Structural Topic Model for Measuring China Agendas in the US Congress

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Abstract

Is there a partisan divide on China in the US Congress? Since the end of the Cold War, the Congress has played an increasingly important role in the US foreign policy. In this paper I analyze partisan divides of congressional speech on China-related issues from 1989 to 2012 using the structural topic model (STM). I found that (1) topics of China agendas in congressional speech data are clearly divided by party lines and (2) that, even in common topics, members of two parties make different word choices reflecting their party affiliations.

Research Object and Period

- House of Representatives in the US Congress
- Congressional Records from 101st Congress (1989-1990) to 112th Congress (2011-2012)
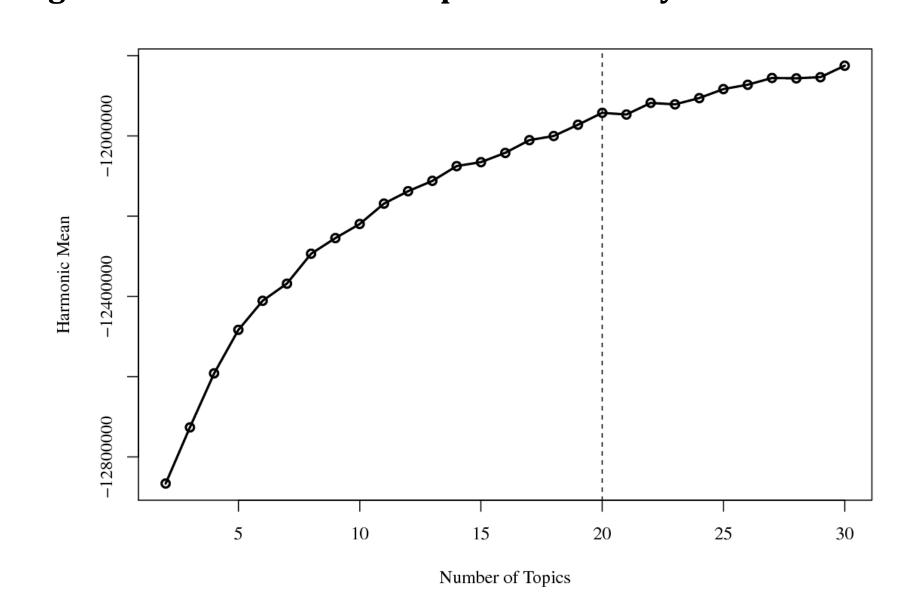
Data Description

- Text Data: Congressional Records
- Scrapped from the Library of Congress THOMAS Website.
- The total number of documents is 7,313.

Research Method and Model

- Structural Topic Model (Roberts, Stewart, Tingley 2015)

- Generally, a topic model in text analysis uncovers hidden topics of documents assuming that topics are unknown beforehand.
- Assuming correlations among topics, the STM allows researchers to estimate the relationship among topics utilizing document-level metadata.
- In this project, the date of the document and party affiliations of speakers are important document-level metadata in uncovering hidden topics. Thus, I use the STM in this analysis.
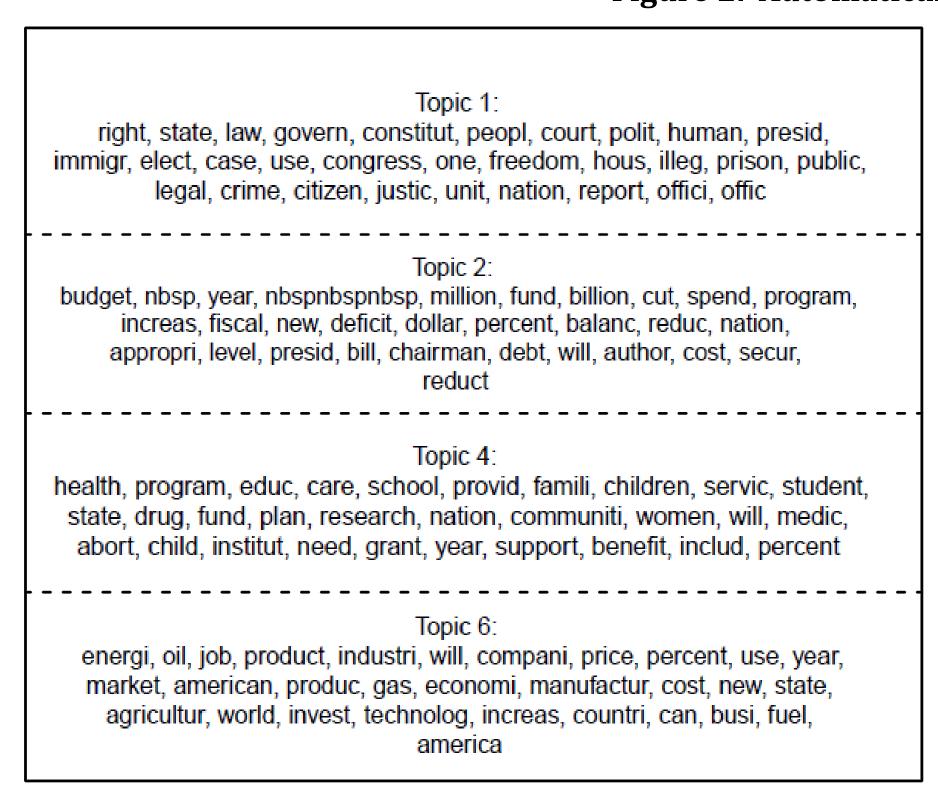
Deciding the number of Topics

