
Fiscal Policy in the Bundestag: Textual Analysis and Macroeconomic Effects*

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Motivation

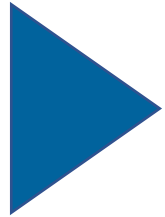


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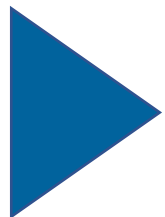
CORE HYPOTHESIS

- ▶ Nature of the parliamentary process itself contains valuable information for understanding the drivers and consequences of **fiscal policy shocks**

Aim of this project

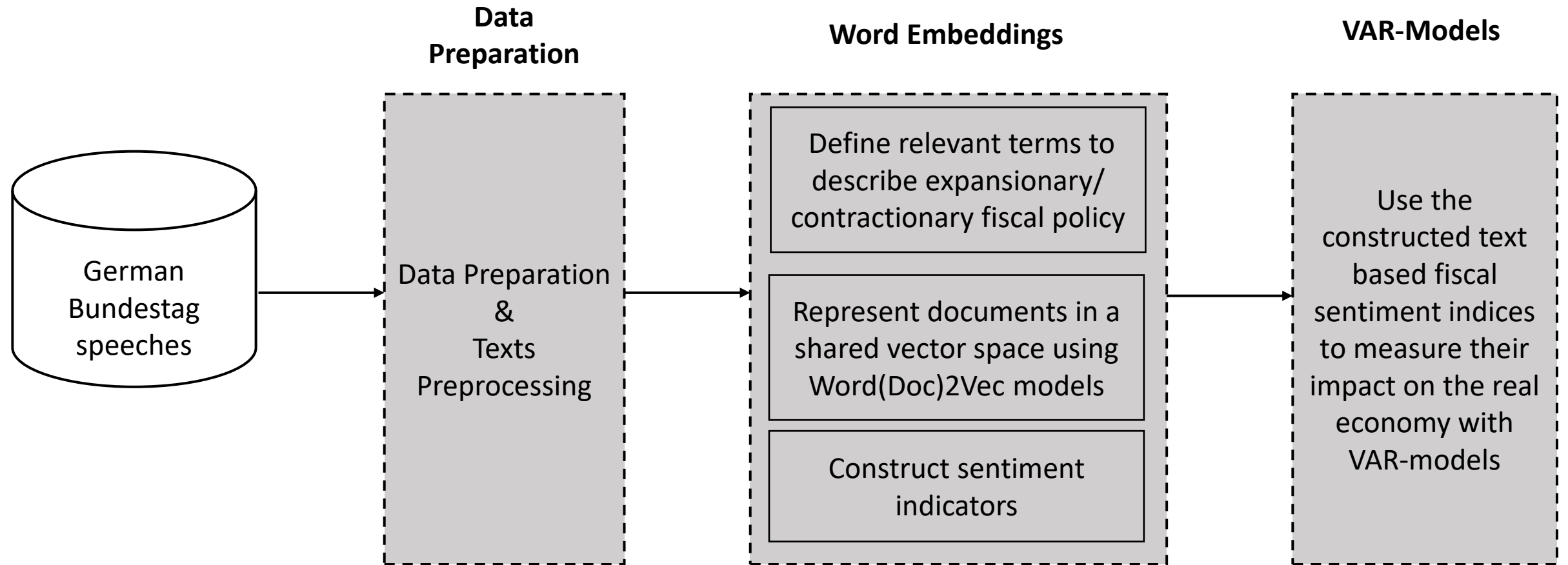


Quantify fiscal-policy-related sentiment



Evaluate whether fiscal sentiment causes government expenditure and, thus, macroeconomic responses

Project Pipeline



Data

Each XML-Protocol
of the legislative
periods 1-18 is
structured by only
six tags

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <DOKUMENT>
3   <WAHLPERIODE>18</WAHLPERIODE>
4   <DOKUMENTART>PLENARPROTOKOLL</DOKUMENTART>
5   <NR>18/1</NR>
6   <DATUM>22.10.2013</DATUM>
7   <TITEL>Plenarprotokoll vom 22.10.2013</TITEL>
8   <TEXT>Plenarprotokoll 18/1
9   Deutscher Bundestag
10  Stenografischer Bericht
11
12  1. Sitzung
13
14  Berlin, Dienstag, den 22. Oktober 2013
15
16  I n h a l t :
17  Tagesordnungspunkt 1:
18
19  Eröffnung der Sitzung durch den Alters-
20  präsidenten . . . . .
