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The effect of Chinese government policy on transnational internet standard-setting

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Introduction

The Chinese governments' attempt to influence internet governance is well-documented (DeNardis, 2014; Galloway & He, 2014; Harcourt et al., 2020; Mueller, 2010; Shen, 2016; Weiss & Wallace, 2021; Weyrauch & Winzen, 2020).

- China has advocated greater intergovernmental control, e.g. via the International Telecommunication Union (Carr, 2015; Galloway & He, 2014; Glen, 2014; Nocetti, 2015; Take, 2012).
- Key conflict between China and the United States over the design of internet standard setting.
- Standard setting takes place in transnational arenas and networks (SDOs) (Bygrave & Bing, 2009; DeNardis, 2009; Musiani et al., 2016), such as:
  - Internet Engineering Task Force (IETF)
  - World Wide Web Consortium (W3C)
  - IEEE

Against this backdrop, we try to answer two questions:

1. How do governmental policies affect the participation of Chinese actors in SDOs
2. How did these actors integrate into the transnational system of international SDOs

Explanations of participation in Internet Standard-Setting

- Historical latecomer disadvantages might persistently depress Chinese participation irrespective of governmental goals (Büthe & Mattli, 2011; Stephen, 2014).
- Participation may be driven by the rapid growth of the Chinese economy and the emergence of powerful global companies.

Yet, both views have problems:

- The former disregards that Chinese actors increasingly participate in internet SDOs (Contreras, 2014; Nanni, 2021; Weyrauch & Winzen, 2020).
- The latter downplays the dependence of the economy on the state in China and autocratic states generally (Andonova et al., 2017; Stephen, 2014; Weiss & Wallace, 2021).

How do we explain *participation* in transnational standard-setting?

Government policy can constrain private actors' involvement in transnational arenas, even if these actors have incentives and capacities to participate.

- If constraints cease due to a new government policy that is compatible with transnational participation, participation should increase.
- We expect especially private actors to engage, as economic incentives from participation are greatest for this group.

How do we expect Chinese actors to *integrate* in transnational standard-setting?

- Due to their different relationship with the state, actors from autocracies may find it difficult to insert themselves into historically grown networks of US and European actors (Stephen, 2014, Weiss and Wallace, 2021, p. 640).

We expect Chinese actors to integrate relatively seamlessly into the collaborative standard-setting process.

1. the low political salience of internet SDOs
2. the limited centrality of their work for the survival of the Chinese regime
3. the heterogeneity of the domestic policy environment (Weiss & Wallace, 2021)
4. China's interest in the functioning of the internet on a technical level

Research Design

Generalized synthetic controls

We compare the development of Chinese stakeholder participation to participation from other states.

- The goal of the generalized synthetic control model is to predict the outcome for China in the absence of the treatment and compare this predicted counterfactual to the observed number of participants.
  - We treat the policy change that occurred around the year 2002 as the treatment in a generalized synthetic control model (Abadie et al., 2010, 2015; Xu, 2017)
- In more substantive terms, we try to predict how many Chinese participants we would expect in the IETF if we had not observed a new policy by the Chinese government and compare this estimate the actual, observed value.
- The counterfactual case is constructed by assessing the behavior of a set of control cases.
  - We focused on countries that were mostly absent from the IETF before 1990
  - Our control group consists of a set of 15 states and includes, for example, India, Israel, or Australia.
- We control for Polity scores, GDP per capita, and include country and year FEs

The treatment

Broad consensus that around the year 2002 a considerable shift in policy of the Chinese government has taken place.

1. Hu Jintao became General Secretary of the Communist Party in 2002 and president in 2003
2. The government sought to reduce dependence on foreign technology innovation and standards.

- This policy included greater reliance on the major companies that had emerged in a process of industry restructuring (Xia, 2017).
- This was also necessitated by WTO accession in 2001, which required rewriting the national standards strategy (Suttmeier, 2005).
    - Following 2002, the government initiated a series of new plans and policy documents to enhance technology and standards leadership in domestic and global governance (Liu, 2012, pp. 48–50).
    - This policy change was not limited to internet governance and internet SDOs but strongly affected this domain.

