How does an authoritarian state co-opt its social scientists studying civil society?

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Abstract

What channels can an authoritarian state employ to steer social science research towards topics preferred by the regime? I researched the Chinese coauthor network of civil society studies, examining 14,088 researchers and their peer-reviewed journal articles published between 1998 and 2018. Models with individual and time fixed-effects reveal that scholars at the center of the network closely follow the narratives of the state's policy plans and could serve as effective state agents. However, those academics who connect different intellectual communities tend to pursue novel ideas deviating from the official narratives. Funding is an ineffective direct means for co-opting individual scholars, possibly because it is routed through institutions. Combining these findings, this study proposes a preliminary formation of *authoritarian knowledge regime* that consists of (1) the state's official narrative, (2) institutionalized state sponsorship, (3) co-opted intellectuals centrally embedded in scholarly networks, and (4) intellectual brokers as sources of novel ideas.

Keywords: authoritarian knowledge regime; civil society; knowledge production; network analysis; natural language processing; word embedding; computational social science methods

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1 Introduction

The study of civil society in authoritarian countries is among the most contested and politicized research topics. Because of the expectation and fear that a well-developed civil society can bring multiparty democracy to authoritarian regimes, this topic has been a core interest of domestic and overseas social scientists, policymakers, and politicians (Toepler et al. 2020). The states have never been passive actors. Social scientists in these countries must strategically comply with official political narratives (Perry 2020). How does an authoritarian state co-opt its social scientists and their research on civil society? We know little about the answer. As the power of authoritarian countries rises globally, our knowledge falls short in understanding the paradoxical presence of civil society studies in these regimes.

This paper examines two important channels of state co-optation: funding resources and scholarly networks. States can impact social scientists' research agendas both by controlling funding priorities and influencing scholarly communities through elite scholars. Do these measures work as expected? To what extent do regimes institutionalize the co-opting process, and what are the essential elements of this process? These theoretical and practical questions are core to this study.

By analyzing a Chinese scholarly network involving 14,088 researchers from 2,493 institutions and the 12,640 peer-reviewed Chinese articles published by these scholars between 1998 and 2018, I found that an individual's position in a scholarly network matters. Scholars who are at the center of an academic network closely follow the government's policy plans. These individuals can serve as excellent agents of the state by broadcasting policy agendas and narratives because they can reach all the other scholars in the network through the shortest paths. At the same time, scholars who connect different intellectual communities tend to have novel ideas that deviate from the state's central planning. Surprisingly, funding is not an effective direct means of co-optation. A possible explanation is that the funded scholars may have already been co-opted by the state through the promotion and tenure process, which suggests that funding works through

institutions but not directly on individual scholars. Combining these findings together, this study concludes that China may have already formed an *authoritarian knowledge regime*.

1.1   Scholarly narratives: Civil society studies in authoritarian countries

The presence of nongovernmental organizations (NGOs) in authoritarian countries around the globe has attracted scholarly attention since the 1980s, and researchers have primarily theorized the state-civil society relationship from two perspectives: a neo-Tocquevillian perspective and a nuanced interdependence perspective (Lewis 2013, 326). The neo-Tocquevillian scholarship frames civil society as a necessary social power for contesting the state's hegemony. It dominated the literature from the 1980s through the 1990s and continues to frame academic discourse—especially in English-speaking scholarly communities. The interdependence perspective, which gained traction in the last two decades, recognizes the complexity of the interactions between nongovernmental entities and the state, aiming to provide a nuanced understanding of the transactions between different actors (Salmenkari 2013). It also challenges the simple connection between civil society and democratization posited by the neo-Tocquevillian perspective. This pattern of scholarly narratives is consistent, even though the context varies across different authoritarian countries.

In the case of China, the first wave of scholarship examining the coexistence of nongovernmental and state actors started in the early 1990s, when scholars and policymakers primarily used a neo-Tocquevillian perspective to argue that the relationship between the state and civil society is in direct conflict (e.g., Chamberlain 1993; Madsen 1993). The second wave started in the mid-2000s when scholars and policymakers theorized the state-society relationship as contingent. Studies in this stream framed NGOs as the service arms of the state, leaving room for these nongovernmental actors to grow. However, their survival was seen as contingent upon them focusing on nonpolitically sensitive areas (e.g., "corporatism," "graduated control," and "consultative authoritarianism"; Kang and Han 2008; Spires 2011; Teets 2013). The third wave evolved in the late 2010s when the relationship was theorized as being networked. Scholarship

emphasized the active role of nongovernmental actors and the mutual embeddedness between NGOs and the state (e.g., Ma and DeDeo 2018; Teets 2018).

The civil society narratives summarized here and elsewhere are primarily syntheses of English scholarship and are potentially threatening to the hegemonic discourses that are core to sustaining authoritarianism. To respond to these threats, authoritarian states invest heavily to maintain their voice, and domestic scholars can hardly resist interventions that are systematic and institutionalized (Perry 2020). For example, both the Russian and Chinese governments sponsored their own science citation indexes for measuring research impact, and these metrics are essential to career promotion and receiving state grants (Xin-ning, Xin-ming, and Xin-ning 2001; Moskaleva et al. 2018).

In comparison to English scholarship, literature published in a country's native language is closer to domestic policy and more susceptible to state's interference. However, domestic scholarship and scholars have been given very limited attention in English-language communities (e.g., Zhang and Guo 2021; Du 2021). Accordingly, I focus on a collection of high-quality academic publications that are in Chinese in this study.

1.2   State narratives: China's Five-Year Plans

The Chinese government maintains a central planning system, a common practice for authoritarian countries, to prioritize and monitor its overall social and economic development goals. All central planning systems trace their conceptual and practical roots back to the Stalin plan of the Union of Soviet Socialist Republics in the late 1920s (Prybyla 1987, xiii). It was designed to provide a highly concentrated and comprehensive economic plan and offered strong advantages in mobilizing resources to develop key industries. After the completion of its second Five-Year Plan (FYP), the Soviet Union became the second-largest economy in the world (Chen, Li, and Xin 2017, 195). The government of the Republic of China also started making policy plans in the late 1920s, and a central planning system was formally institutionalized after the country became a socialist state.

The People's Republic of China made its first FYP in 1955 and primarily focused on establishing modern industries. As of 2020, China has released thirteen FYPs, and they have become the most influential policy documents outlining China's socioeconomic development. Along with China's reforms, the role of FYPs has been transformed from dictating economic activity to coordinating, implementing, and evaluating policy in a variety of social, political, and economic areas. This policy process is a continuous cycle that involves participation from all levels of government, intellectuals, and the general public, generating thousands of subplans and execution guidelines. The institutionalization of this policy process started during the 11th FYP (2006–2010), was fully employed in the 12th FYP (2011–2015), and has been continuously expanded during the 13th FYP (2016–2020) (Melton 2016, 42). China's FYPs are effective at facilitating targeted social and economic development. For example, Wu, Zhu, and Groenewold (2019) found that industries prioritized by FYPs can see substantial growth. The FYPs can also influence corporate investment behavior (Xie et al. 2019), financial industries (Chen, Li, and Xin 2017), and social sectors (Zhao 2016).

Since the late 1990s, the FYPs have included evolving guidance regarding the governance and framing of civil society. Because of political concerns, the terms "civil society" (*gongminshehui* 公民社会) and "nongovernmental organization" (*feizhengfu zuzhi* 非政府组织) are cautiously used in China's official narratives. Instead, the party-state employs a functional approach and uses language like "social management" (*shehui guanli* 社会管理), "social governance" (*shehui zhili* 社会治理), and "social organizations" (*shehui zuzhi* 社会组织). These terms originated at the central government level in 1998 and were discussed extensively during the sixteenth Chinese Communist Party Congress in 2004 (Pieke 2012; Shi 2017), with one chapter of the 11th FYP (2006–2010) devoted to "Improving Social Management System." Five years later, the 12th FYP (2011–2015) developed an entire section with five chapters directly related to civil society, and numerous regulations following the FYP were released at the central government level reinforcing the approach taken there, making 2011 a watershed year for civil society development in China (Simon 2013). The 13th FYP (2016–2020) also devoted one section with multiple

chapters to the topic and underscored creating an innovative system to manage and govern civil society actors. In short, starting in 1998 there is ample evidence of an official narrative regarding civil society that has evolved as reflected in subsequent FYPs.

1.3   Contributing to official narratives: How are social scientists co-opted?

Scholars have been important contributors to the FYPs and central planning system—an important apparatus for policy deliberation (Callahan 2013, 8). Although academic freedom is constrained to some extent in all countries, social scientists in China have even fewer options because the state is highly motivated to influence social scientists (Noakes 2014). How does the state co-opt its social scientists so that they will contribute to the official narratives of civil society as outlined in the FYPs? The literature on state co-optation in authoritarian regimes suggests two important approaches: resources and elite networks (Bertocchi and Spagat 2001; Gandhi and Przeworski 2006; Kreitmeyr 2019).

