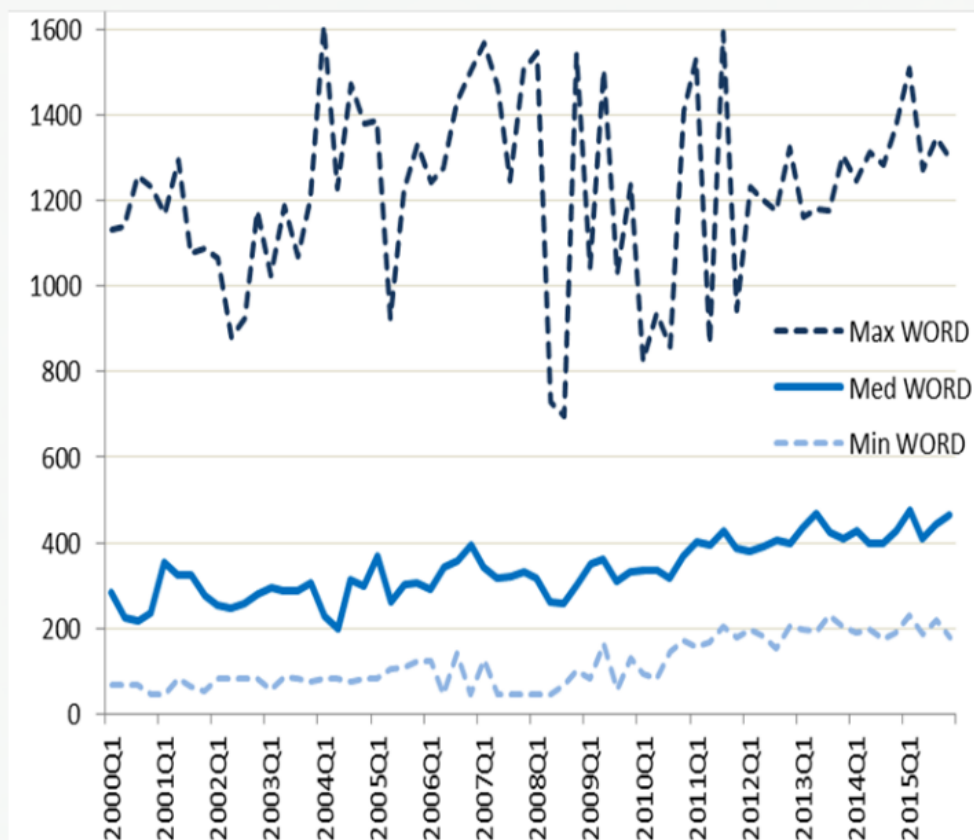
S4: Inflation targeters discuss

Estimated topic proportions: Inflation vs (2001-2015)