The Internet Engineering Task Force

- Key SDO arena
  - Develops technical standards focused on the packaging, addressing, transfer, and reception of information
  - Output is publicly available via RFCs
  - Participation by engineers from major technology companies, academics, actors from the so-called “technical community” , civil society, and governments.
- Decision making in the IETF is technical and consensual
  - Yet, companies might have different standardization preferences, leading to standard-setting competition (Harcourt et al., 2020; Simcoe, 2012).

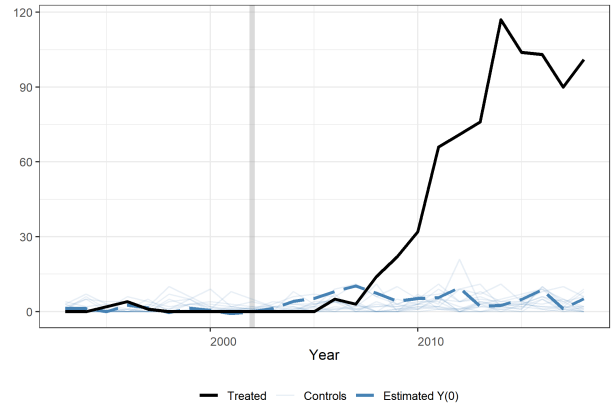
Based on RFC-authorship we collected

- 8.323 RFCs
- 5.455 authors
- 2.204 distinct organization names
- Grouped into 1.736 major organizations (e.g. "Google" and "Google Inc.")
- We define the country origin of RFC authors based on the location of the headquarters of their organizations.
- Our data spans almost 5 decades (1969-2018)

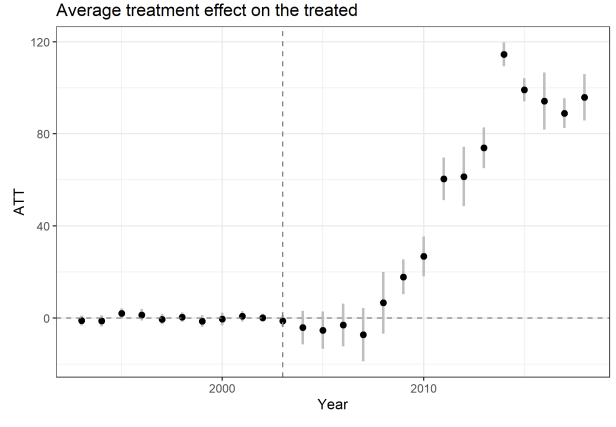
Analysis

Participation

Results of the generalized synthetic control model (I)



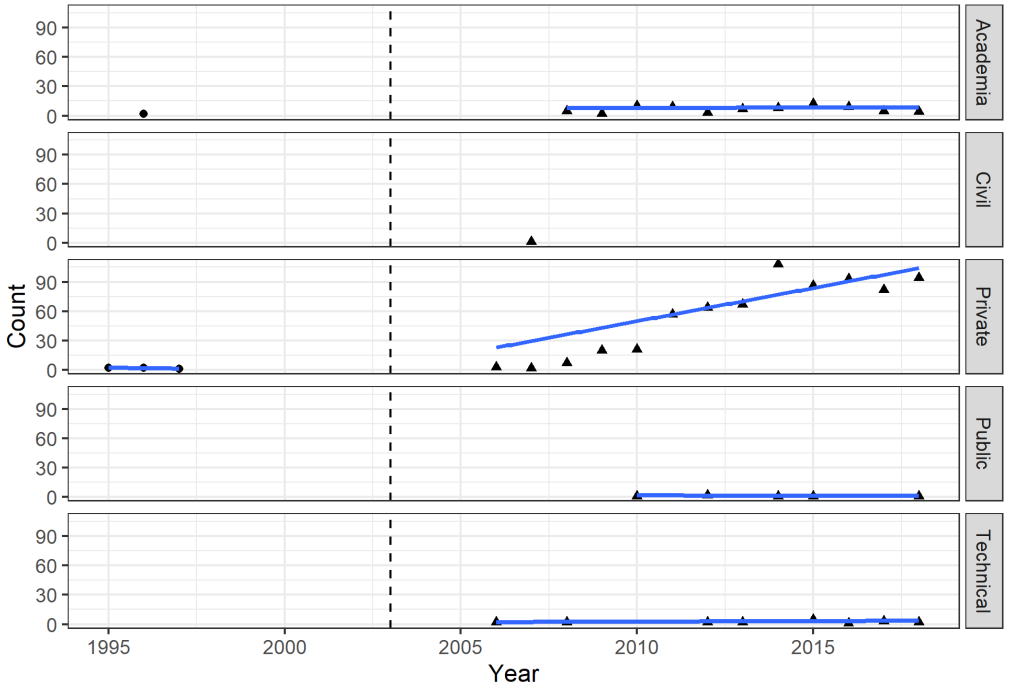
Participation in IETF RFCs by type of delegation