1.3.1   Co-opting through resources

Research funding in China is political and one of the most direct means of state co-optation. As Smith (2010) put it, seeking research funding can shape the relationship between research and policy, and there is a "growing pressure to produce 'policy relevant' research" that is "diminishing the capacity of academia to provide a space in which innovative and transformative ideas can be developed, and is instead promoting the construction of institutionalized and vehicular (chameleon-like) ideas" (176).

The state has extensively invested in its top universities to raise their global rankings; meanwhile, it also engaged in an elaborate evaluation and grant-awarding system that impacts scholarly independence and research agendas (Perry 2020, 14–15). There are five primary sources of funding for social science researchers (Holbig 2014, 17–19): (1) the National Social Science Fund of China (NSSFC), which is a flagship funding source for Chinese social sciences; (2) the Ministry of Education; (3) the Chinese Academy of Social Sciences; (4) the National

Natural Science Foundation, which also funds social science research if relevant to natural sciences; and (5) local funding sources (e.g., research funds from provincial and municipal governments and universities). Funding sources 1–3 are tightly nested within the state's propaganda system at the central government level and set the guidelines and priorities for funding social science research. The number and size of the grants received by a university from these sources are also tied to the university's ranking. In general, the state's use of research funding as a co-opting strategy leads to the first hypothesis:

Hypothesis 1: *Scholars who receive government grants are more likely to align their research with the state's official narratives.*

1.3.2   Co-opting through elites

Another strand of literature on state co-optation in authoritarian countries focuses on social elites and shares an early theoretical viewpoint: the ultimate goal of authoritarian regimes is to integrate themselves with their host societies through "the admission of a wide range of social elites to consultative status in sociopolitical activities" (Jowitt 1975, 72). For example, Bank (2004) studied how the rulers of authoritarian regimes in the Middle East incorporate political elites through "economicisation." Wong (2012) found that Beijing selectively chooses Hong Kong firms that are owned by prestigious elite families to co-opt because these firms yield the greatest demonstration effect. A recent advance along this research line combines co-optation theories with network analysis methods to study how social entrepreneurs, business and political elites, and international actors interact in Jordan and Morocco (Kreitmeyr-Koska 2016; Kreitmeyr 2019). The author found that the state actors and social and business elites are embedded in dense social entrepreneurship networks and that the elites' positions in the networks are closely connected to the degree of co-optation.

Intellectuals are a privileged group in policymaking because of their expertise and ability to make authoritative claims (Campbell 2002; Pielke 2007). Individuals with special positions in scholarly networks are especially attractive to state co-optation. Scholars who are network centers

can reach other intellectuals through shorter paths (i.e., they are "close" to other scholars). Moreover, these network centers are more capable of being "aware of whatever is going on in the network" and have higher status (Perry-Smith 2006, 88). Therefore, co-opting a scholar who is the center of a network can be an effective strategy to influence the entire academic community. This leads to the second hypothesis:

Hypothesis 2: *Scholars who are at the center of a scholarly network are more likely to align their research with the state's official narratives.*

However, some scholars in networks may relatively autonomous and therefore can provide novel policy ideas. These individuals are often boundary spanners and intellectual brokers who have connections to different knowledge communities (Burt 2004). Because information is often homogeneous within close-knit groups but heterogeneous between groups, these brokers understand how to communicate using different ways of thinking and have more flexibility in adjusting their research agendas and narratives. Therefore, they have more options when faced with co-optation. Empirical studies of policy actors suggest that these knowledge brokers are especially important to policy innovation in both democratic and authoritarian systems (Smith 1993; Nay 2012; Sungurov 2012; Zhu 2018). I therefore draw the third hypothesis as below:

Hypothesis 3: *Scholars who are brokers between different intellectual communities are less likely to align their research with the state's official narratives.*

1.4   Knowledge regime and institutionalized state co-optation

A knowledge regime is the "organizational and institutional machinery that generates data, research, policy recommendations, and other ideas that influence public debate and policymaking" (Campbell and Pedersen 2014, 3). It focuses on the interaction between ideas and institutions in producing policy knowledge (Campbell and Pedersen 2010, 167). The framework of knowledge regime was primarily developed to study advanced capitalist countries such as the United States, Britain, and Germany.

Unlike most western democracies, authoritarian China is neither a liberal nor a coordinated market economy; instead, it is a "socialist market economy" (Sigley 2006, 498). Although it is debatable whether this term is academically rigorous (Huang 2012), it is prominent that government planning plays a central role in China's social and economic development, which is also a representative feature of authoritarianism. Authoritarian states are motivated to institutionalize co-opting social scientists, raising the intriguing question: Does state planning lead to the creation of an *authoritarian knowledge regime*? We yet know too little.

Scholars have adapted the notion of knowledge regimes to study China and have singled out a significant feature of policymaking: the crucial role of linkage to the state (Nachiappan 2013; Menegazzi 2018; Zhu 2020). As Zhu (2020) described it, the knowledge regime in China is a "politically embedded" one. However, not all interactions between the state and civil society researchers are equal—some scholars may be excellent agents for broadcasting state policy plans (i.e., Hypothesis 2), but others may have the freedom to pursue their own interests (i.e., Hypothesis 3). Existing literature has not defined what *embeddedness* actually means nor which linkages produce which outcomes.

These theoretical puzzles motivated and informed my analysis. Empirically, FYPs can serve as an excellent instrument to operationalize state planning in an authoritarian country, and the analysis of network position and funding resources can serve as different means of co-optation. By bringing them together, we can empirically construct the constituents of the knowledge regime in China and generate a framework for studying other authoritarian countries at large.

2   Method

2.1   Data on civil society scholarship in Chinese

The datasets were created by searching for civil-society-related terms in journals indexed by the Chinese Social Sciences Citation Index (CSSCI). The CSSCI was developed by Nanjing University in the late 1990s and is a Chinese counterpart of the Social Sciences Citation Index. But unlike in the English academic community where the Social Sciences Citation Index and the Arts and Humanities Citation Index are separate, the CSSCI also includes humanities journals. As of 2019, it has indexed 568 high-quality peer-reviewed Chinese journals.

The datasets were built following three steps:

1. Identify all CSSCI-indexed journals.

2. Search within the bibliographic fields of title, keyword, and citation using keywords that specify the research area of civil society (refer to Online Appendix A.1 for the keywords used and justification).

3. Retrieve all bibliographic records between 1998 and 2018 (e.g., article title, abstract, author name, correspondence address, and reference list).

These steps generated three datasets: bibliography (e.g., article title, funding, and abstract), author (e.g., name and affiliation), and cited reference (e.g., reference title and publication year). I cleaned these datasets, disambiguated the records using multiple strategies, and generated a high-quality dataset (technical details in Online Appendix A.2). Overall, a group of 14,088 authors from 2,493 institutions published 12,640 articles on civil society between 1998 and 2018, citing 127,746 references that include journal articles, books, research reports, and so on.

Figure 1: BUILDING THE POLICY-RESEARCH SIMILARITY INDEX
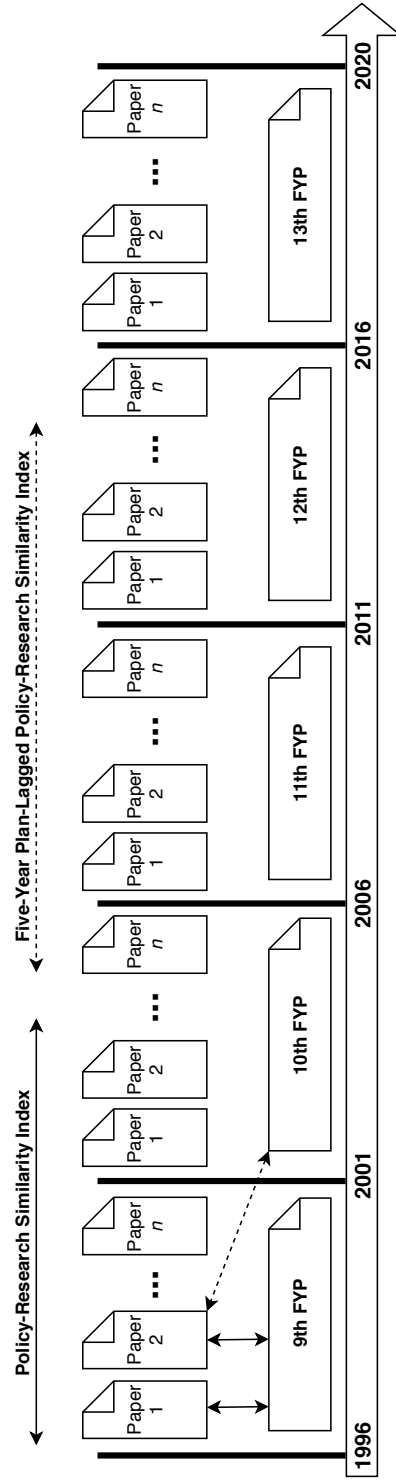
Notes: Used Word Mover's Distance to calculate the similarities between texts (Kusner et al. 2015). Only showing the calculation of two articles' Policy-Research Similarity Index and one article's FYP-Lagged Policy-Research Similarity Index. FYPs are released at the beginning of each time period and valid for the entire period. FYP = Five-Year Plan.