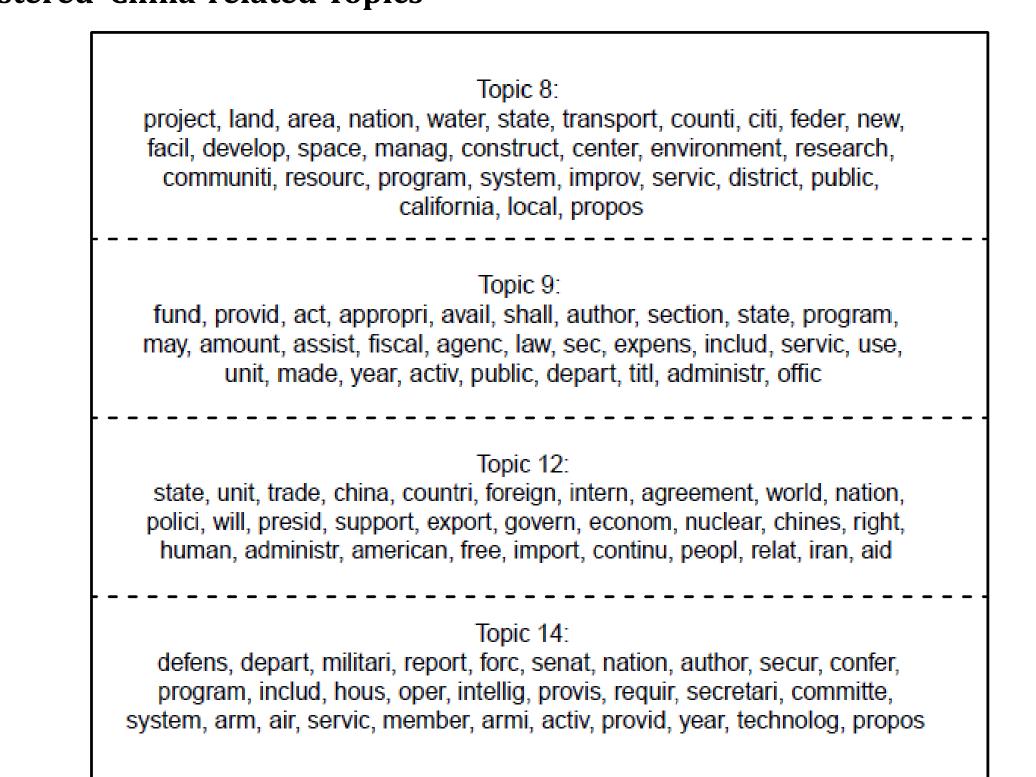### Figure 1. The Number of Topics Decided by Harmonic Mean