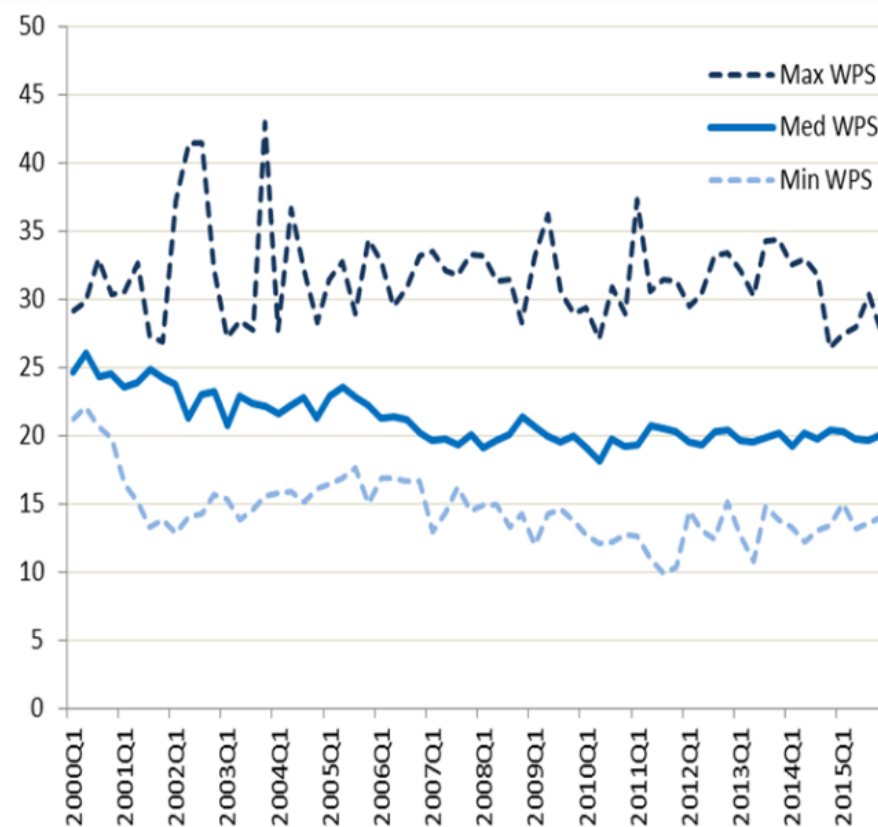


S1: Central banks talk more over time

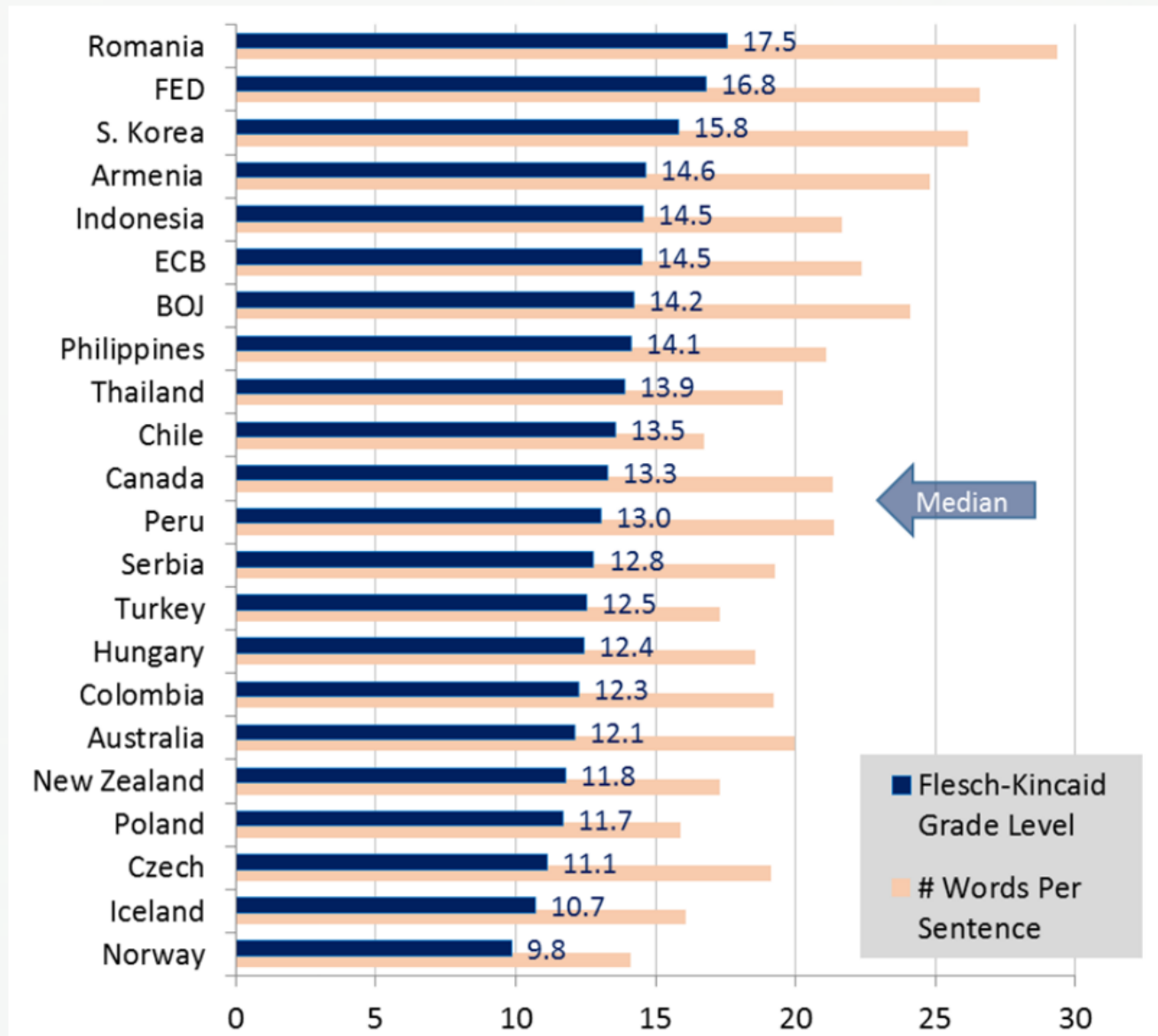
(i) Words



(ii) Words per sentence



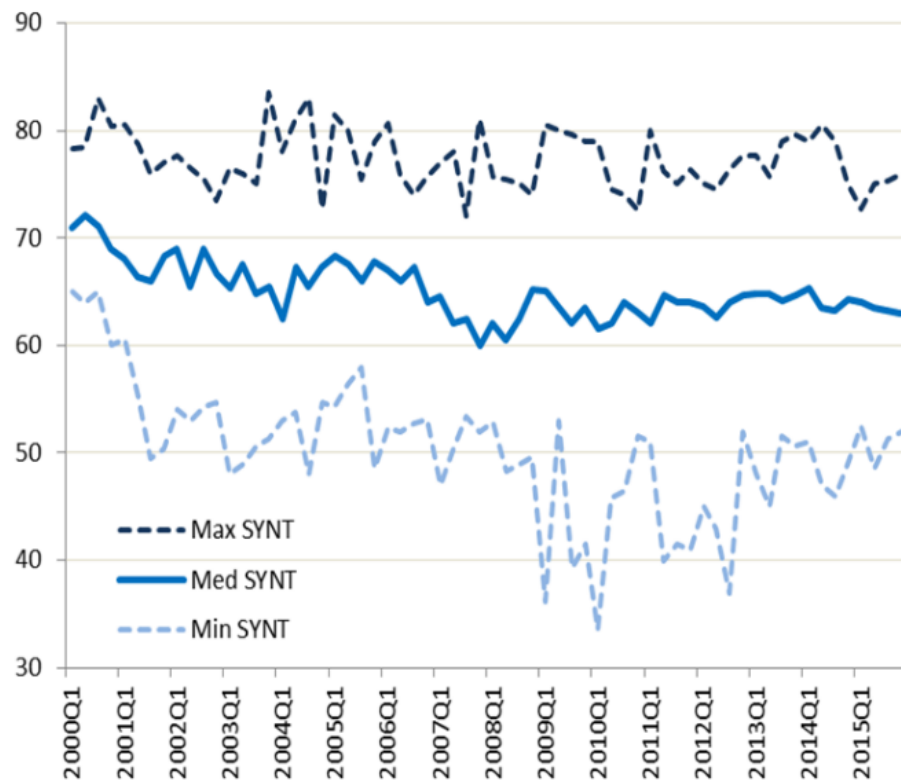