2.2 Measures

2.2.1 Measuring co-optation: Similarity between scholarly and state narratives

By using the Word Mover's Distance (WMD) method in natural language understanding (Kusner et al. 2015), I built a time-series Policy-Research Similarity Index (PRSI; Figure 1 and Eq. 1) to measure the extent to which a scholar's research narrative is similar to the state's policy plans. The WMD method employs *word vectors* to represent words and calculate the semantic distance between two documents (Mikolov et al. 2013). In other words, even when two texts have no terms in common, WMD can effectively measure their semantic similarity.[1]

The WMD measure outperforms many canonical and state-of-the-art methods (Kusner et al. 2015, 6), and the application of word vectors has also been confirmed as a valid method in empirical social science studies (e.g., Kozlowski, Taddy, and Evans 2019; Rodriguez and Spirling 2021). I also checked this measure by comparing WMD to human coders. One doctoral student and one senior policy consultant, both of whom majored in Chinese public policy, were asked to practice on a random sample of twenty research articles published after the 13th FYP. They measured their attitudes toward the statement "this research applies the 13th Five-Year Plan's discourse" using a Likert scale with 1 representing "strongly disagree" and 5 representing "strongly agree." After deliberation, they rated another random sample of one hundred research articles independently. The intercoder reliability between the two human coders measured by *kappa* statistics was substantial (i.e., 0.61). The articles' WMD values and average human ratings were statistically consistent ($R^2 = 0.43, p < 0.01$).[2]

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1. Because WMD does not judge semantic attitudes, it is entirely possible to write a highly critical article that nonetheless would score highly using WMD since the article must refer constantly to the policy terms. However, such article is unlikely to be published in the Chinese context, which implies that all instances of semantic matching are about co-option but not criticism.

2. The standard of a reliable *kappa* score varies by disciplines, but generally speaking a score of 0.61 suggests the intercoder reliability is better than fair (Landis and Koch 1977, 165; Cicchetti 1994, 286; Viera and Garrett 2005, 362). Moreover, the validation approach errs on the conservative side because of using the 5-point Likert scale, which is significantly challenging to achieve agreement between coders. If we recode the ratings as binary, the *kappa* score increases to 1 (i.e., perfect agreement). The application of computational social science methods is relatively new and fast-evolving (Ma et al. 2021) and more empirical studies are needed to firmly support the validity of these novel methods.

$$PRSI_{it} = \frac{n}{\sum_{j=1}^{n} WMD_{ijt}} \tag{1}$$

In Eq. 1, author i published n articles in year t, and WMD_{ijt} represents the semantic similarity between author i's article j published in year t and the current FYP for year t (i.e., the solid arrow lines in Figure 1). Essentially, we are using the reciprocals for authors' average WMD values in a given year.[3] The PRSI should indicate policy influence because research articles are published *after* FYPs. However, FYPs may also be influenced by published research articles (i.e., the dashed arrow lines in Figure 1). Therefore, I calculated the PRSI-L by lagging research articles for five years so that they can be compared with a subsequent FYP.

2.2.2 *Measuring funding resource*

Research funding is measured by a binary variable that labels whether a scholar has funding in a given year. $Fund_{it} = 1$ indicates that scholar i has at least one article published in year t with funding information disclosed. Because a project usually generates publications a few years later after being funded, "3.2 Description of funding" in the result section and Online Appendix "E.1 Testing the lag between funding and publication" elaborate on this and test the lag effect.

2.2.3 *Measuring network embeddedness*

I constructed a *weighted coauthor network* for each year. In each network of a given year, the nodes represent scholars, and two nodes are connected if the scholars coauthor an article published in that given year. The ties are weighted using the frequency of coauthorship in the given year. The weights are crucial to considering the funneling effect because (1) collaborations are not equally important in terms of frequency, and a scholar tends to coauthor repeatedly with only a few others, and (2) as the units of analysis are individuals, it is necessary to consider

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3. I use the reciprocals instead of raw values to make the statistical analysis more intuitive (i.e., larger values indicate that a research article and policy plan are more similar).

attributes at that level (Newman 2001, 016132–2). Authors without any connections with other scholars are removed before analysis so that only embedded scholars are considered.[4]

Closeness centrality is used to measure the extent to which a node is at the center of a network (Perry-Smith and Shalley 2003, 96; Perry-Smith 2006). It is the reciprocal of the sum of the shortest paths from node *i* to all the other nodes. Therefore, an individual with higher closeness centrality has shorter path steps to all the other scholars.

Betweenness centrality is used to operationalize a scholar's access to structural holes (Brandes 2001). It measures how often a scholar lies on the shortest path between any other pair of scholars. Individuals with high betweenness centrality are better positioned to mediate information flow and connect people.[5]

I used the Python package `NetworkX` (Hagberg, Schult, and Swart 2008) to analyze the networks. The math equations to calculate these centrality values have been widely shared and thus are omitted here to save space.[6]

2.2.4   Control variables

Scholarly reviews and empirical studies have suggested that four categories of confounding factors can bias the estimation: network attributes, knowledge contribution, scholarly credibility, and political factors (e.g., Phelps, Heidl, and Wadhwa 2012; Gonzalez-Brambila, Veloso, and Krackhardt 2013; Bozeman et al. 2019). Online Appendix B has the details. While control variables cannot be exhaustive, together with the individual and time fixed effects and sensitivity tests, this study made its best effort to mitigate the problem of unobserved variables.

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4. The proportion of isolated authors steadily decreased from 100% in 1998 to 28.94% in 2018, suggesting a trend of academic collaboration observed in most scientific disciplines (Wuchty, Jones, and Uzzi 2007).

5. Betweenness centrality should typically be used with caution in measuring structural hole access because it may not be an accurate measure for nodes with distant contacts (Burt 2010). But this is not a substantial concern in this study because the scholarly networks tend to be focal and small in size.

6. Note that because we are using weighted coauthor networks, the weight of an edge is not *cost* but *strength*. It therefore needs to be inverted (i.e., divided by 1) during calculation (Newman 2001, 016132–5).

2.3 Estimation strategy

The full model is Eq. 2, in which author *i*'s PRSI at year *t* is regressed on variables measuring (1) funding (*Fund*), (2) betweenness centrality (*Betweenness*), (3) closeness centrality (*Closeness*), (4) control variables (*Control*), and (5) the individual and time fixed effects (α' and β') and the error term (ε').

$$PRSI_{it} = \gamma' \cdot Fund_{it} + \delta' \cdot Betweenness_{it} + \vartheta' \cdot Closeness_{it} +$$
$$\alpha'_i + \beta'_t + \mu' \cdot Control_{it} + \varepsilon'_{it} \tag{2}$$

I built the estimation models stepwise to primarily consider (1) possible confounding relationships among the explanatory variables (Models 1–5) and (2) the unobserved variables that are time or individual dependent (Models 6–8). The full model is Model 8. Online Appendix C details each of the models with a causal graph and expected results.

Models 1–5. I first estimated the coefficients of independent variables by pooling all observations without considering the panel structure of the dataset. Model 1 only considers the relationship between funding and policy-research similarity. Models 2–4 add network measures singly to consider potential confounding relationships and test more hypotheses. Model 5 considers all the explanatory variables.

Models 6–8. There may be unobserved variables that are consistent across entities but vary over time. For example, the funding opportunity increased dramatically over the years (Figure 4), and the pressure to align research with official narratives also increased in the past two decades (Perry 2020). As a result, the positive association between funding and policy-research similarity can only be a function of time. Unobserved variables at the individual level are also a concern. For instance, funding opportunities are disproportionately distributed among Chinese universities, with elite universities receiving most of the resources. Therefore, scholars at top institutions have access to more resources but also face more pressure to align their research with policy plans and

government goals (Perry 2020, 14). Models 6 and 7 consider the time and individual fixed effects, respectively. Model 8 is the full model as described in Eq. 2.

3 Results

I first describe the research activities and explanatory variables to give readers an intuitive impression, then present the results of the regression models introduced in "2.3 Estimation strategy." Online Appendix B details the control variables.