- This paper decided the number of topics by using harmonic mean.
- According to the figure, marginal likelihood keeps increasing as the number of topic does. But the number of topics in this paper is 20 since there are too many topics not directly related to China when the number of topics is over 20.
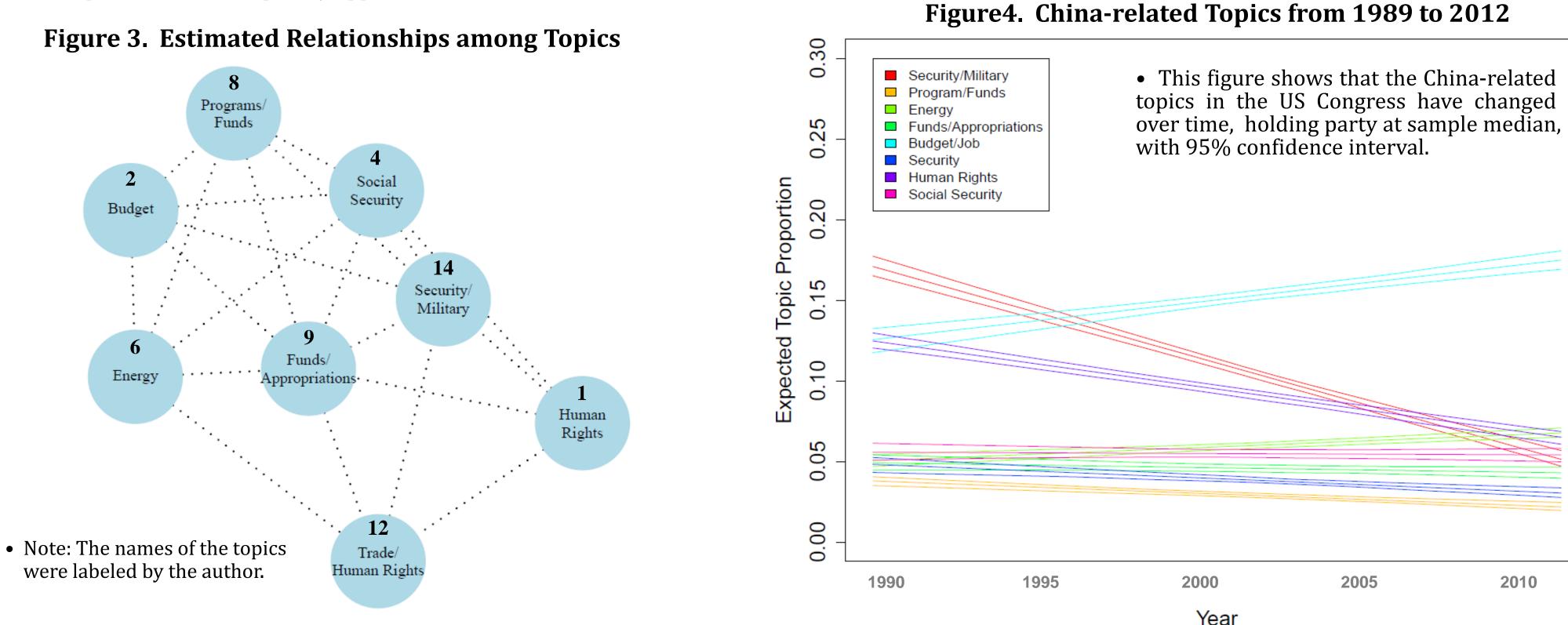
Analysis 1.

Figure 2. Automatically Clustered China-related Topics

Topic 1:
right, state, law, govern, constitut, peopl, court, polit, human, presid, immigr, elect, case, use, congress, one, freedom, hous, illeg, prison, public, legal, crime, citizen, justic, unit, nation, report, offici, offic

Topic 2:
budget, nbsp, year, nbspnbspnbsp, million, fund, billion, cut, spend, program, increas, fiscal, new, deficit, dollar, percent, balanc, reduc, nation, appropri, level, presid, bill, chairman, debt, will, author, cost, secur, reduct

Topic 4:
health, program, educ, care, school, provid, famili, children, servic, student, state, drug, fund, plan, research, nation, communiti, women, will, medic, abort, child, institut, need, grant, year, support, benefit, includ, percent

