ANALYZING PARLIAMENTARY QUESTIONS
A POLITICAL SCIENCE APPLICATION OF A NEW TOPIC MODELLING APPROACH

#1 Motivation

1. Empirical motivation:

Demand
- Parliamentary control of the government → a decisive feature of democracy
- Increasing interest in parliaments' role in foreign policy
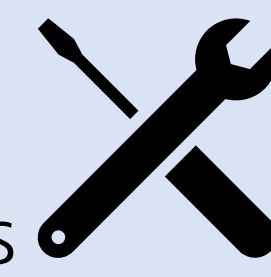
But a gap in the literature:
- So far → manual case studies of German parliamentary questions
- Lack of systematic analysis of parliamentary control in foreign policy

2. Methodological motivation:

A new method
- developed and validated in a transdisciplinary collaboration of computer & social scientists
- based on community detection, rather than probabilistic methods (such as LDA), and comprehensive pre- and postprocessing steps
- geared towards good and easy topic interpretability

#2 Method

Process

Preparation
- Clean, reduce to nouns & adject., NER, lemmatise
- pIdfRank: Ranking of words in document using a weighted modification of PageRank
- Retain only top 12.5% of words per document

Discovery
- Build word co-occurrence network
- Find topics as word communities by optimisation of parametrised modularity using Leiden algorithm

$$\mathcal{H}_\gamma(C) = I(C) - \gamma \mathcal{J}(C)$$
$$I(C) = \frac{1}{2m} \sum_{i,j} A_{ij} \delta_{c(i)c(j)}$$
$$\mathcal{J}(C) = \frac{1}{(2m)^2} \sum_{i,j} k_i k_j \delta_{c(i)c(j)}$$

Presentation
- Rank words per topic by Bayesian average of word ranks in document
- Cluster topic words in fastText word embedding space

Advantages

- **Resolution parameter** enables topic discovery on **various scales**
- **High topic quality** – generally independent of choice of resolution parameter (unlike number parameter in LDA)
- Discovery step is very **fast** (less than a minute for present corpus)
- Topic words are not sorted by probability but by **specificity**
- Word cloud presentation allows **grasping > 100 topic words** (rather than ~20 words in word lists)
- **Semantic clustering** in presentation helps to **recognise meaning**

#3 Application

Data

Minor interpellations (MIs, *Kleine Anfragen*)
- are an instrument of parliamentary control in the German parliament (Bundestag).
- are written questions on a specific issue/topic to be answered by the executive.
- can be made by least 5 % of members of parliament or by parliamentary groups.
- are typically put forward by the opposition.

Dataset

- Our corpus consists of all 3,881 foreign-policy related MIs from the 17th, 18th and the current 19th legislative period until 24 August 2020.
- This includes all MIs assigned to at least one of the following subject areas in the Bundestag database: Foreign Policy & International Relations; Foreign Trade; Development Policy; EU & European Policy; Defence.

Finding 1: Medium-resolution (2.0) model results in 52 topics. The majority of topics represent thematic and geographic policy areas:

Topic	Share	Topic	Share	Topic	Share	Topic	Share
German military: internal	7.1%	Investments abroad	2.5%	German military: assistance	1.4%	Lobbyism	0.8%
Police/customs operations abroad	7.0%	Human rights: Europe	2.4%	Intelligence	1.3%	Project funding	0.7%
International police cooperation	6.5%	German military: training	2.4%	Cyber/hybrid threats	1.2%	Maritime	0.7%
Arms exports	4.8%	Historical responsibility	2.3%	Europe: general	1.1%	Sanctions	0.7%
Europe: financial	4.3%	EU & UK	2.1%	Resources	1.1%	Regional organizations	0.5%
Syria	4.2%	Eastern Europe	2.0%	Europe: social	1.0%	Migration: internat. law	0.4%
Migration: Mediterranean	4.0%	Energy	2.0%	Education & culture	1.0%	Military radiation	0.4%
Free trade	3.5%	Nuclear	1.9%	Africa	0.9%	Press & sports	0.3%
Military drones	3.4%	Climate & environment	1.6%	Afghanistan	0.9%	Nigeria	0.1%
Development cooperation	3.2%	Crisis prevention & conflict management	1.6%	Health	0.9%	Patents	0.1%
Human rights: outside Europe	3.1%	Digital transformation	1.6%	Formal aspects	0.9%	3 more topics, found in 6 documents in total, are not meaningfully interpretable.
Visa	3.0%	Research	1.4%	Arab-Israeli conflict	0.8%	
Asylum	2.8%	Asia	1.4%	Agriculture	0.8%	

Finding 3: Redistributions in topic shares after elections with parties entering or leaving suggest that MIs are subject to agenda setting, e. g.:
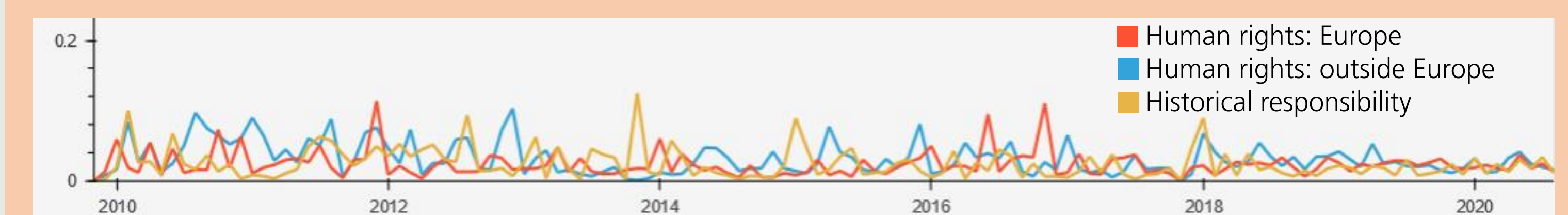
Topic \ Period	17th	18th	19th
Internat. police coop.	5.6%	9.6%	4.9%
Military drones	2.7%	4.6%	2.8%
Europe: financial	4.7%	2.6%	5.2%

Finding 2: Lower resolution (0.8) results in 11 topics that represent general thematic policy areas, such as *economic/financial* and *security*. Higher resolution (2.5) results in 68 topics that additionally provide issues within policy areas, such as *wood economy* and *piracy*.

→ *Historical responsibility* as a distinct policy area:

Finding 4: More precisely, parties discuss primarily those areas in which they significantly disagree with government policies. This implies that MIs attempt to influence the direction of government policy:

Top 10 party topics (%)

AfD / The Left / Greens

Finding 5: Foreign-policy MIs may be used to monitor the general political topic attention: Topics that are a stable and integral part of the German debate can be constantly measured throughout time (see examples in figure above) whereas most other topics reflect peaks in the general political debate (see examples in figure below).

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