3.1 Description of research activities

3.1.1 Major trends and top producers

Figure 2: PUBLICATION ACTIVITIES OF CIVIL SOCIETY IN CHINA, 1998–2018
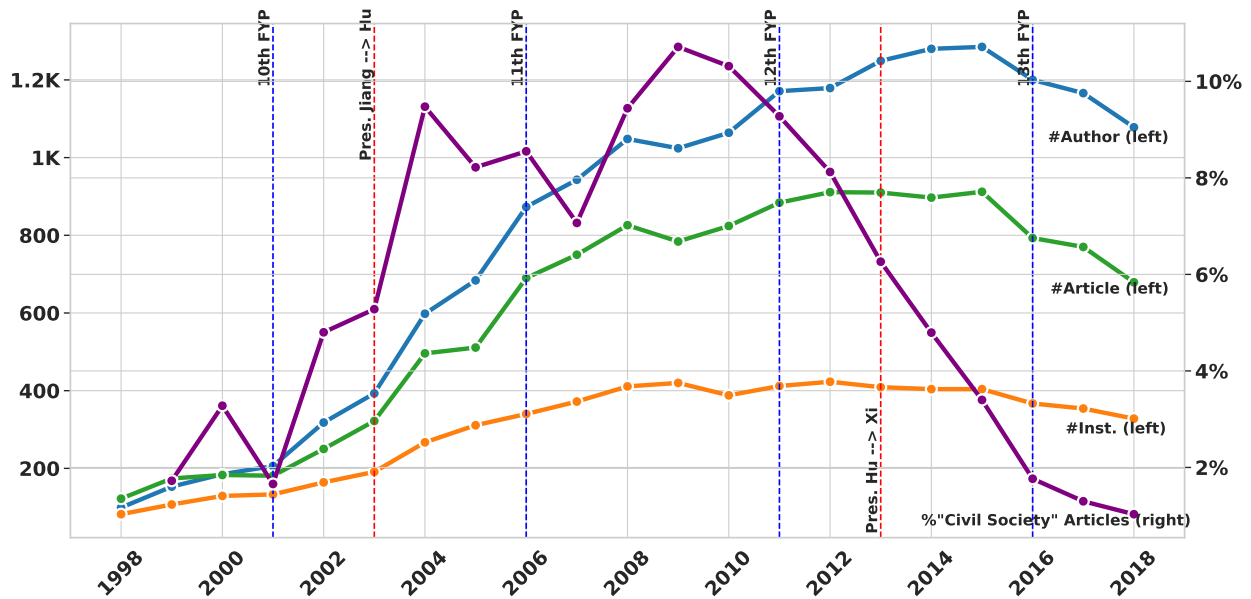
Figure 2 shows the publication activities of civil society in China by year. In 1998, a total of 122 articles on civil society were published by 99 authors from 82 institutions. Research in this field started to grow during the 10th and 11th FYPs (2001–2010), reaching its peak during the 12th FYP (2011–2015), with a total of 1,285 authors from 404 institutions publishing 906 articles on civil society in 2015. This growth trend started to reverse during the 13th FYP (2016–2020). In 2018, a total of 679 papers were published by 1,078 authors from 328 institutions—about the

same amount as ten years prior. Overall, a group of 14,088 unique authors published 12,640 articles on nonprofit and civil society in core Chinese academic journals between 1998 and 2018.

Figure 2 also presents a subset of articles that use the exact term "civil society" (*gongmin shehui* 公民社会), which has been politically sensitive in China and only used by Chinese scholars sporadically. The percentage of articles using this term never went above 11% (peaking in 2009 at 10.7%), and the number dropped dramatically after the 12th FYP and during Xi Jinping's presidency. In 2018, only 1% of all the articles published that year used this exact term.

Overall, the decreased research activities over time reflect the increasing level of control over China's civil society since Xi came into power (Guo 2020; Nie and Wu 2021). Chinese scholars veered away from using "civil society" and embraced the official narratives introduced in the 12th FYP that were shared between policymakers and scholars (refer to Figure 3 below).

Major producers of knowledge on civil society are geographically diverse and widely spread across many universities in the country. Table 1 lists the top twenty institutions by the number of journal articles published. Although seven of the twenty are in Beijing, many of the rest are located throughout the country in other developed areas. An interactive geographic information system animation that maps 2,493 institutions and their productivity from 1998 to 2018 is available online (https://xxx).

3.1.2   *Similarity between policy and research*

Figure 3 shows that the similarity between research and policy linearly increased in the past twenty years. (1) During the 10th FYP, the PRSI was larger than the PRSI-L, suggesting that research articles published between 2001 and 2005 were more similar to the current FYP than to the next FYP (i.e., the 11th FYP). (2) However, this trend was reversed during the 11th FYP—the PRSI-L was larger than the PRSI, indicating that articles published between 2006 and 2010 were more similar to the subsequent FYP (i.e., 12th FYP) than to the current plan. (3) During the 12th FYP (2011–2015), the two PRSI values started to converge, suggesting a shared narrative regarding civil society had coalesced among policymakers and scholars.

Table 1: Top 20 Chinese institutions publishing on civil society, 1998–2018

Rank	Inst. Name	Province	#Article	#Author
1	Renmin University of China	Beijing	461	426
2	Beijing (a.k.a. Peking) University	Beijing	362	304
3	Nanjing University	Jiangsu	351	311
4	Zhongshan (a.k.a. Sun Yat-sen) University	Guangdong	297	257
5	Wuhan University	Hubei	274	289
6	Tsinghua University	Beijing	268	222
7	Beijing Normal University	Beijing	261	238
8	Zhejiang University	Zhejiang	250	246
9	Fudan University	Shanghai	241	232
10	Jilin University	Jilin	202	185
11	Huazhong Normal University	Hubei	201	186
12	Nankai University	Tianjin	187	173
13	Shandong University	Shandong	182	169
14	Xiamen University	Fujian	165	165
15	Shanghai Jiaotong University	Shanghai	147	131
16	Central Party School	Beijing	144	79
17	Shanghai University	Beijing	137	108
18	Suzhou (a.k.a. Soochow) University	Jiangsu	134	81
19	East China Normal University	Shanghai	128	119
20	China University of Political Science and Law	Beijing	127	113

Based on these observations, we can infer a course of development for the narrative about civil society. (1) Between 2001 and 2005 (i.e., the 10th FYP), scholars followed a version of the narrative that was broadly consistent with the current FYP. However, the narrative changed in the subsequent 11th FYP. (2) Between 2006 and 2010 (i.e., the 11th FYP), scholars departed from the current policy narrative more than they did in the previous FYP and instead hewed closer to the narrative put forth in the subsequent policy plan (i.e., 12th FYP), suggesting their narrative was adopted by the subsequent FYP to some degree. (3) Between 2011 and 2015 (12th FYP), scholars adopted a policy narrative that continued in the 13th FYP. In general, the release of the 12th FYP in 2011 was a milestone for scholars and policymakers in developing a shared narrative of civil society in China. These empirical patterns echo two relevant facts discussed in the introduction section: (1) The 12th FYP (2011–2015) developed an entire section with five chapters directly related to civil society, and numerous regulations following the FYP were released at the central

government level, making 2011 a remarkable year for civil society development in China (Simon 2013); (2) The institutionalization of this policy process started during the 11th FYP (2006‒2010), was fully employed in the 12th FYP (2011‒2015), and has been continuously expanded during the 13th FYP (2016‒2020) (Melton 2016, 42).