S2: Statements require an advanced reader



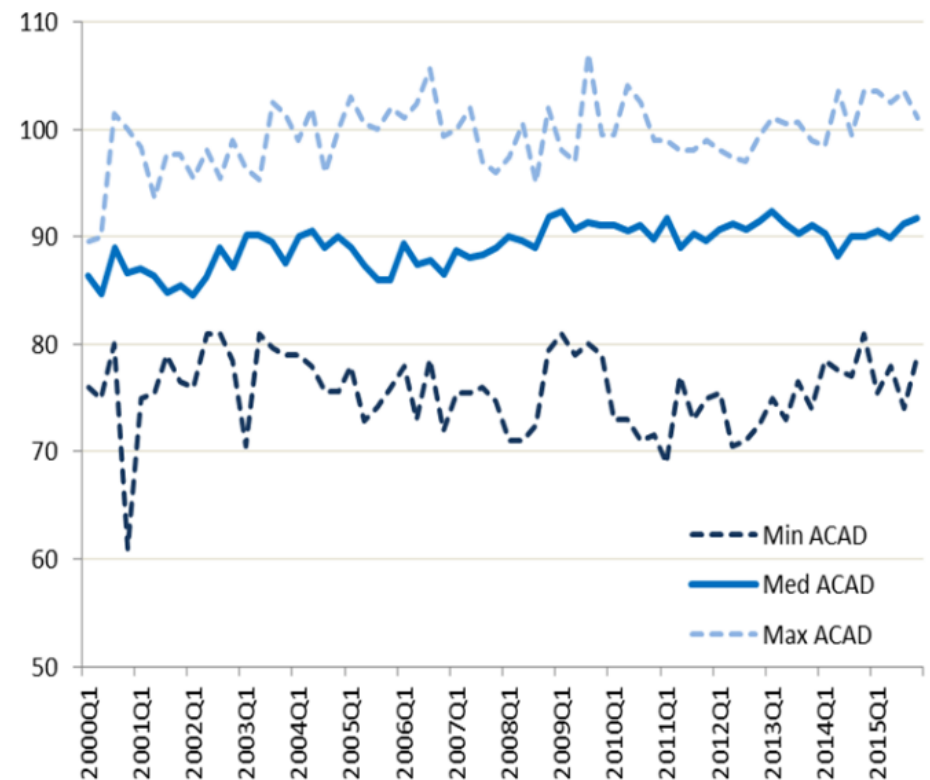
The numbers are 2008-2015 averages. FK rates text on a US school grade level.