Average treeatment effect on the treated

- Black line: Observed number of participants
- Blue, dashed line: Estimated $Y0$
  - Estimated participation of Chinese engineers in absence of the treatment based on control-state participatory patterns.
- Following a considerable implementation time we observe an initial uptick in participation following the year 2005
- Exponential growth in participation until 2014
  - Reaches a max. number of participants of 117

Results

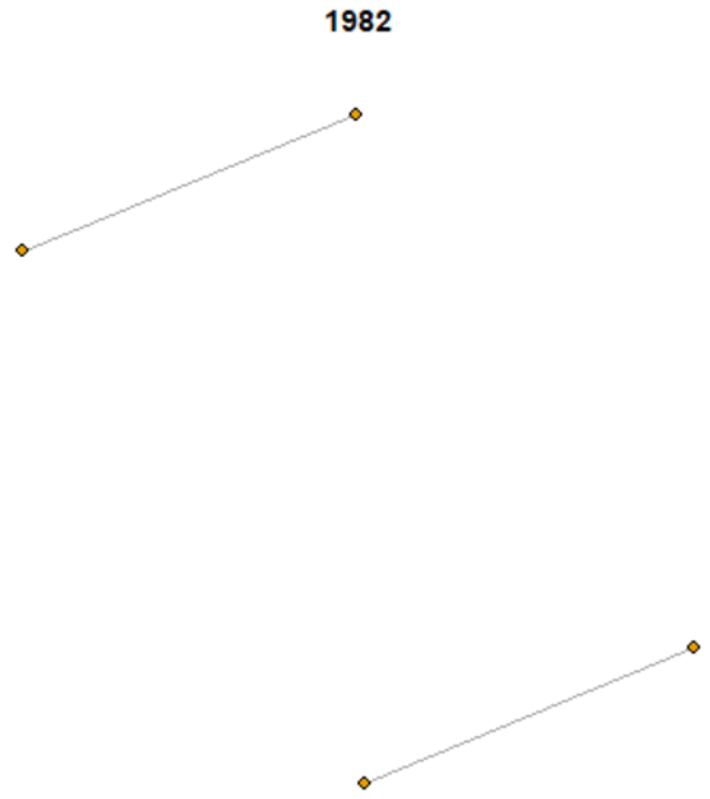


Participation in IETF RFCs by type of delegation

- Participation by different groups of actors
  - E.g. Private actors or academics
- Vertical, dashed line: Treatment
  - Change in governmental preference
- Both private and academic actors respond to the change in governmental preference
- Only private actors participate in **greater** numbers from year to year.
- Technical community participates more frequently, but not regularly