```

Data

- Full data set comprises a total of 877,140 speeches

doc_id	speech_identification_ent	date	period	session	pos_speechbeginning	Party	Role	governing_Party	text	
0	0	Alterspräsident Labe:	07.09.1949	1	1	\nAlterspräsident Labe:	no-text	Alterspraesident	no-text	Meine Damen und Herren! Abgeordnete des Deuts...
1	1	Dr. Adenauer (CDU):	07.09.1949	1	1	\nDr. Adenauer (CDU):	CDU/CSU	MdB	1.0	Namens der Fraktion der CDU/CSU schlage ich a...
2	2	Alterspräsident Löbe:	07.09.1949	1	1	\nAlterspräsident Löbe:	no-text	Alterspraesident	no-text	Das Wort hat der Herr Abgeordnete Reimann.\n
3	3	Reimann (KPD):	07.09.1949	1	1	\nReimann (KPD):	KPD	MdB	0.0	Ich schlage im Namen der kommunistischen Frak...
4	4	Alterspräsident Löbe:	07.09.1949	1	1	\nAlterspräsident Löbe:	no-text	Alterspraesident	no-text	Sie haben die Vorschläge gehört: Hans Böhm un...
...
24490	24490	Präsident D. Dr. Ehlers:	29.07.1953	1	282	\nDie genannten Fraktionen stimmen dem Gesetz ...	no-text	Bundestagspraesident	no-text	Das Wort hat der Abgeordnete Paul.\n
24491	24491	Paul (Düsseldorf) (KPD):	29.07.1953	1	282	\nPaul (Düsseldorf) (KPD):	KPD	MdB	0.0	Herr Präsident! Meine Damen und Herren! Die N...
24492	24492	Präsident D. Dr. Ehlers:	29.07.1953	1	282	\nPräsident D. Dr. Ehlers:	no-text	Bundestagspraesident	no-text	Meine Damen und Herren! Bevor ich zur Schlußa...
24493	24493	Löbe (SPD) :	29.07.1953	1	282	\nWir sind am Ende der Tagesordnung. Das Wort ...	SPD	MdB	0.0	Werte Abgeordnete des ersten Deutschen Bundes...