Central banks tend to use 'big words'

(i) Syntactic complexity



(ii) Academic words score



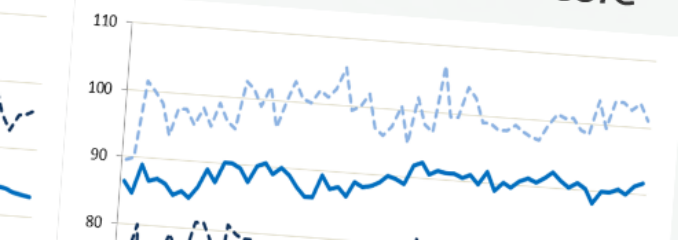
We used TextEvaluator, provided by Educational Testing Service (ETS), to calculate complexity scores.

DATA DEPENDENT

S3: Complexity coincides with rate cuts

tend to use 'big words'

ty (ii) Academic words score

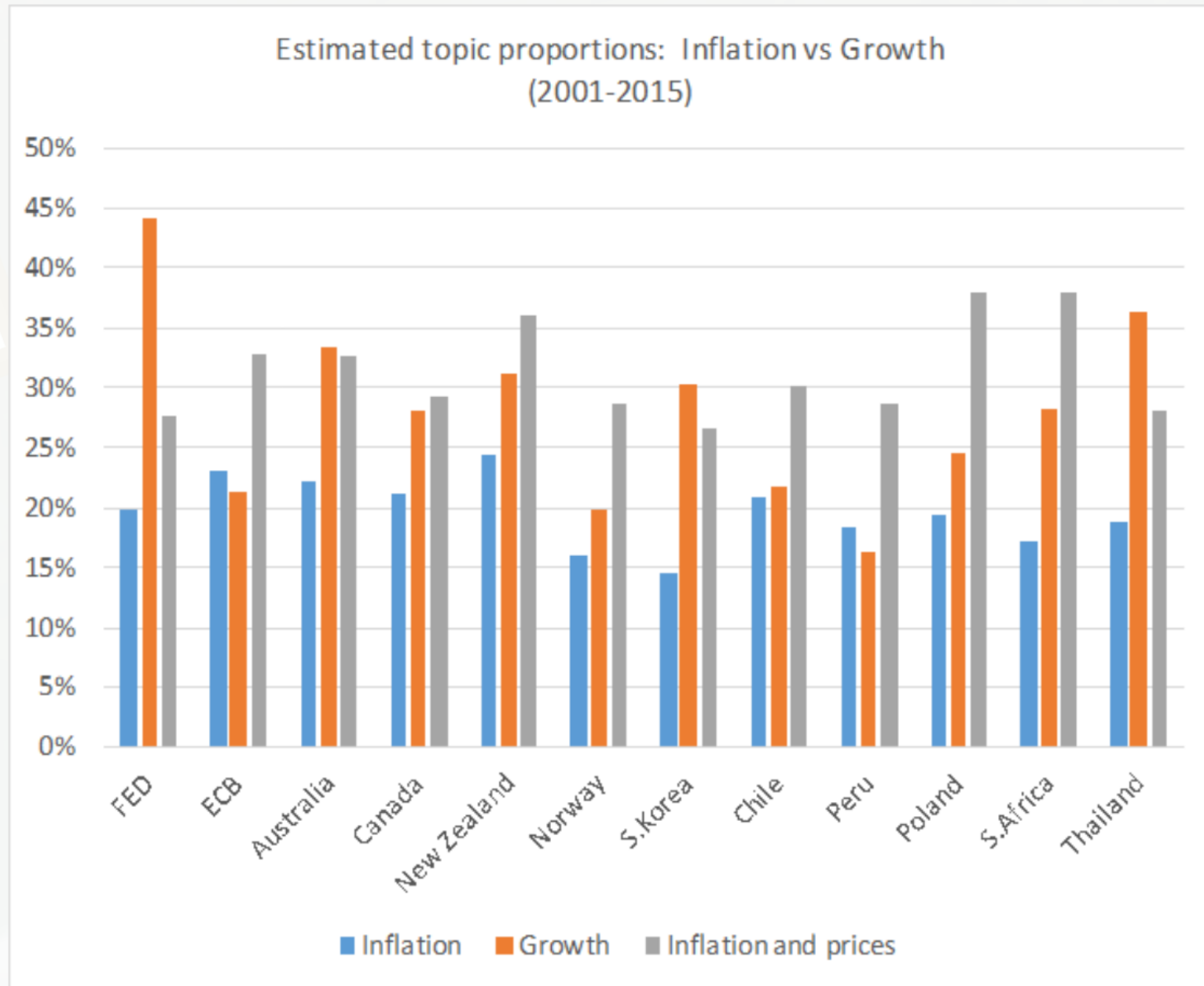


Top vocabulary in policy statements

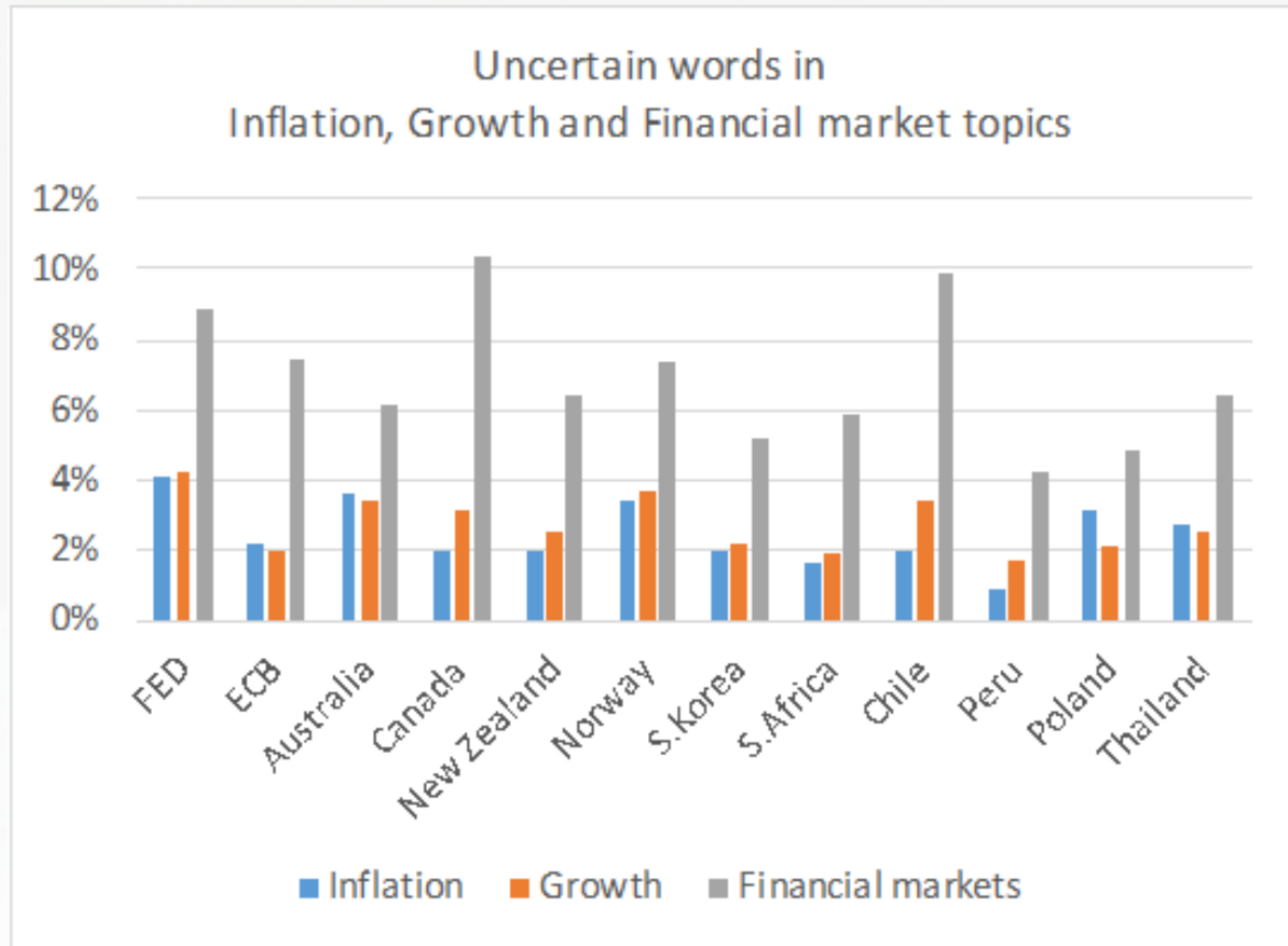
Topic classification by LDA algorithm



S4: Inflation targeters discussed inflation more



S5: Uncertainty words are prevalent in financial market topics



S6: Global developments become more important after GFC

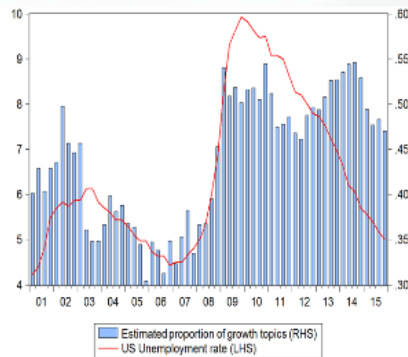
	Domestic economy			External environment		
	2001-2007	2008-2015	Difference	2001-2007	2008-2015	Difference
Australia	57%	55%	-2%	31%	33%	2%
Canada	53%	52%	0%	26%	32%	7%
New Zealand	60%	58%	-2%	31%	34%	3%
Norway	58%	45%	-13%	24%	25%	1%
S. Korea	67%	52%	-15%	17%	35%	19%
Chile	53%	48%	-5%	20%	27%	7%
Peru	52%	49%	-2%	14%	15%	1%
Poland	67%	59%	-7%	20%	25%	4%
S. Africa	69%	65%	-4%	23%	29%	6%
Thailand	57%	51%	-7%	31%	37%	6%

