Why so sentimental?

The hidden narrative of the FED's Monetary Policy Report

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Motivation

The monetary policy report discusses the conduct of monetary policy and economic developments and prospects for the **future**.

... so, let's take it at face value!

Question: can we infer future economic performance based on the information disclosed in the Monetary Policy Report?

The exercise

Try to come come up with a structural approach to extract forward-looking information about economic growth and employment using FED's own words.

The data

Use the testimony presented by the FED Chair to congress, which summarises the report.

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Methodology - steps

Outline of steps:

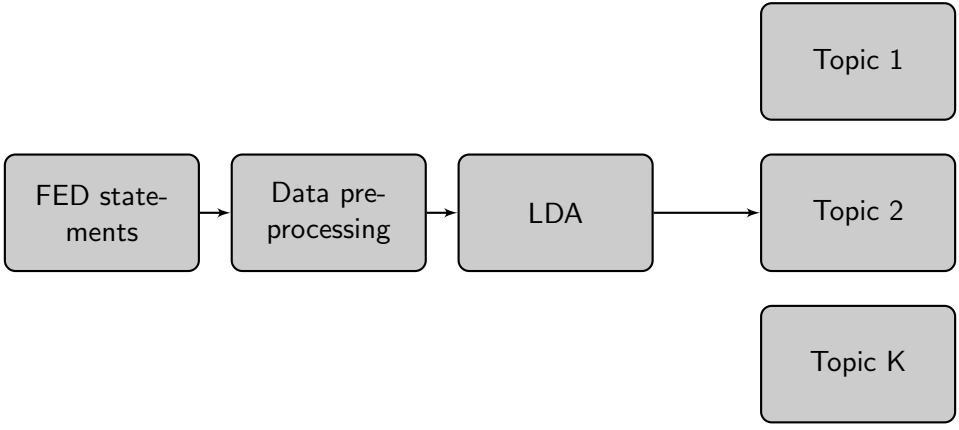
1. Download and clean statements
2. Use topic modeling to identify structures in each document
3. Identify words that correspond to the topics that comprise the documents
4. Use the frequency of the words to come up with a score at each point in time - this will be our time series variable
5. Estimate a VAR using lagged GDP growth and unemployment rate together with this word-frequency variable.

Cleaning

The idea is to remove unnecessary characters/words in each string

- Remove special characters
- Remove stopwords (e.g. 'is', 'a', 'the')
- Wordstemming
  - operate operating operates operation operative operatives operational $\Rightarrow$ oper

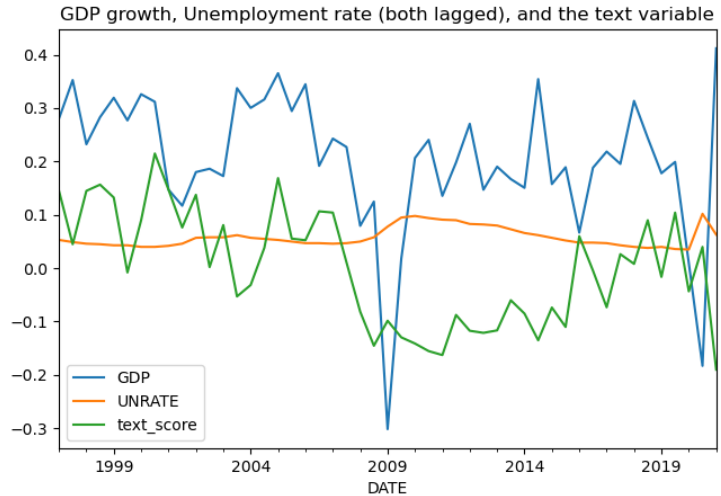
Identifying the structure



Structuring the data - the document-term matrix

	unanticip	downturn	facil	help	secur	...
19962.txt	1	1	1	6	0	...
19971.txt	0	2	3	2	0	...
19972.txt	0	0	1	6	1	...
19981.txt	0	6	4	5	3	...
19982.txt	3	0	11	5	1	...
19991.txt	4	0	4	5	0	...
19992.txt	1	4	0	7	0	...
⋮	⋮	⋮	⋮	⋮	⋮	⋱

The variable



Estimation result

	Sentiment	UNRATE	GDP
constant	0.097915(**)	0.036111 (***)	-0.013287(*)
Sentiment(t-1)	0.313785 (**)	-0.052083 (***)	0.076464 (***)
Unemployment(t-1)	-2.450050 (***)	0.496066 (***)	0.441470 (***)
GDP(t-1)	0.196695(**)	-0.033185 (**)	0.387126 (***)

P-value of Granger-Causality test (Sentiment on GDP): 0.

P-value of Granger-Causality test (Sentiment on Unrate): 0.7%.

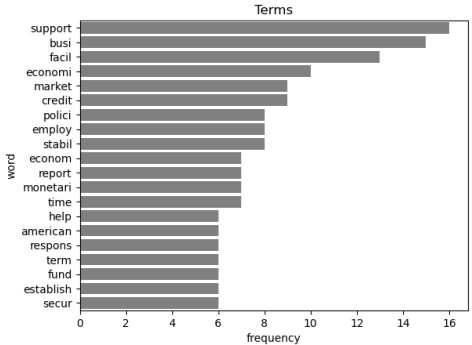
Summary

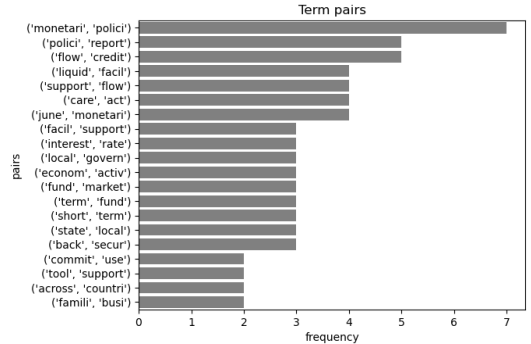
Question: can we infer future economic performance based on the information disclosed in the Monetary Policy Report?

... it appears so!

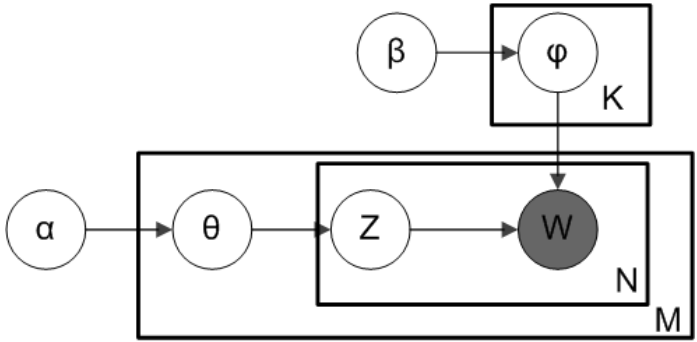
- I document a relationship between the FED's statement to the Congress and future economic growth and unemployment rate, which is both statistically and economically significant.
- Ways of improvement and possible future work

Additional slides





Additional slides



$$p(\beta_{1:K}, \theta_{1:D}, z_{1:D}, w_{1:D}) = \prod_{n=1}^{K} p(\beta_i) \prod_{d=1}^{D} p(\theta_D) \prod_{n=1}^{N} p(z_{d,n}|\theta_d) p(w_{d,n}|\beta_{1:K}, z_{d,n}).$$