Figure 3: POLICY-RESEARCH SIMILARITY INDEX, 1998–2018
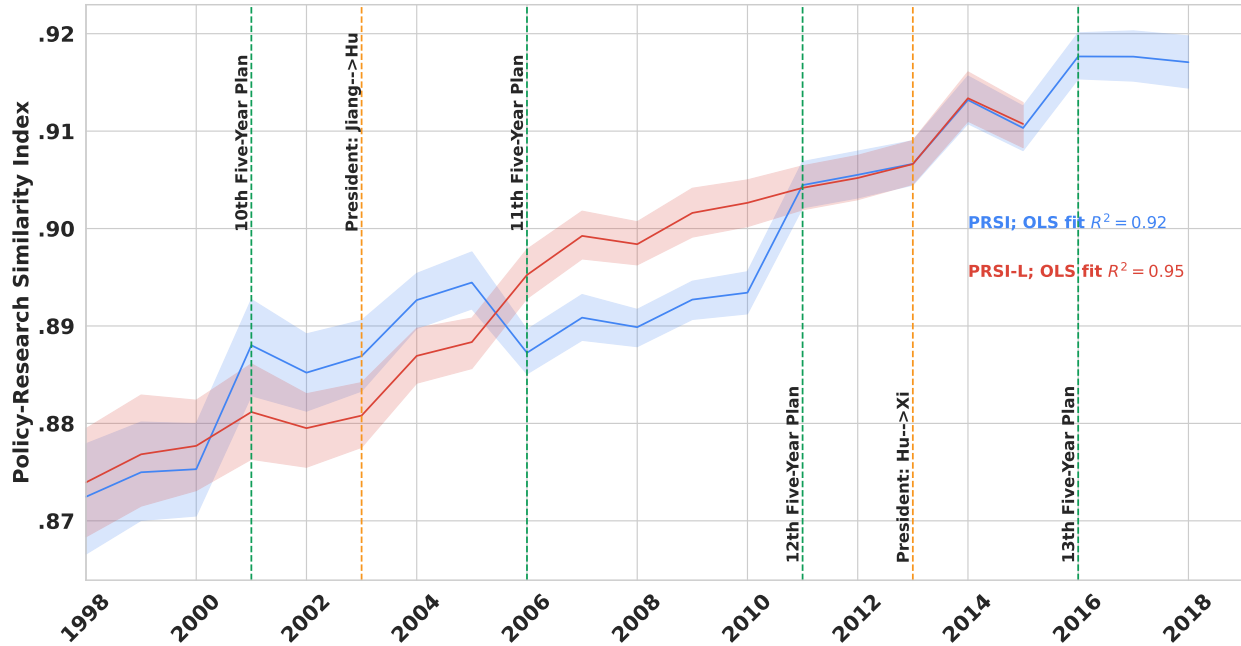
Note: The Policy-Research Similarity Index is operationalized by Word Mover's Distance (Kusner et al. 2015). Shaded areas show 95% confidence intervals.

3.2 Description of funding

Figure 4 shows the number of papers by funding status and time and the number of NSSFC-funded projects by time. Funded papers increased from only 1 (0.82%) in 1998 to 539 (79.38%) in 2018. In the meantime, the number of NSSFC-funded projects saw a nearly tenfold increase (i.e., from 562 to 5,421).

We should expect a substantial positive association between the number of NSSFC-funded projects and the number of funded papers because, in general, funded papers are a function of

NSSFC funding.[7] Figure 4 shows the goodness of fit (i.e., R^2) of the ordinary least squares models between NSSFC and funded papers. Since publication usually lags behind funding for a certain period of time, Figures 4*b*, 4*c*, and 4*d* present the number of NSSFC-funded projects by lagging one, two, and three years, respectively.

The R^2 values help us estimate the percentage of variance of funded papers that can be explained by the change in NSSFC-funded projects in corresponding scenarios. For example, the R^2 is 0.84 without lagging (Figure 4a), indicating that 84% of the variance of funded papers is due to changes in the NSSFC-funded projects. According to the results, a project is most likely to generate publication within two years after being funded because the R^2 value of the 3-year lag sharply dropped to 0.74.[8] Other scholars suggest that the review process of Chinese journals usually takes less than a year (Jia, Nie, and Xiao 2019, 795), which also supports my speculation (e.g., 1–2 years for research, plus another year for the turnaround with journals). The lag between publication and funding is important in informing the robustness tests detailed in Online Appendix E.1.

3.3   Description of networks

3.3.1   Coauthor networks

Figure 5 presents the connectedness of coauthor networks and funding status. According to the line graph, the average connection (i.e., degree) of authors did not substantially change over time, which is rare in scholarly networks—empirical studies have repeatedly found that the connectedness of scholarly networks increases over time (e.g., Goyal, van der Leij, and Moraga-González 2006; Rawlings et al. 2015). It suggests that there might be external interventions, possibly from the state, in the formation of the networks. The proportion of funded

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7. A publication can be sponsored by non-NSSFC funding. For example, there are many funding resources at the provincial and university levels. Because these funding resources usually follow the NSSFC's guidance, the analysis should still be valid even though the non-NSSFC projects are not captured.

8. Roughly speaking, if projects generate publications within a year after being funded, the optimal fitting window is between no lag and a 1-year lag. The optimal fitting window is between a 1 to 2-year lag if publication takes two years, and between a 2 to 3-year lag if the publication takes three years to appear.

Figure 4: FUNDING STATUS OF CIVIL SOCIETY LITERATURE AND THE NATIONAL SOCIAL SCIENCE FUND OF CHINA, 1998–2018
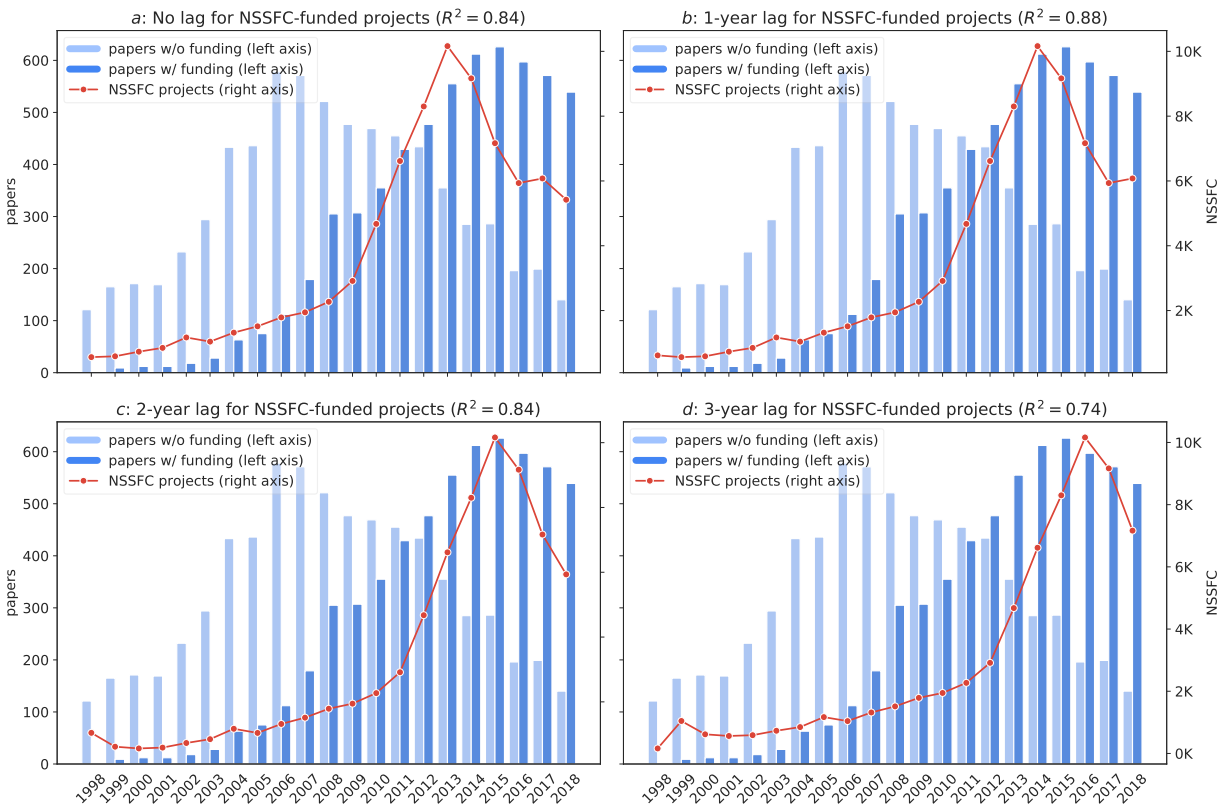
Note: NSSFC = National Social Science Fund of China. NSSFC data are from the official website (https://web.archive.org/web/20210429195128/http://fz.people.com.cn/skygb/sk/index.php/Index/seach), and are lagged by 1, 2, and 3 years in *b*, *c*, and *d*, respectively. R^2 values are obtained by fitting NSSFC to funded papers.

scholars significantly increased from less than 10% in the late 1990s to almost 80% in the late 2010s. The most rapid increase happened during the 11th and 12th FYPs. For the network graphs, red nodes are funded authors, while blue nodes are not; node size represents the betweenness centrality (i.e., intellectual brokers). The network visualizations clearly show that the funded scholars gradually took most of the positions of intellectual brokers (i.e., the large red nodes).

3.3.2 *Institutional networks*

Figure 6 illustrates the evolution of institutional networks publishing on civil society from 1998 to 2018. In the graphs, node size represents betweenness centrality, color represents communities

found by the Louvain algorithm (Blondel et al. 2008), and weighted links represent collaborations established by the coauthors. Larger nodes are more important in bridging the entire network because they pass novel and heterogeneous information (i.e., they are nodes with larger betweenness centrality values, and they are more accessible to structural holes). As the figure shows, the Chinese Academy of Social Sciences was a leading actor in connecting different institutional communities in the early phase of civil society studies (1998–2005; Figure 6*a*). Then Renmin University took over the bridging role for the next ten years (2006–2015; Figures 6*b* and 6*c*), with many other institutions coming up along the way, for example, Beijing Normal University, Beijing University (a.k.a. Peking University), and Zhongshan University (a.k.a. Sun Yat-sen University). Between 2016 and 2018 (Figure 6*d*), multiple universities started to take equally important roles in connecting the scholarly community (e.g., Beijing University, Fudan University, Tsinghua University, Wuhan University, and Zhongshan University).