	Do
	2001-

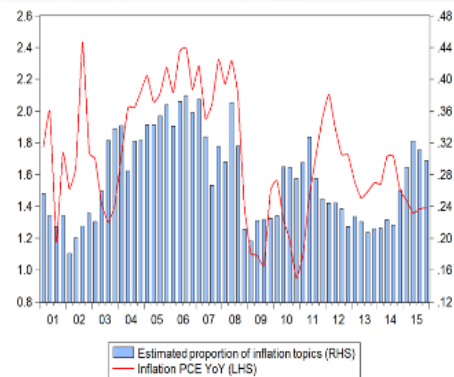
Topic evolution & Tone analysis

FOMC topic proportions

(i) Growth topics

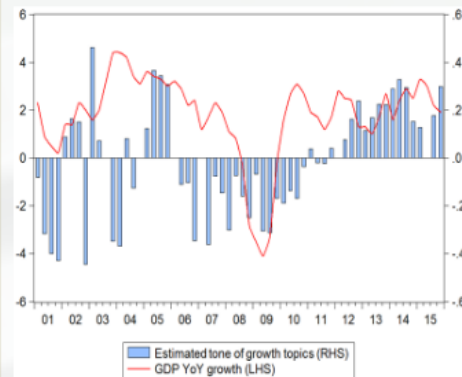


(ii) Inflation topics

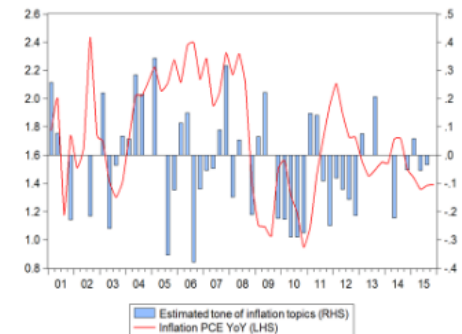


FOMC tones

(i) Growth topics

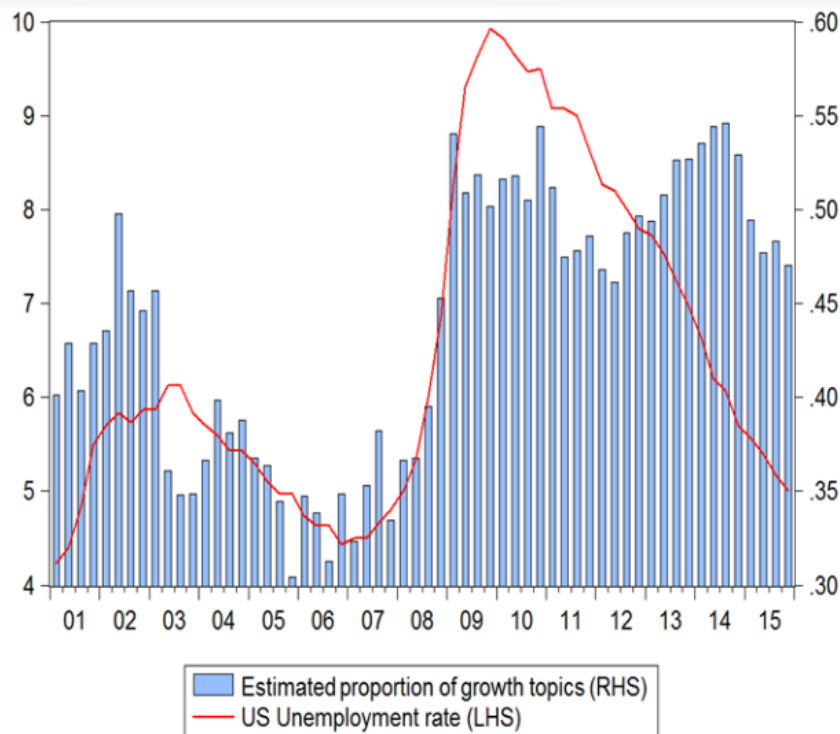


(ii) Inflation topics