Topic 6:
energi, oil, job, product, industri, will, compani, price, percent, use, year, market, american, produc, gas, economi, manufactur, cost, new, state, agricultur, world, invest, technolog, increas, countri, can, busi, fuel, america

Topic 8:
project, land, area, nation, water, state, transport, counti, citi, feder, new, facil, develop, space, manag, construct, center, environment, research, communiti, resourc, program, system, improv, servic, district, public, california, local, propos

Topic 9:
fund, provid, act, appropri, avail, shall, author, section, state, program, may, amount, assist, fiscal, agenc, law, sec, expens, includ, servic, use, unit, made, year, activ, public, depart, titl, administr, offic

Topic 12:
state, unit, trade, china, countri, foreign, intern, agreement, world, nation, polici, will, presid, support, export, govern, econom, nuclear, chines, right, human, administr, american, free, import, continu, peopl, relat, iran, aid

Topic 14:
defens, depart, militari, report, forc, senat, nation, author, secur, confer, program, includ, hous, oper, intellig, provis, requir, secretari, committe, system, arm, air, servic, member, armi, activ, provid, year, technolog, propos
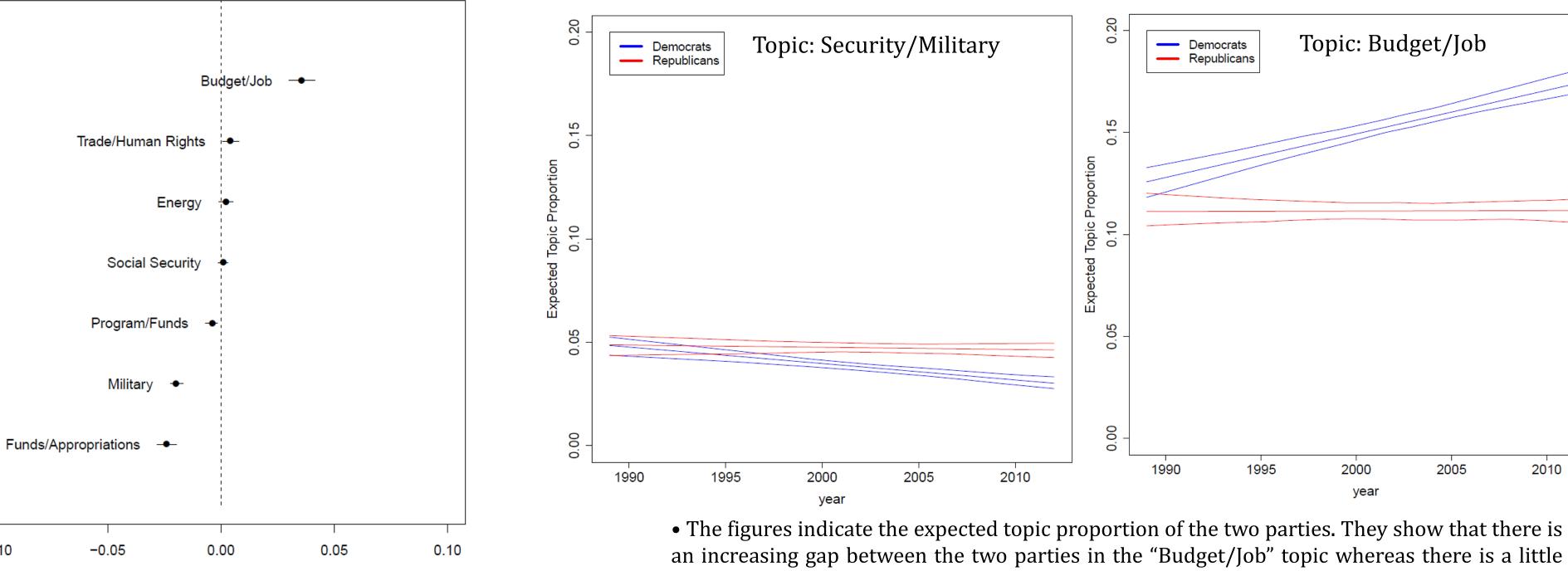
- The topics not presented here are not directly related to China. Most of them consist of procedural words.
- Note that topic 12 includes both the words related to human rights and the words related to trade appear within the topic. This is because the US has linked China's human rights issue to trade issue from 1993 to 2000.
- The topics that most frequently appeared were 4, 2, 14, 8, 9.