24494	24494	Präsident D. Dr. Ehlers:	29.07.1953	1	282	\nDeshalb allen Genannten unseren aufrichtigen...	no-text	Bundestagspraesident	no-text	Mein sehr verehrter Herr Kollege Löbe! Meine ...

Common text preprocessing steps

- Data set as of 1960 since most macroeconomic time series are available from 1970 onward
- Dataset: 235,129 speeches (1960-2021)
- Common text preprocessing steps and removal of domain-specific stop words that were previously identified as such

Word (Document) Embeddings

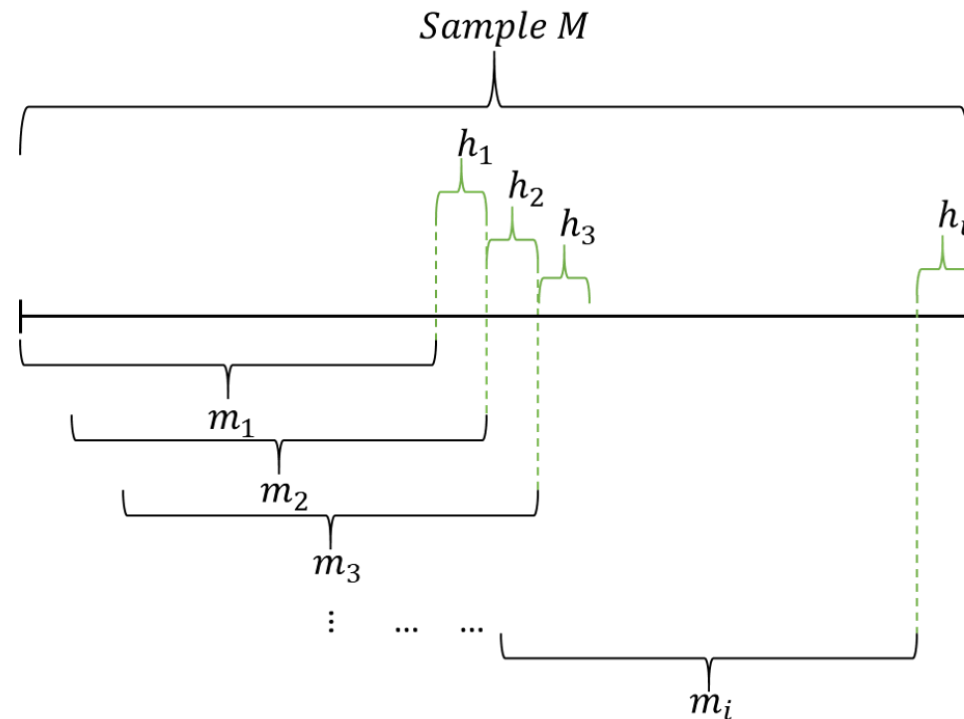
WORD2VEC/DOC2VEC

- ▶ Unsupervised method to represent natural language in a high-dimensional vector space
- ▶ Ability to capture semantic characteristics of the words/texts
- ▶ Additive property of the resulted vectors and the interpretability of the distances

▶ In this paper, Doc2Vec models are used to construct speech representations as well as vectors representing expansionary/contractionary fiscal policy.

Proposed Dynamic Doc2Vec approach

- Based on the approach described by Kampffhammer et al. (2020), we propose a dynamic Doc2Vec approach with a rolling forecast architecture to construct the fiscal sentiment time series:



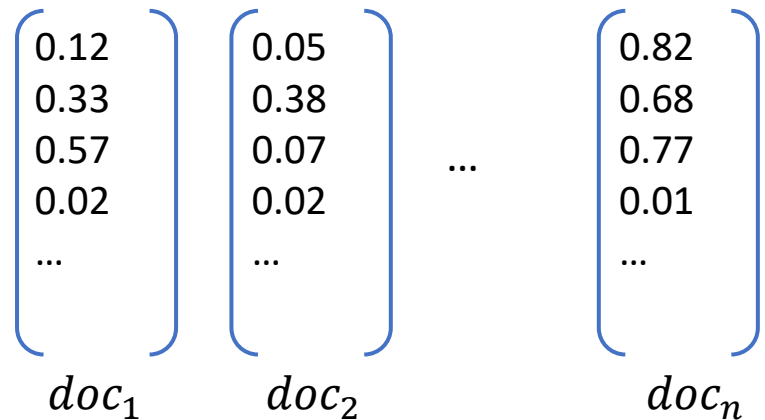
Proposed Dynamic Doc2Vec approach

1. DEFINE RELEVANT FISCAL POLICY-SPECIFIC TERMS

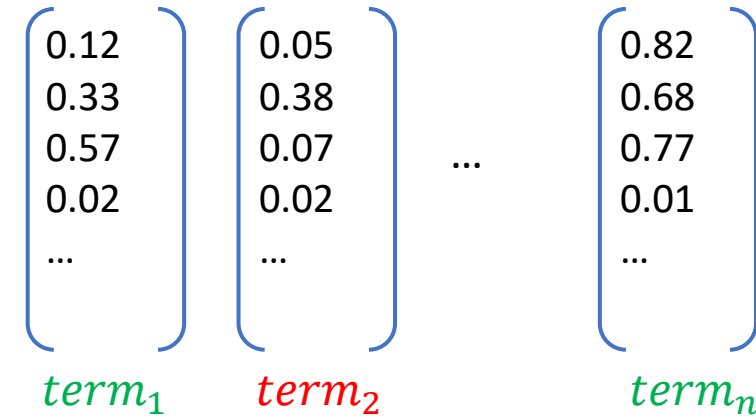
- ▶ **expansionary**: government investment, tax reduction, create jobs, ...
- contractionary**: cut spending, tax increase, deficit reduction, consolidation ...