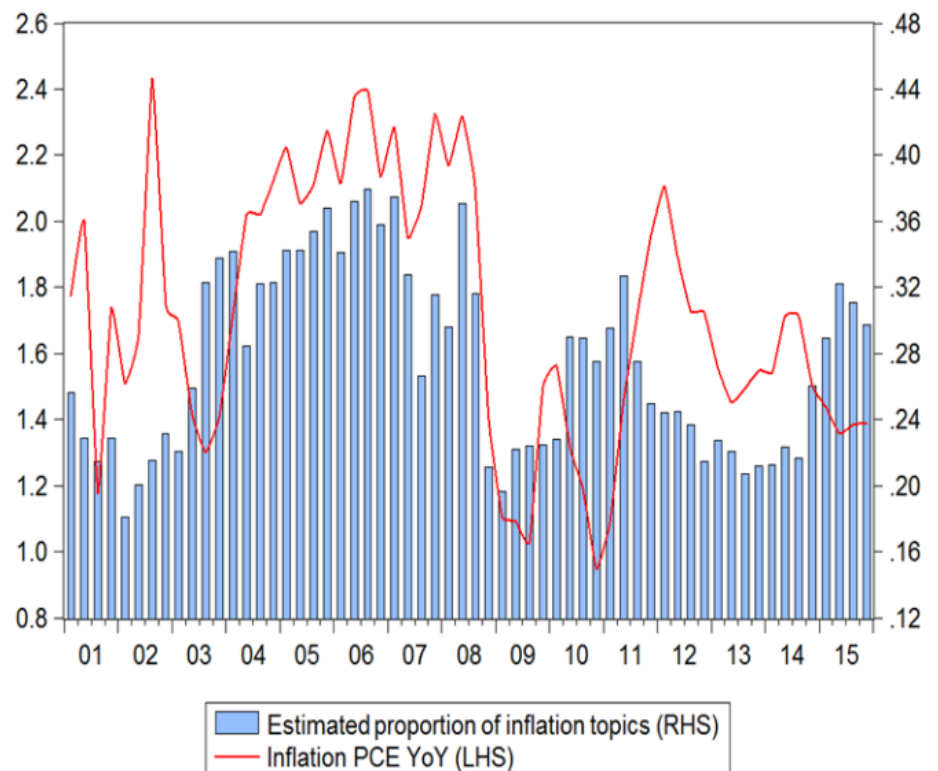


FOMC topic proportions

(i) Growth topics

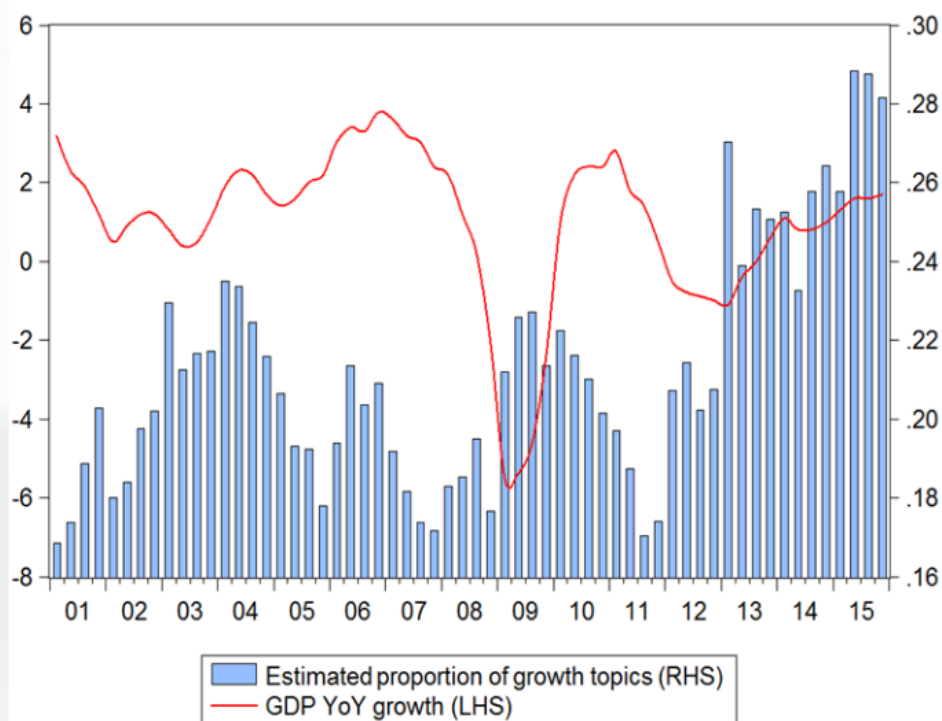


(ii) Inflation topics

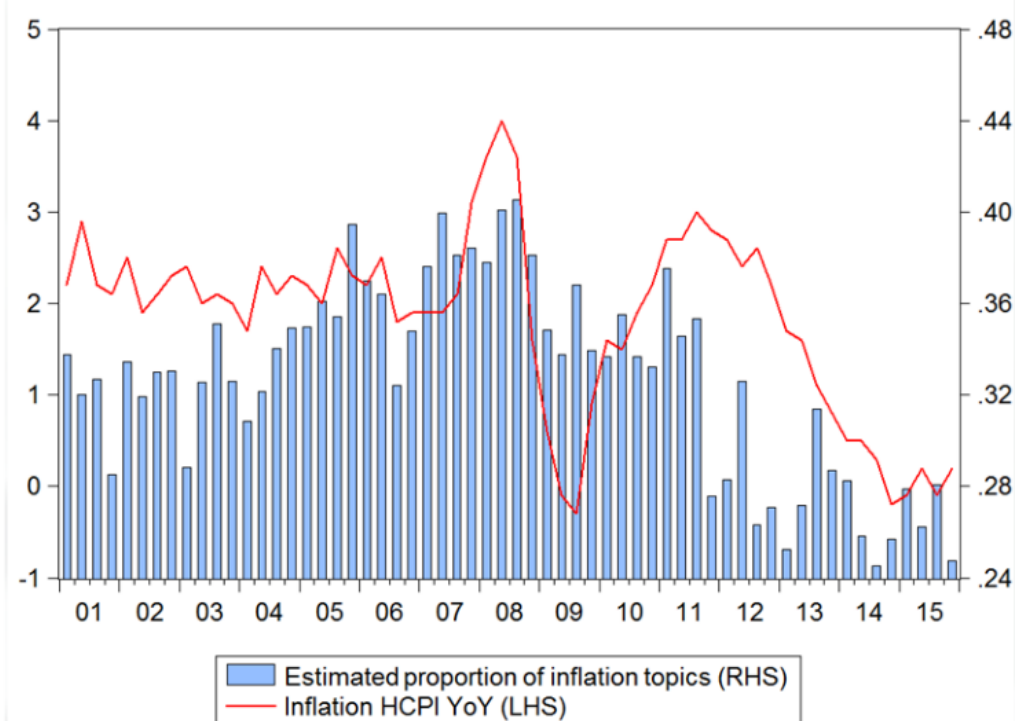


ECB topic proportions

(i) Growth topics

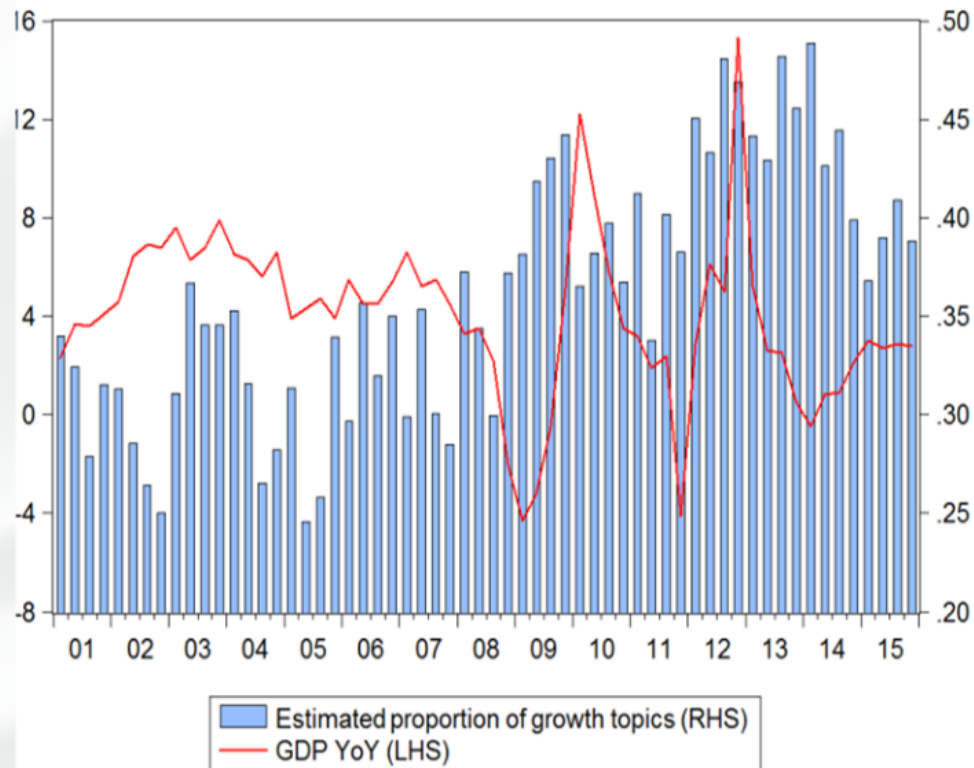


(ii) Inflation topics