Analysis

Integration

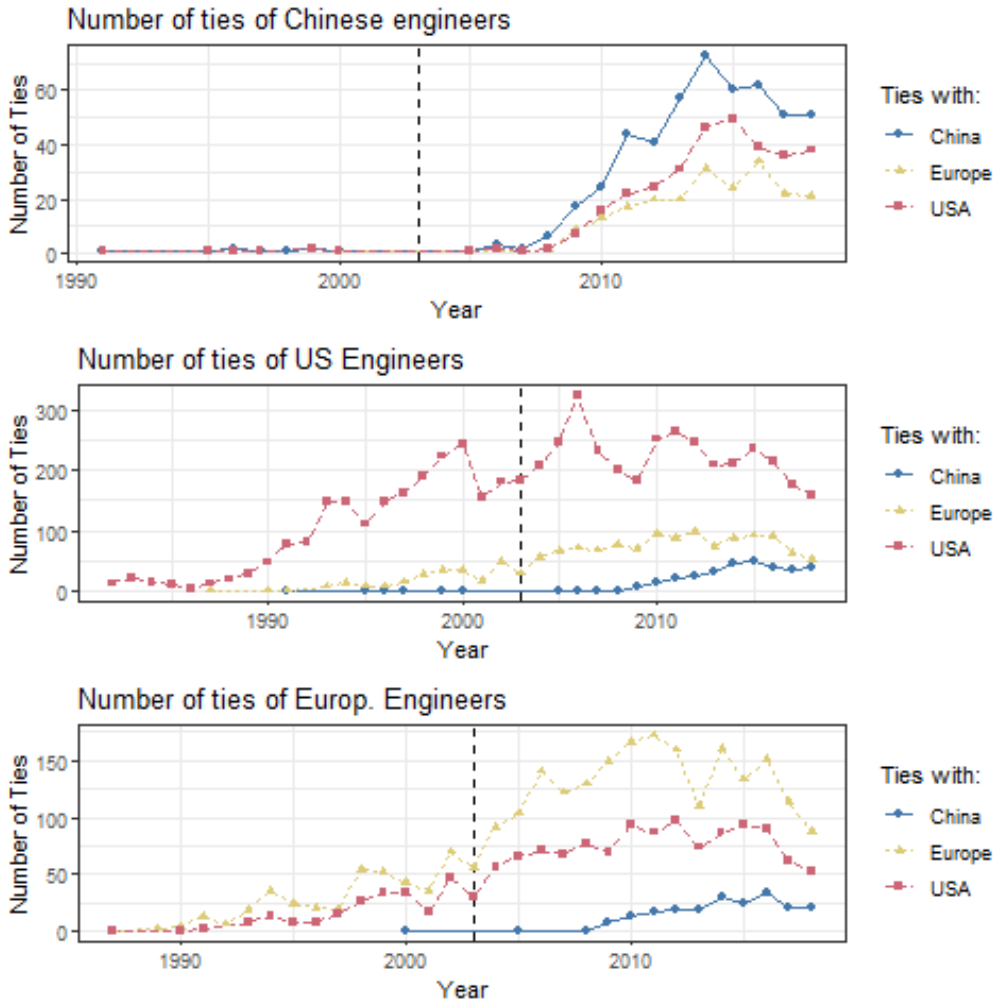


IETF Network development since 1982

Based on the RFC-coauthorships we created annual cooperative networks

- Authorship is often a collective project
- Authors often publish more than one RFC
  - Therefore authors often connect different authors across projects