Proposed Dynamic Doc2Vec approach

2. TRAIN DOC2VEC MODELS FOR EACH PERIOD M (10 YEARS WINDOW)



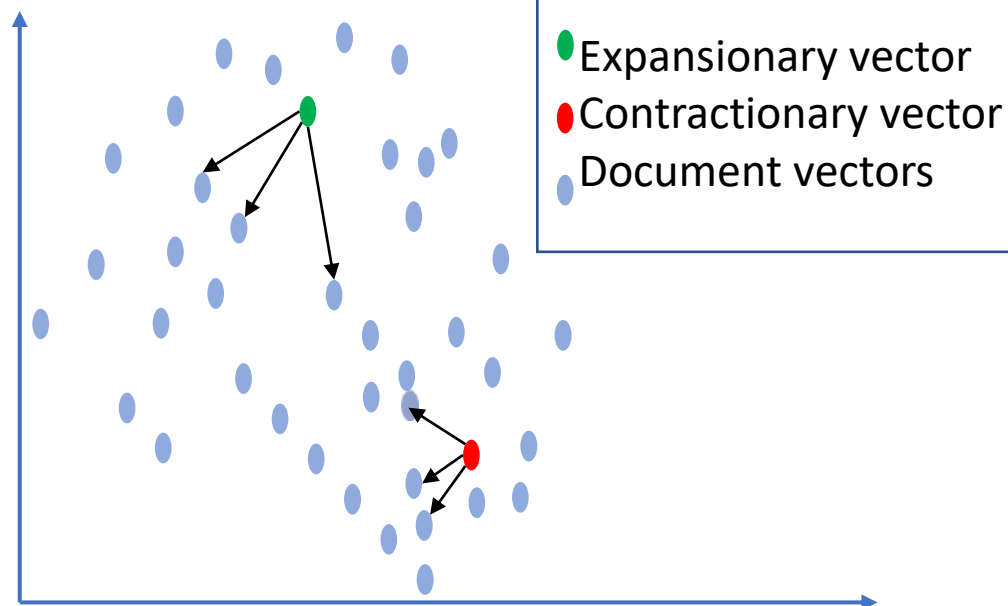
Vector representations for speeches



Vector representations for **expansionary/**
contractionary terms

Proposed Dynamic Doc2Vec approach

3. INFER SPEECHES VECTORS AND FISCAL POLICY VECTORS FOR THE SUBSEQUENT FORECAST PERIOD H (1 QUARTER WINDOW) AND CALCULATE SIMILARITIES TO FISCAL POLICY VECTORS



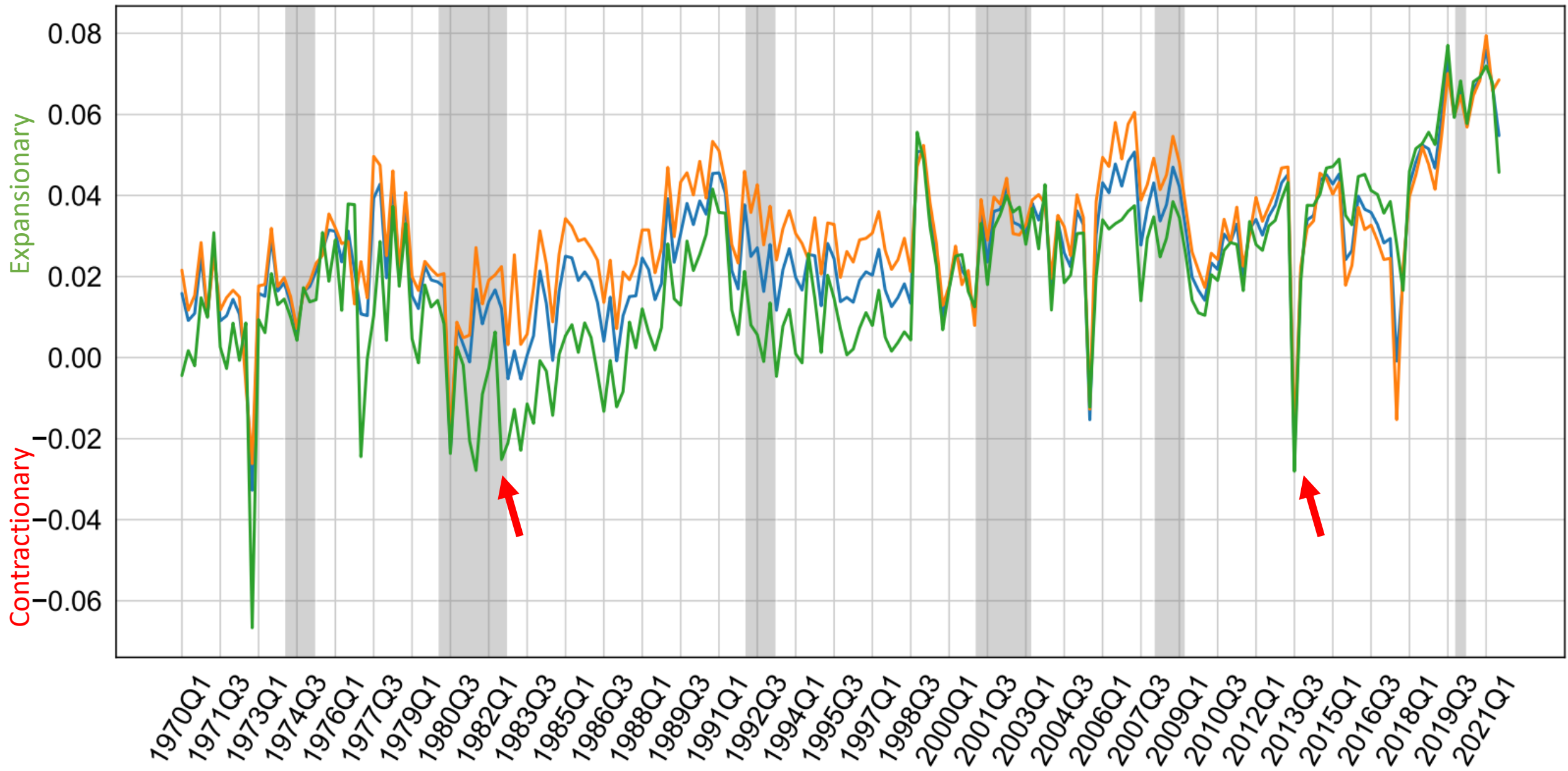