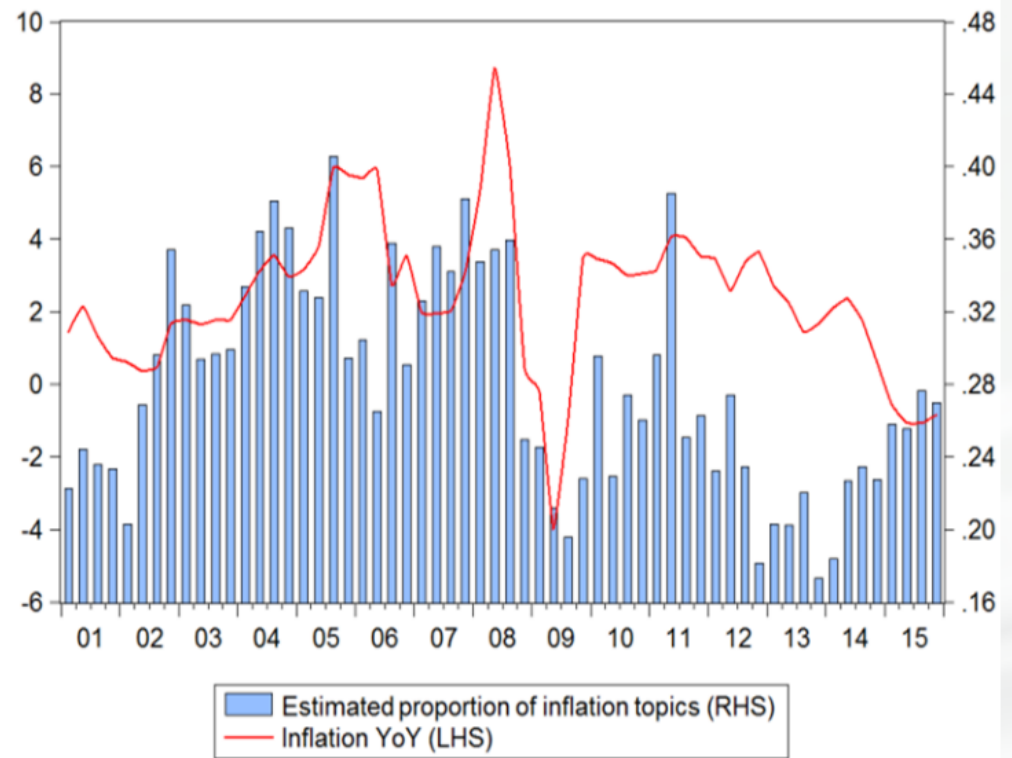


BOT topic proportions

(i) Growth topics

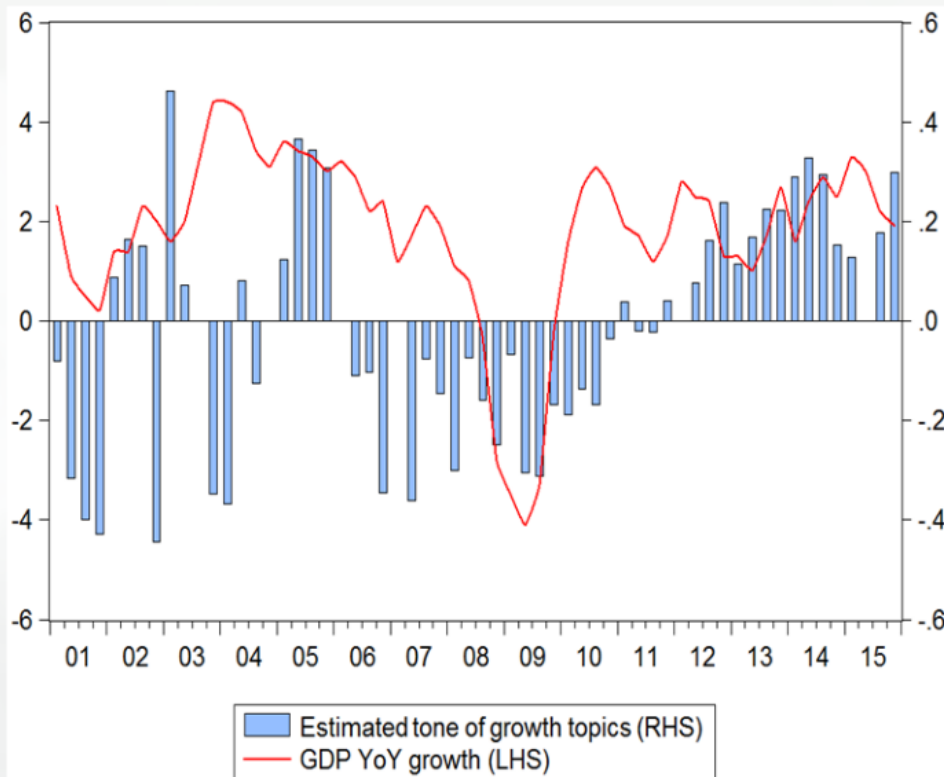


(ii) Inflation topics

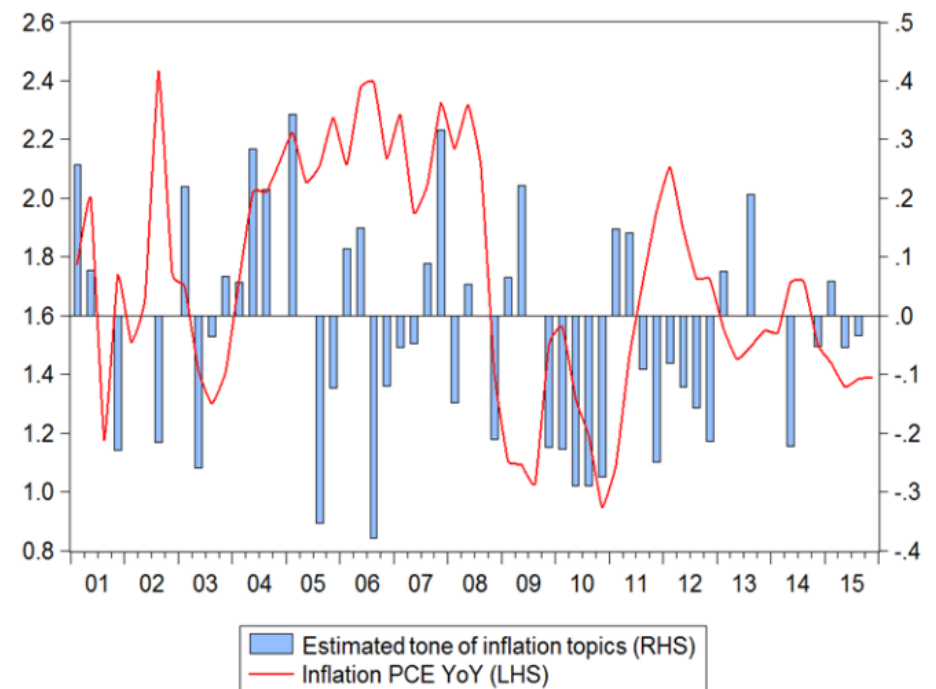


FOMC tones

(i) Growth topics

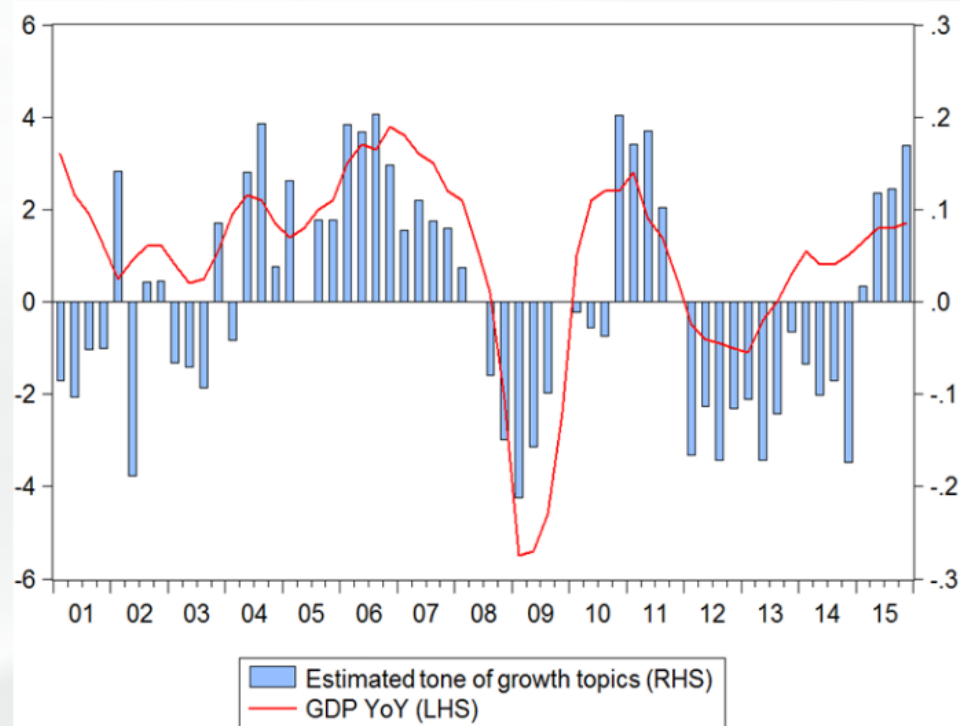


(ii) Inflation topics

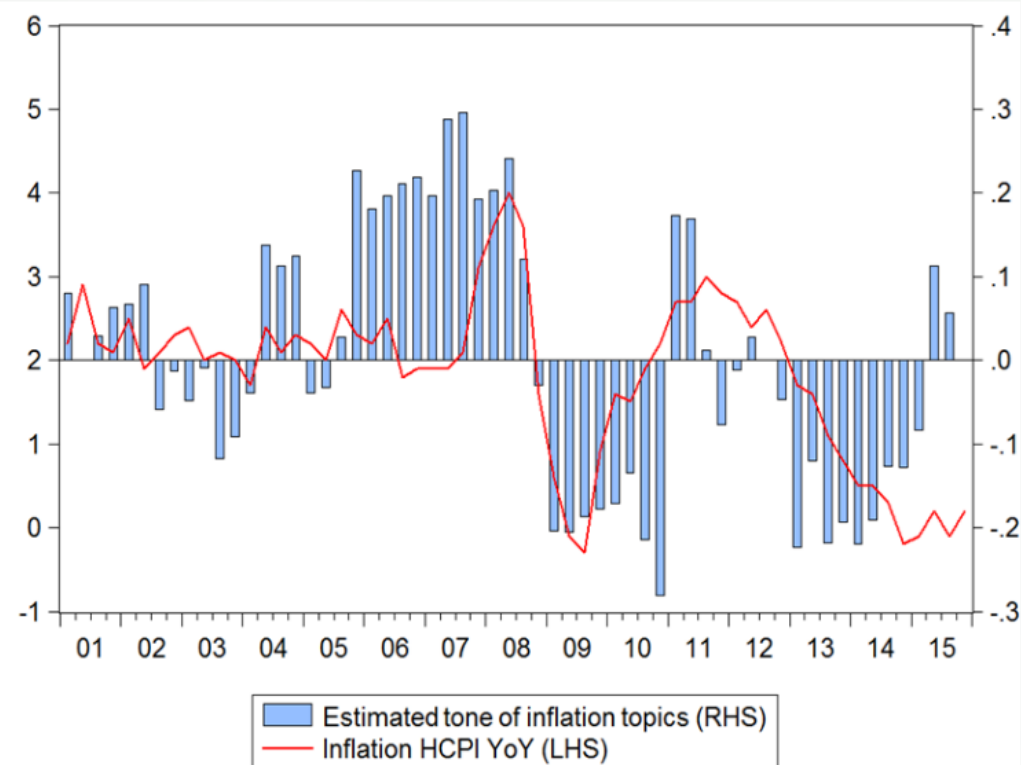