Figure 3. Estimated Relationships among Topics

- Note: The names of the topics were labeled by the author.

Figure4. China-related Topics from 1989 to 2012

- This figure shows that the China-related topics in the US Congress have changed over time, holding party at sample median, with 95% confidence interval.

Analysis2. Party Difference in China-related Topics

Figure 5. Party Differences in China-related Topics

- "Funds/Appropriations" topic is strongly used by Republicans compared to Democrats, while "Budget/Job" topic is strongly used by Democrats.
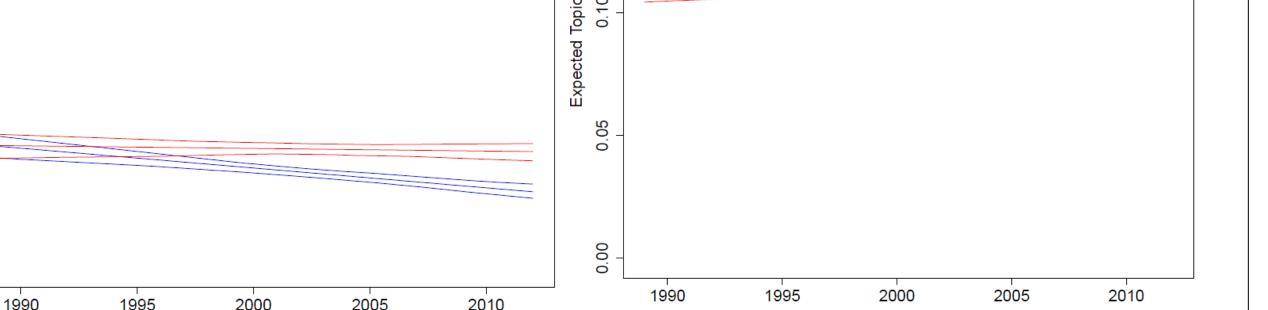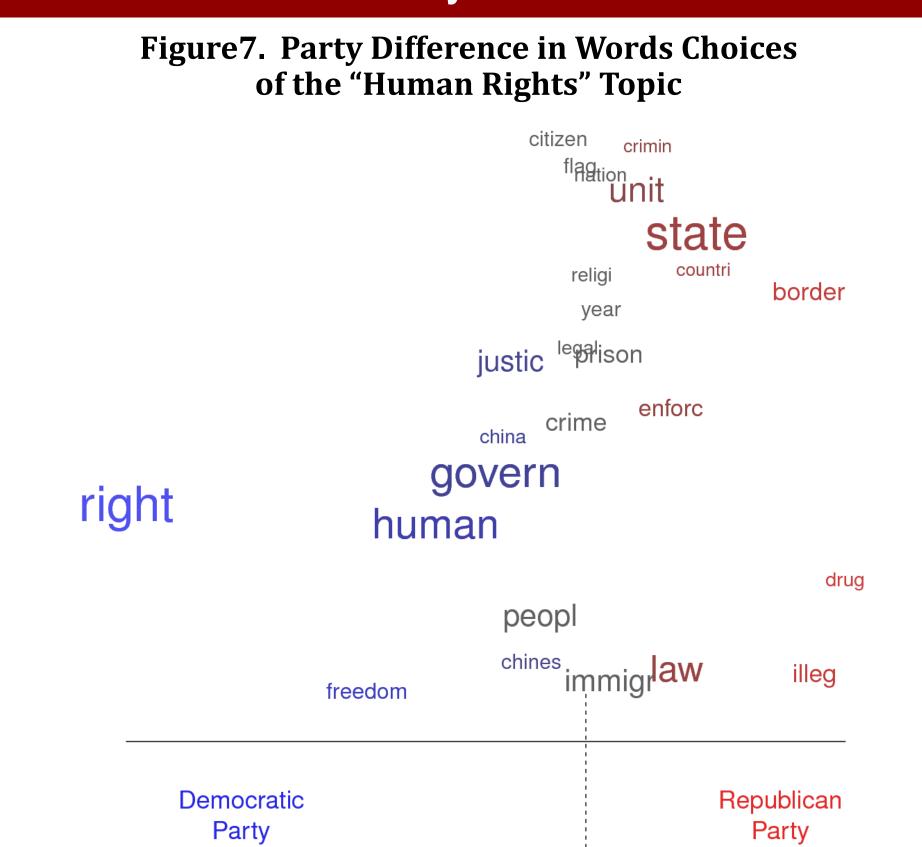
Figure 6. Party Differences in China-related Topics