Proposed Dynamic Doc2Vec approach

4. CONSTRUCT CONTINUOUS SENTIMENT INDICATOR

$Sentiment_{h_i} = Sim.to \textit{expansionary} \textit{ vector} - Sim.to \textit{contractionary} \textit{ vector}$

$Sentiment_{h_i} \in [-1, 1]$

— full Bundestag — opposition — government



VAR models

- Include the constructed fiscal policy sentiment time series in conventional VAR models

BASELINE MODEL

- **Endogenous variables:**
- log(real government expenditure),
- log(GDP),
- log(real private consumption),
- Sentiment (one of three time series)

- Sentiment ordered last

Figure 9: Response to fiscal sentiment (government)

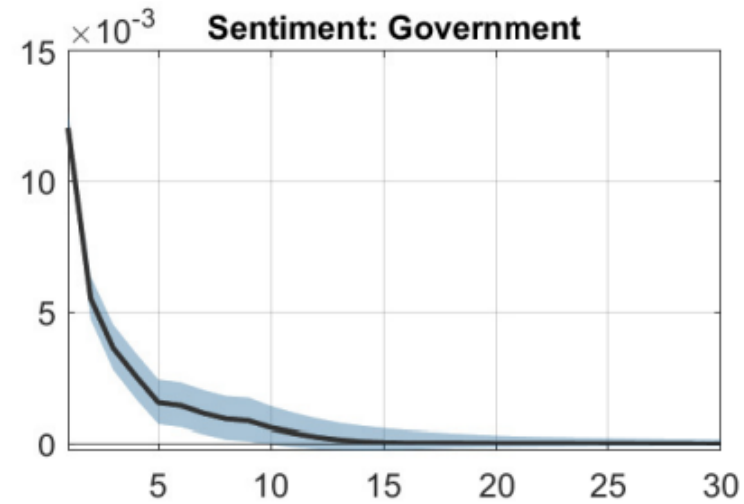
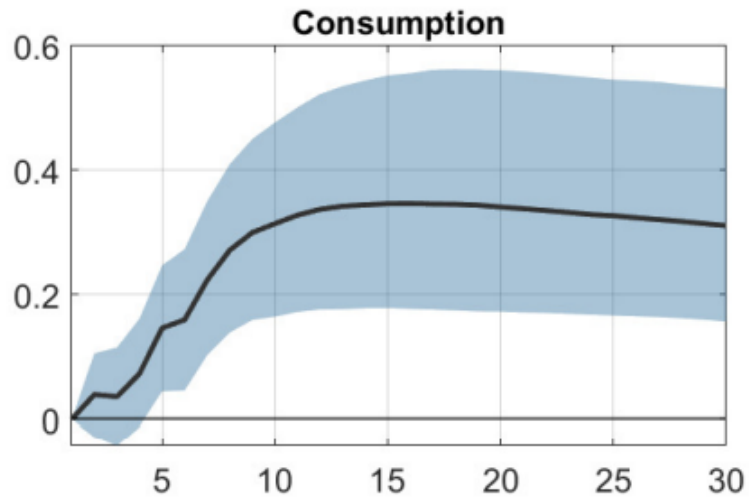
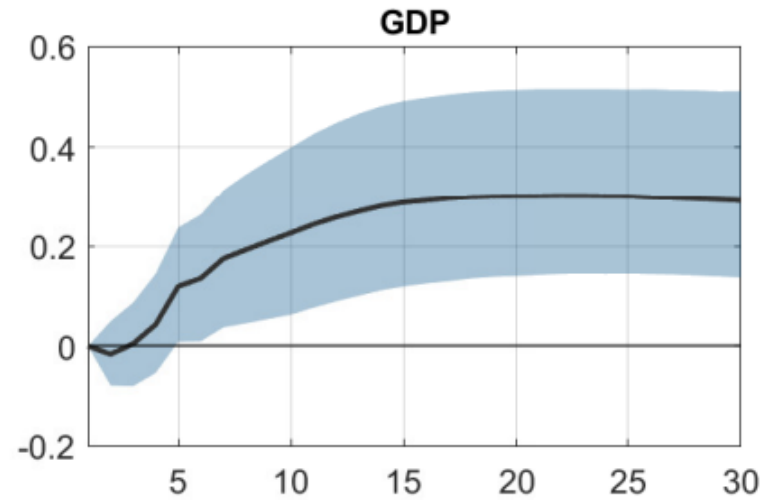
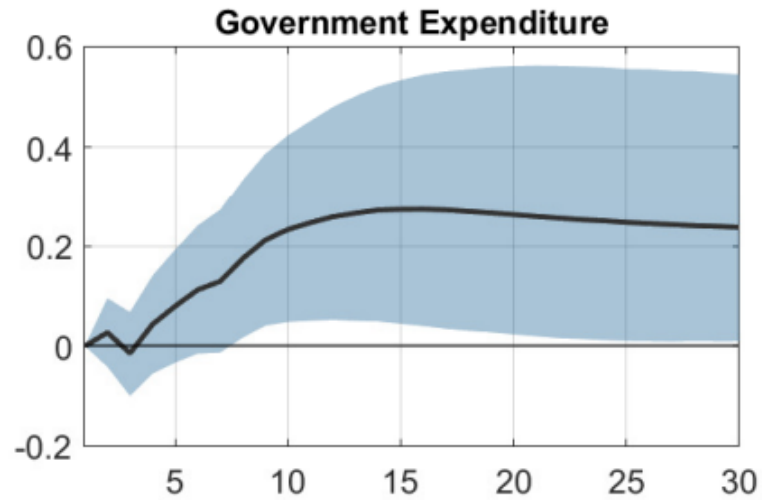


Figure 11: Response to fiscal sentiment (government): extended VAR

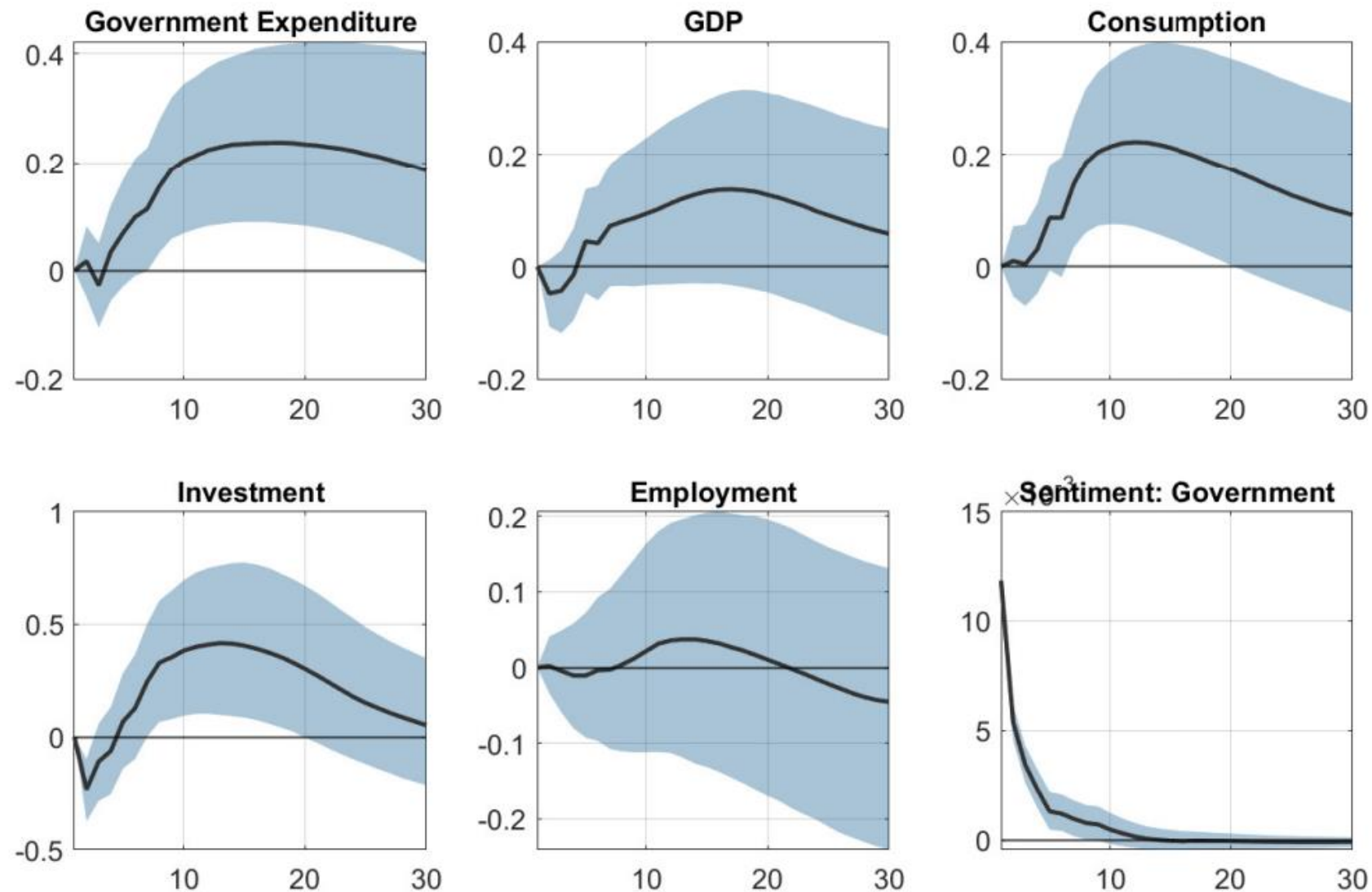
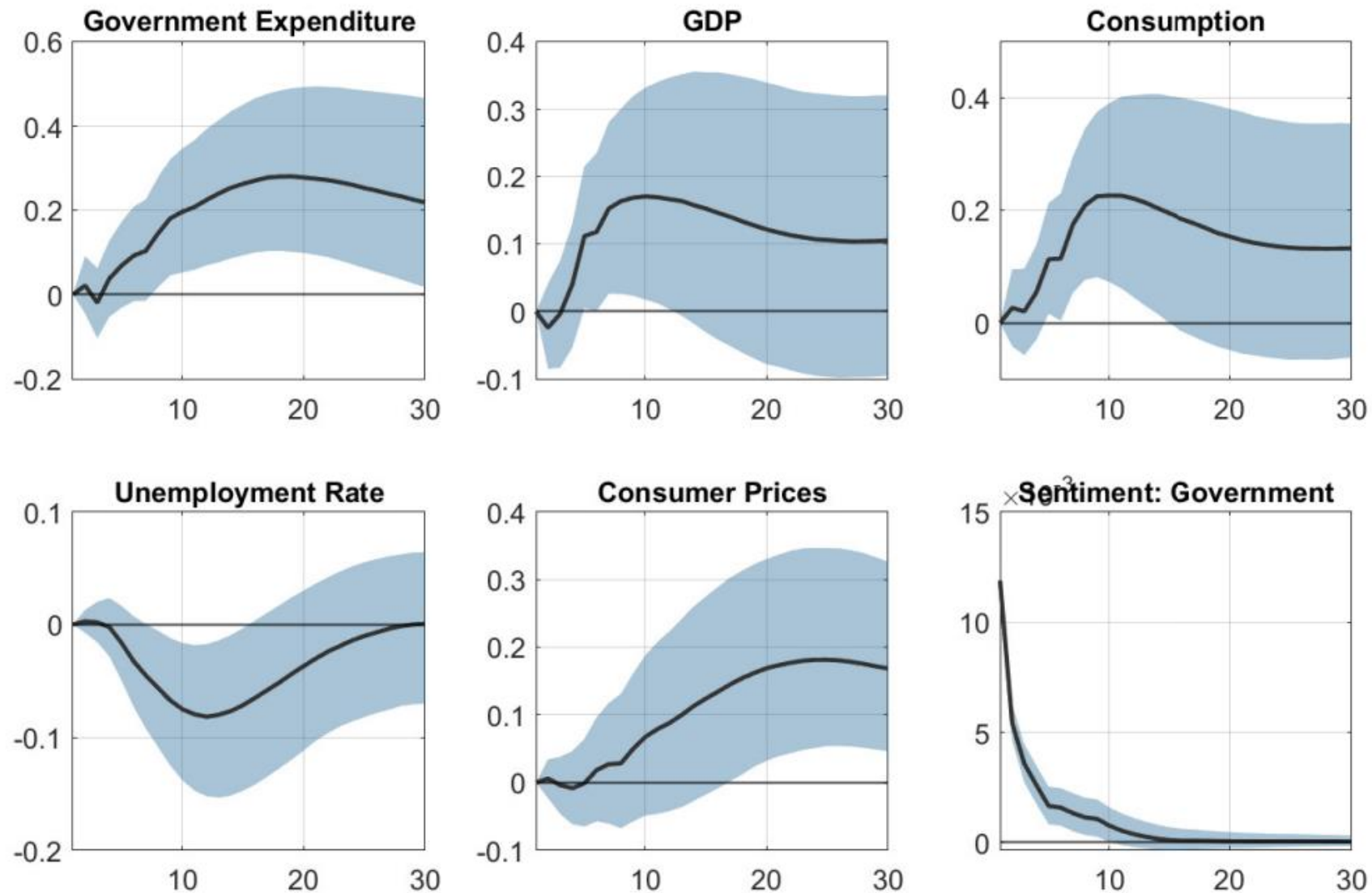


Figure 12: Response to fiscal sentiment (government): extended VAR



Conclusion

- Aim: evaluate whether fiscal sentiment causes government expenditure and ,hence, macroeconomic responses

FINDINGS

- ▶ Sentiment series has real economic effects: results suggest that an increase in fiscal sentiment towards a more expansionary policy stance increased government spending, output and consumption
- ▶ Parliamentary data is very informative about economic policy-making

Outlook

PUBLIC DISCOURSE

- ▶ Economy related news articles from FAZ
- ▶ What topics are talked about in public as opposed to parliament?
How is the evolution of these topics over time?
- ▶ To what extent does the public fiscal policy-related sentiment differ from that in parliament?

DISAGREEMENT

- ▶ Study the consequences of disagreement about fiscal policy between government and the opposition

Thank you for your attention!

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