Results

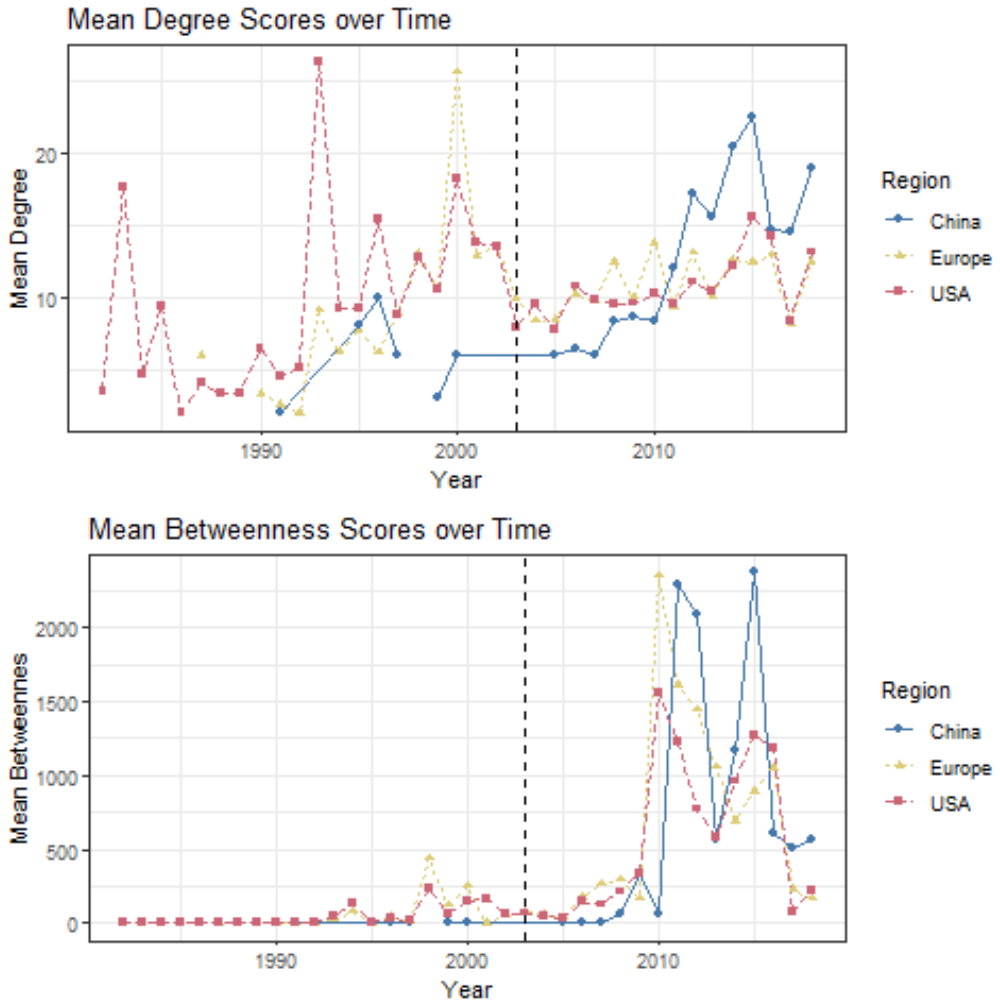


Participation in IETF RFCs by type of delegation

Number of ties of participants from different regions

- Chinese engineers cooperate most often with other Chinese engineers
  - So do European and US engineers
- Chinese engineers are not isolated but frequently co-author RFCs with engineers from the US and Europe
- The total number of ties is still smaller than for US and European engineers

Results



Participation in IETF RFCs by type of delegation

- Degree (top): Average number of ties of actors from different by region
  - European and US average degree scores have developed "in parallel"
  - Chinese engineers have overtaken actors from the EU and US in 2011
- Betweenness (bottom): Average number of actors connected by region
  - Potentially driven by strong outliers (individuals that connect large parts of the network)
  - However, development similar for all three groups

Conclusion

Change in Chinese policy leads to an increase of participation in the IETF by Chinese engineers

- Though there is a considerable implementation phase

Participation is driven by engineers from private companies

- However, engineers from academia and the technical community also engage more frequently

Chinese engineers have integrated into the existing network of IETF co-authorship rather than work in parallel

- Though all groups (China, US, EU) cooperate most often with engineers from their region, there is no distinctive gap observable when it comes to cooperation across regions.

Thank you very much for the attention!

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Who participates?

- The goods deliberated in internet governance can be considered to be club goods.
  - These are non-rivalrous but excludable, which means that accession to the club can have additional benefits for certain stakeholders.
- Private actors (compared to, for example, academics) have an additional incentive to engage in cooperation at the transnational level.
  - Benefit by adhering to shifting governmental policies - avoiding potential costs of non-compliance.
  - Benefit by shaping standards that they have to implement at a later stage - avoiding adaptation costs.
- We expect the change in participation to be driven by private actors