Topic: Security/Military

Topic: Budget/Job

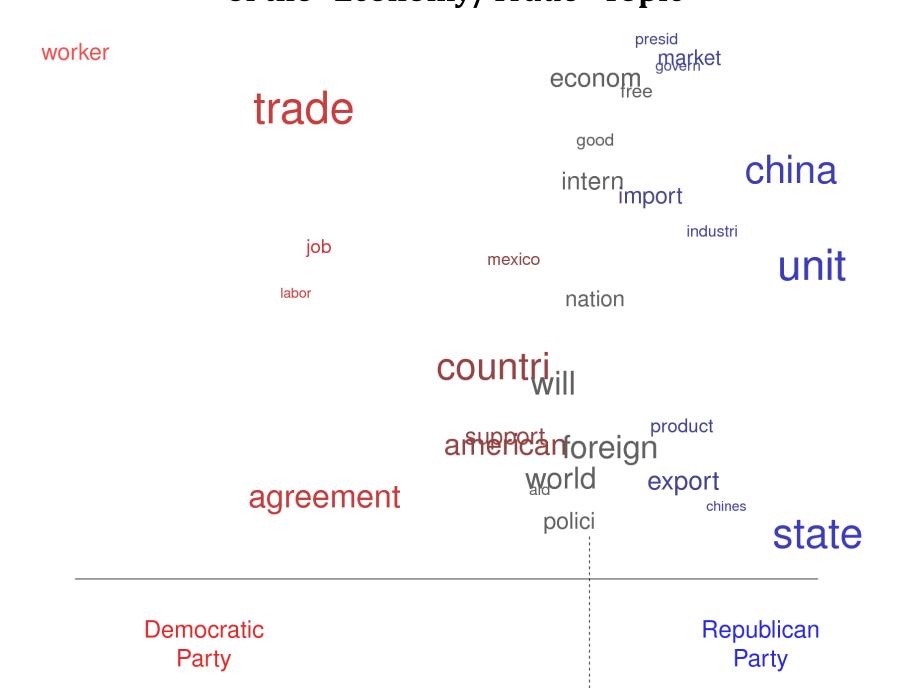- The figures indicate the expected topic proportion of the two parties. They show that there is an increasing gap between the two parties in the "Budget/Job" topic whereas there is a little gap in the "Security/Military" topic. Democrats have emphasized the US budget deficit, huge amount of debts China holds, and the unemployment problem by harshly criticizing China's unfair trade and exchange rate policy.

Analysis 3.

Figure7. Party Difference in Words Choices of the "Human Rights" Topic

Democratic Party — Republican Party

- This figure shows how Democrats and Republicans talk about the "Human Rights" topic differently.
- In particular, Democrats emphasized "human," "rights," and "freedom," while Republicans emphasized "illegal," "drug," "criminal," "religion." This makes sense because Democrats tend to emphasize human rights-related issues regarding China while Republicans focus more on the freedom of religion or illegal drug trade with China.

Figure8. Party Difference in Word Choices of the "Economy/Trade" Topic

Democratic Party — Republican Party

- In this figure, Democrats use words like "trade," "worker," "job," and "labor" very often while Republicans frequently use words like "export," "product," "market," and "industry." These word choices indicate that Democrats focus on criticizing China's exchange rate policy and unfair trade relationship while advocating the rights of workers in the US. On the other hand, Republicans warn that imposing countervailing duties on China's products would lead to trade war between the US and China while advocating interests of the US business sector.

Conclusion

This paper examined how China-related issues are discussed differently along the party line in the US Congress. Analyzing congressional speech data using the structural topic model, I found that (1) topics of China agendas in congressional speech data are clearly divided by party lines and (2) that, even in common topics, members of two parties make different word choices reflecting their party affiliations.