3.4   Predicting co-optation: Scholars using the state's narratives

Figure 7 shows the primary results of Models 5–8 as introduced in "2.3 Estimation Strategy" (Online Appendix C and Table C1 have more details on estimation strategy and regression models). As the figure and appendix table present, *funding* is positively associated with the PRSI across all pooled ordinary least squares models. However, the association becomes insignificant once we run the regression at the entity level, suggesting there are individual-dependent influencers that confound the relationship between funding and the PRSI. The estimations of being *knowledge brokers* are substantially negative across all the models (Model 7 is significant at $p < 0.10$ level), indicating that access to structural hole positions decreases the likelihood of using official narratives. The estimations of being *knowledge centers* are significantly positive across all the models, suggesting that individuals who are at the center of scholarly networks are more likely to employ policy plan narratives. In terms of *magnitude of influence*, knowledge centers have a much larger impact on PRSI than brokers ($F = 3.75, p = 0.053$).

The results of the control variables are in line with my expectations. In the full model (i.e., Model 8 in Table C1), density and degree are negatively associated with PRSI, but transitivity and reputation are positively associated. Although other control variables are not significant in the full model, the direction of association and significance of most of these variables are expected. The time and individual dependent variables appear to be powerful influencers.

In general, the hypotheses concerning network centers (H2) and knowledge brokers (H3) are well supported. The results of funding are mixed but not surprising. I will discuss these findings and their implications below.

3.5 Robustness tests

I checked the robustness of regression analysis from statistical and theoretical perspectives. Refer to Online Appendix E for details.

Figure 5: AUTHOR NETWORKS AND FUNDING STATUS, 1998–2018
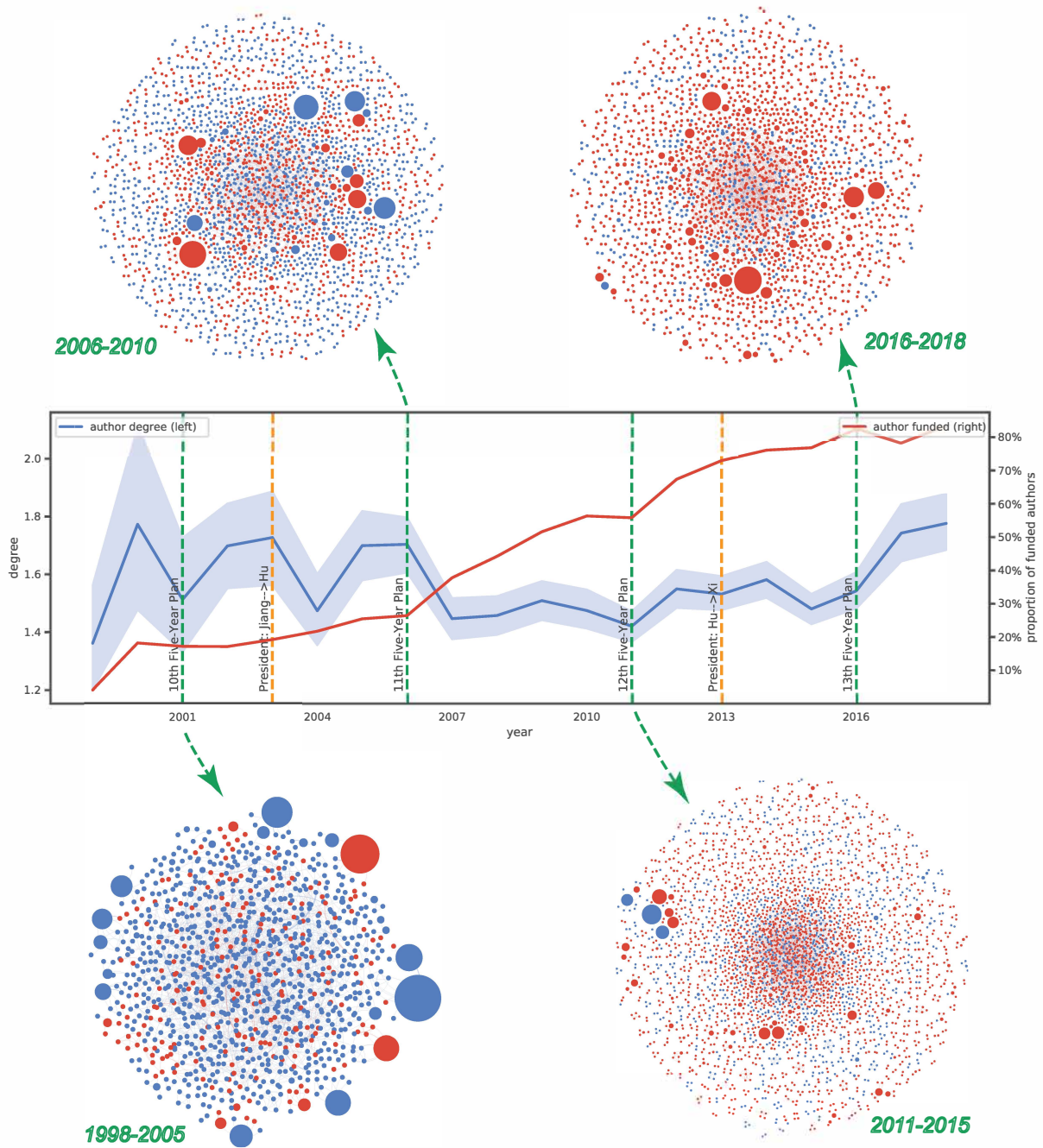
Note: The shaded area shows a 95% confidence interval. For the networks, red nodes are funded authors and blue nodes are not; node size represents the betweenness centrality (i.e., intellectual brokers). Isolated nodes (i.e., nodes without connections) have been removed for visual clarity.

Figure 6: INSTITUTIONAL NETWORKS PUBLISHING ON CIVIL SOCIETY, 1998–2018

(a) 1998–2005

(b) 2006–2010

(c) 2011–2015

(d) 2016–2018
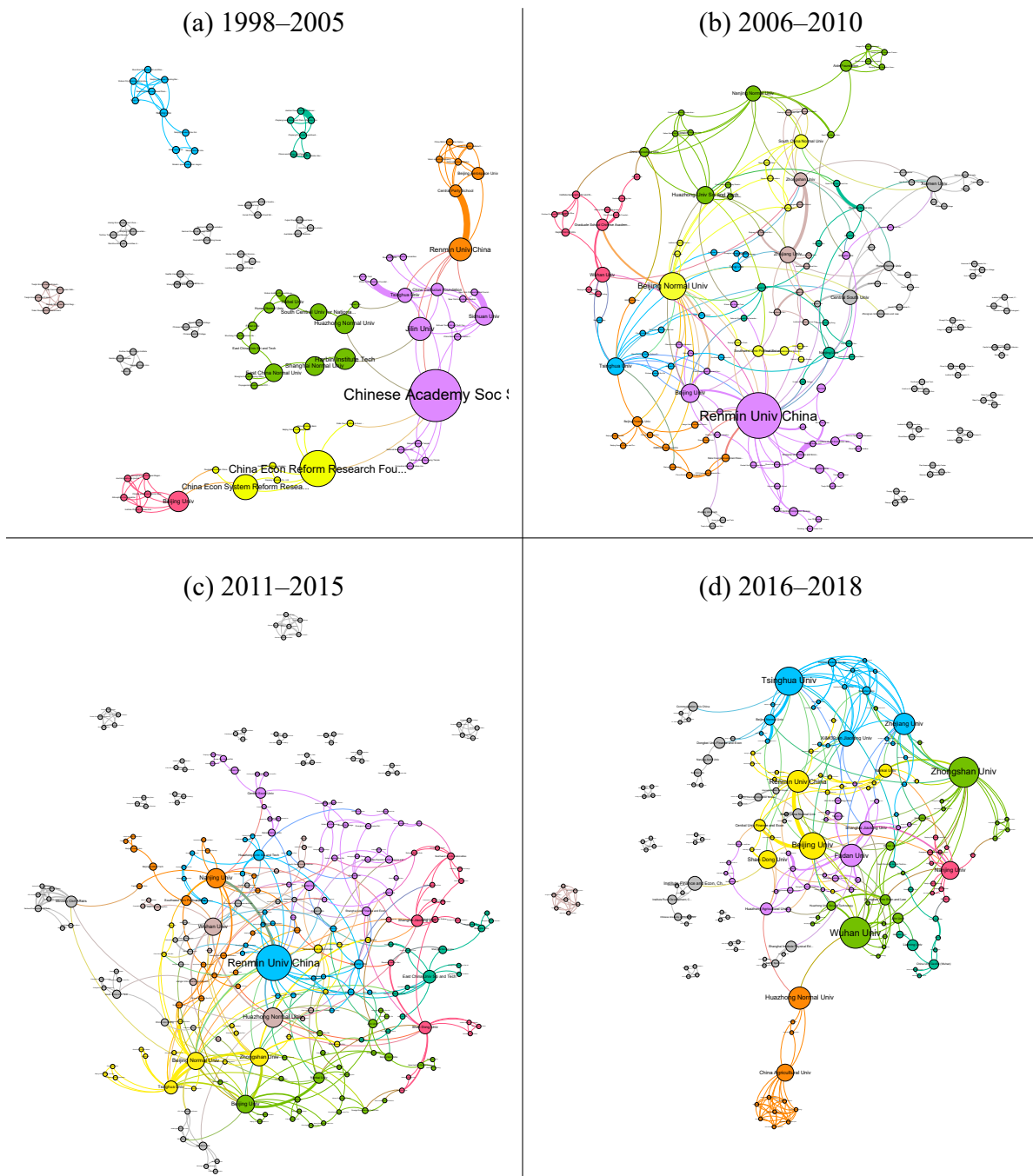
Note: Node size represents betweenness centrality, weighted links represent relationships established by coauthors, and color represents communities found by the Louvain algorithm (Blondel et al. 2008). For clarity in visualization, graphs are pruned using the *k*-core method with $k = 2$ (Batagelj and Zaversnik 2003). The time periods were chosen according to 1) data availability, the source database (i.e., CSSCI) was only available between 1998 and 2018 by the time of research; 2) the Five-Year Plans (i.e., 9th FYP, 1996—2000; 10th FYP, 2001—2005; 11th FYP, 2006—2010; 12th FYP, 2011—2015; and 13th FYP, 2016—2020).