ECB tones

(i) Growth topics

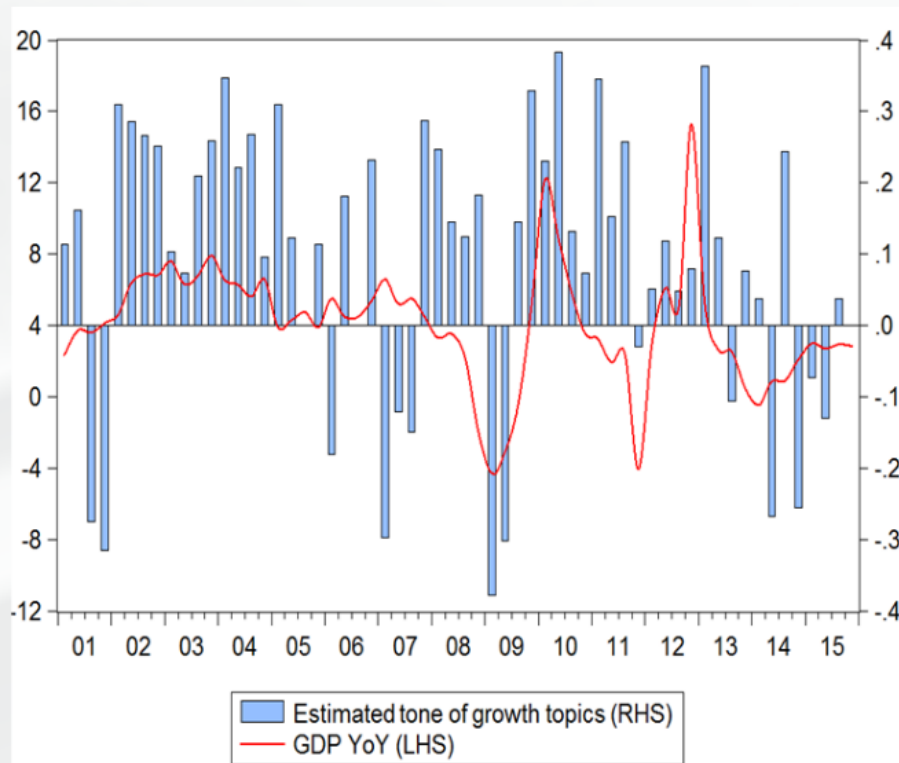


(ii) Inflation topics

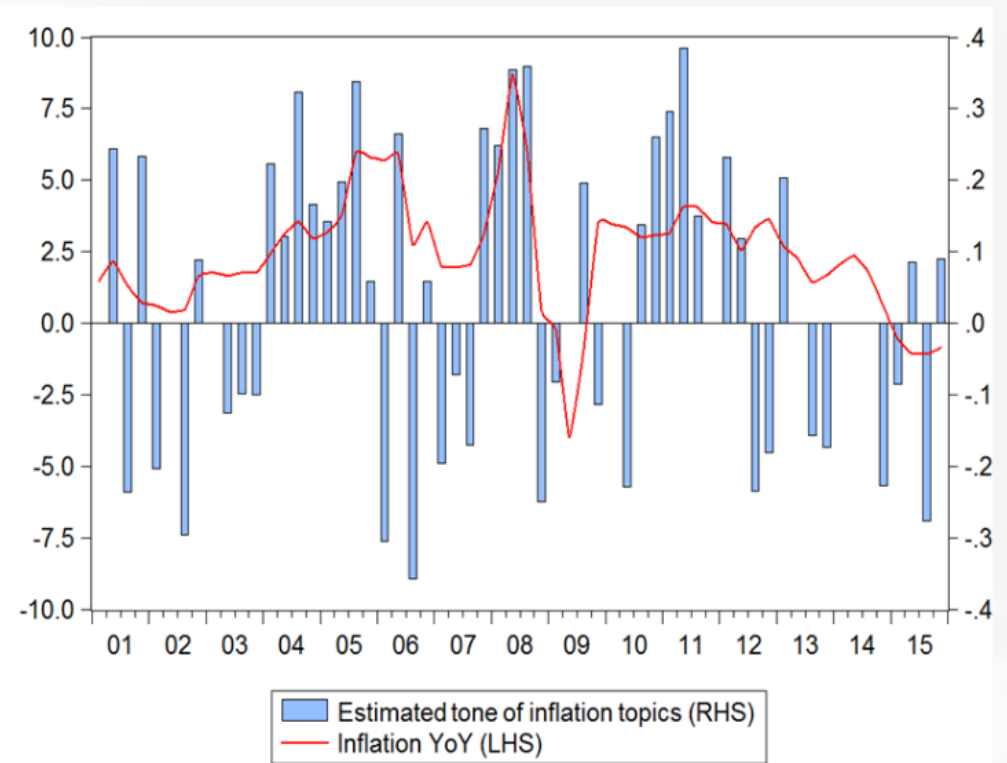


BOT tones

(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.”

More Than Words

A Textual Analysis of Central Bank Communication

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