Figure 7: PRIMARY RESULTS OF REGRESSION MODELS PREDICTING POLICY-RESEARCH SIMILARITY
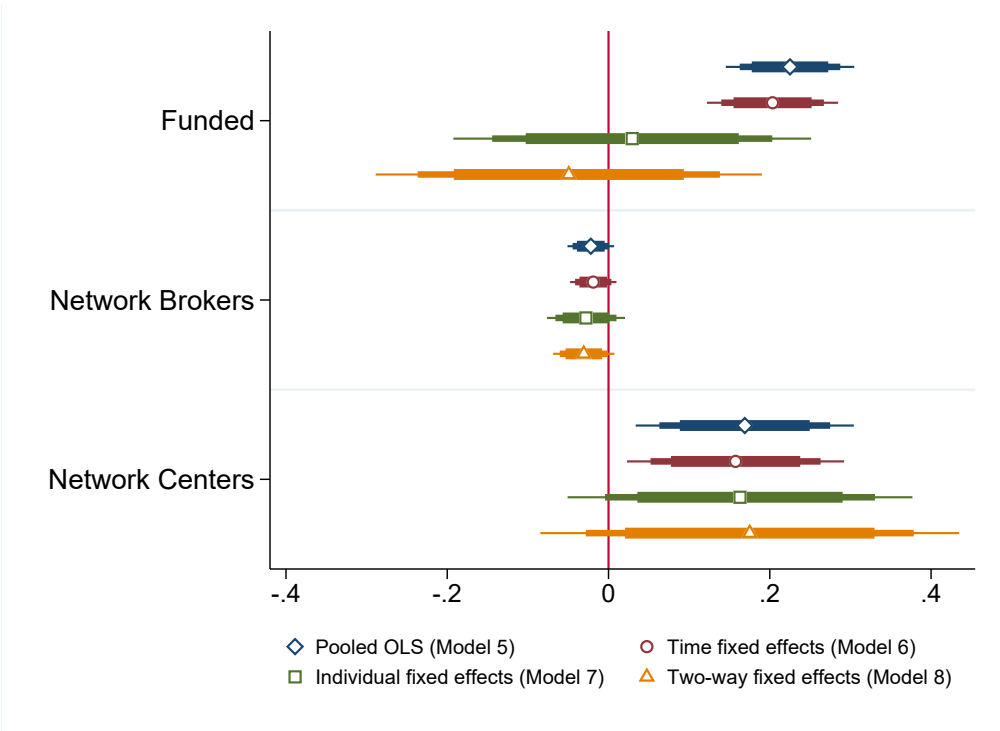
Note: Detailed statistics of all models are in Online Appendix Table C1.

4 Discussion

How does an authoritarian country co-opt its social scientists and their research on civil society? By studying the Chinese scholarly network and literature from 1998 to 2018, I researched the influence of funding resources and the embeddedness of intellectuals in coauthor networks. The findings are summarized in the article's opening paragraphs. I now turn to a few lingering questions that are worth discussing further: (1) Why might research funding not be a direct measure of co-optation? (2) In an authoritarian country, where do novel research ideas about civil society originate from if the narratives are centrally planned by the state? And (3) what are the theoretical implications of these empirical results?

4.1 Co-opting through institutionalized support

Sponsorship is the most direct measure for influencing academics. The Chinese government provides vast funding resources to scholars and also prioritizes its funding categories according to policy plans. However, my analysis indicates that funding has an insignificant effect on aligning research interests with policy plans after considering the individual fixed effect. In other words, a scholar's preference for adopting state narratives does not vary by funding status. I have two potential explanations for this finding but also acknowledge that these reasons are speculative, and more empirical studies are needed to confirm these suppositions.

The first possible explanation is that the state's sponsorship takes effect via institutions and does not directly influence individual scholars. As noted above, the state has made considerable investments in its top universities. As the "Request for Proposal of NSSFC" states, to be qualified as a primary applicant, a scholar must be affiliated with a renowned institution, be well established, and rank at the full-professor level or equivalent (National Social Science Fund of China 2019). According to Table D1 and statistics from the London School of Economics (2011), those with an h-index larger than three can be considered as full professors. Therefore, roughly less than 2% of the scholars studying civil society in China are eligible to apply. It is highly likely

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that this small elite group may have already been successfully co-opted by the state through the promotion and tenure process because reputation is positively associated with policy-research similarity in the analysis (Model 8 in Table C1). Another empirical study also suggests that resource allocation in Chinese academia is influenced by political and administrative power (Jia, Nie, and Xiao 2019). In general, the institutional characteristics and evaluation criteria have more pressure on social scientists.

A second but more speculative explanations is that scholars with certain personalities may be more likely to follow government directions than others. Although this study does not have direct evidence to support this possibility, there are many empirical studies confirming the connection between personal traits and political attitudes (e.g., Gerber et al. 2010; Mondak 2010). Personal traits could also influence scholars in steering clear of studying topics like civil society that are politically sensitive.

4.2   Intellectual brokers: Novel ideas in a planned society

Where do novel research ideas originate from in an authoritarian country if the state is central to regulating policy and research narratives? I found that the brokers between different intellectual groups are the source of new ideas, even though the magnitude of their impact is marginal in comparison to other influencers. This finding also echoes studies of democratic societies (Burt 2004; Perry-Smith 2006) and other academic research fields (Leahey and Moody 2014).

Scholars who are brokers between different research groups understand how to communicate using various ways of thinking. They also have more flexibility in adjusting their research agendas. As a result, these knowledge brokers appear less likely to be influenced by the state's dominance. What is surprising is that these figures are consistently inclined to have research agendas that deviate from policy plans compared to those scholars who are not brokers. This finding is particularly important because it means that the source of novel ideas is structurally inherent even in a planned policy system—as long as scholars are free to collaborate and form scholarly networks, novel ideas will emerge from those knowledge brokers.

As Charles Merriam famously quipped, "To plan or not to plan is not [the] real issue" (Merriam 1944, 397). The real issue is how plans are made—either through a decentralized approach or by a central planner (Hayek 1945, 520). The decentralized approach of democratic systems appear to maximize the participation of all actors, making the best use of knowledge in society. But in authoritarian states, policymaking is expected to be dictated by only a few individuals, thereby constraining the planning process because no one can command complete knowledge.

China has made considerable efforts to institutionalize its policy planning system and broad participation (Melton 2016). However, aside from participation and efficiency, diversity and novelty of ideas also matter. The use of knowledge in policymaking is inclined to be decentralized and polycentric in democracies (Polanyi 1951, 171; Hayek 2011, 230), helping generate a multipolar structure in which brokers are embedded (Heemskerk and Takes 2016). Democratic societies therefore have structural advantages for policy innovation because intellectual brokers can be the source of novel ideas. But for an authoritarian state, policy participation is inclined to be structured in a "core-periphery" manner, limiting the formation of brokers between different knowledge clusters. Although authoritarian countries must maintain their hegemony, it is not in their best interest to eliminate policy innovations altogether. If they find novel policy ideas valuable, they should nurture the structural habitat for intellectual brokers because they are the source of new ideas.

4.3   Toward a theory of authoritarian knowledge regime

Forging the empirical findings together, we can identify four key components of the knowledge regime in authoritarian China: (1) the state's official policy narratives, (2) institutionalized state sponsorship for co-opting intellectuals, (3) co-opted intellectuals centrally embedded in scholarly networks, and (4) intellectual brokers as sources of novel ideas.

State's official policy narratives. The state's official discourse embedded in FYPs serves as a beacon to scholars and has a strong effect on scholarly narratives. As Figure 3 illustrates, the

similarity between research and policy discourse has increased over time, particularly, after "social management" was extensively discussed in the 12th FYP. Subsequently, scholarly discourse on civil society became stable across different FYPs, indicating that social scientists and policymakers are following a shared narrative regarding civil society. How has such convergence been achieved? The other constituents of an authoritarian knowledge regime provide answers.

Institutionalized state sponsorship of co-optation. The state's sponsorship of universities and the promotion and tenure process can systematically co-opt intellectuals. In comparison to the research funding awarded to individuals, the sponsorship through institutions is more embedded in the academic system and more effective at producing "establishment intellectuals" who are authoritative and actively align themselves with the state (Goldman and Gu 2004, 6–7; Perry 2020).

Co-opted intellectuals centrally embedded. An effective policy planning system should be able to broadcast the state's will timely, which means its agents should have shorter paths to other researchers in a scholarly network (i.e., by being the center of a network). The interaction between central planning and the scholarly community in China is effective according to this perspective because the scholars who are network centers also actively align their research agendas with the FYPs.

Intellectual brokers as sources of novel ideas. Despite the significant influence the state exercises in advancing its narrative, there are still structural gaps where knowledge brokers reside and foster innovative policy ideas. Authoritarian countries will find these novel ideas valuable, even though they must maintain their hegemony. Authoritarian regimes ought to foster these intellectual brokers and the structural habitats that allow for knowledge exchange and new ideas.

These four elements have coalesced and suggest that China has created an *authoritarian knowledge regime* in which social scientists and the state interact following institutionalized rules. These characteristics are certainly not exhaustive in describing such a knowledge regime, but this preliminary project can serve as a stimulus for future studies. Ever since Nathan (2003) proposed the notion of authoritarian resilience, a wide range of scholars have examined the puzzle that why

this communist state has *not* failed as expected. It is clear that the resilience of this authoritarian state goes beyond its political institutions, and it remains an open question whether and how such an authoritarian knowledge regime contributes to China's resilience.

References

Bank, André. 2004. "Rents, Cooptation, and Economized Discourse: Three Dimensions of Political Rule in Jordan, Morocco and Syria." *Journal of Mediterranean Studies* 14 (1): 155–179. Accessed May 11, 2021. http://muse.jhu.edu/article/670364.

Batagelj, V., and M. Zaversnik. 2003. "An O(m) Algorithm for Cores Decomposition of Networks." *arXiv:cs/0310049,* accessed November 29, 2015. http://arxiv.org/abs/cs/0310049.

Bertocchi, Graziella, and Michael Spagat. 2001. "The Politics of Co-optation." *Journal of Comparative Economics* 29 (4): 591–607. Accessed May 11, 2021. https://doi.org/10.1006/jcec.2001.1734.

Blondel, Vincent D., Jean-Loup Guillaume, Renaud Lambiotte, and Etienne Lefebvre. 2008. "Fast Unfolding of Communities in Large Networks." *Journal of Statistical Mechanics: Theory and Experiment* 2008 (10): P10008. Accessed November 26, 2015. https://doi.org/10.1088/1742-5468/2008/10/P10008.

Bozeman, Barry, Jan Youtie, Eriko Fukumoto, and Marla Parker. 2019. "When Is Science Used in Science Policy? Examining the Importance of Scientific and Technical Information in National Research Council Reports." *Review of Policy Research* 36 (2): 262–289. Accessed February 29, 2020. https://doi.org/10.1111/ropr.12324.

Brandes, Ulrik. 2001. "A Faster Algorithm for Betweenness Centrality." *The Journal of Mathematical Sociology* 25 (2): 163–177. Accessed March 19, 2020. https://doi.org/10.1080/0022250X.2001.9990249.

Burt, Ronald S. 2004. "Structural Holes and Good Ideas." *American Journal of Sociology* 110 (2): 349–399. Accessed October 17, 2019. https://doi.org/10.1086/421787.

Burt, Ronald S. 2010. "Appendix B. Measuring Access to Structural Holes." In *Neighbor Networks: Competitive Advantage Local and Personal.* Oxford, New York: Oxford University Press.

Callahan, William A. 2013. *China Dreams: 20 Visions of the Future.* Oxford University Press.

Campbell, John L. 2002. "Ideas, Politics, and Public Policy." *Annual Review of Sociology* 28 (1): 21–38. Accessed March 16, 2022. https://doi.org/10.1146/annurev.soc.28.110601.141111.

Campbell, John L., and Ove K. Pedersen. 2010. "Knowledge Regimes and Comparative Political Economy." In *Ideas and Politics in Social Science Research,* 1 edition, edited by Daniel Beland and Robert Henry Cox, 167–190. Oxford, England ; New York: Oxford University Press, USA.

Campbell, John L., and Ove K. Pedersen. 2014. *The National Origins of Policy Ideas: Knowledge Regimes in the United States, France, Germany, and Denmark.* Princeton University Press.

Chamberlain, Heath B. 1993. "On the Search for Civil Society in China." *Modern China* 19 (2): 199–215. Accessed March 18, 2016. http://www.jstor.org/stable/189380.

Chen, Donghua, Oliver Zhen Li, and Fu Xin. 2017. "Five-Year Plans, China Finance and Their Consequences." *China Journal of Accounting Research* 10 (3): 189–230. Accessed November 1, 2019. https://doi.org/10.1016/j.cjar.2017.06.001.

Cicchetti, Domenic V. 1994. "Guidelines, Criteria, and Rules of Thumb for Evaluating Normed and Standardized Assessment Instruments in Psychology." *Psychological Assessment* (US) 6 (4): 284–290. https://doi.org/10.1037/1040-3590.6.4.284.

Du, Juan. 2021. "Research on Women in Public Administration in China: A Systematic Review of Chinese Top Journal Publications (1987-2019)." *Chinese Public Administration Review.*

Gandhi, Jennifer, and Adam Przeworski. 2006. "Cooperation, Cooptation, and Rebellion Under Dictatorships." *Economics & Politics* 18 (1): 1–26. Accessed May 11, 2021. https://doi.org/10.1111/j.1468-0343.2006.00160.x.

Gerber, Alan S., Gregory A. Huber, David Doherty, Conor M. Dowling, and Shang E. Ha. 2010. "Personality and Political Attitudes: Relationships across Issue Domains and Political Contexts." *American Political Science Review* 104 (1): 111–133. Accessed July 25, 2021. https://doi.org/10.1017/S0003055410000031.

Goldman, Merle, and Edward Gu, eds. 2004. *Chinese Intellectuals Between State and Market.* 1 edition. London ; New York: Routledge.

Gonzalez-Brambila, Claudia N., Francisco M. Veloso, and David Krackhardt. 2013. "The Impact of Network Embeddedness on Research Output." *Research Policy* 42 (9): 1555–1567. Accessed October 10, 2019. https://doi.org/10.1016/j.respol.2013.07.008.

Goyal, Sanjeev, Marco J. van der Leij, and José Luis Moraga-González. 2006. "Economics: An Emerging Small World." *Journal of Political Economy* 114 (2): 403–412. Accessed November 17, 2020. https://doi.org/10.1086/500990.

Guo, Dingping. 2020. "Xi's Leadership and Party-Centred Governance in China." *Chinese Political Science Review* 5 (4): 439–456. Accessed February 28, 2022. https://doi.org/10.1007/s41111-020-00149-y.

Hagberg, Aric A., Daniel A. Schult, and Pieter J. Swart. 2008. "Exploring Network Structure, Dynamics, and Function Using NetworkX." In *Proceedings of the 7th Python in Science Conference,* edited by Gaël Varoquaux, Travis Vaught, and Jarrod Millman, 11–15. Pasadena, CA USA.

Hayek, Friedrich A. von. 1945. "The Use of Knowledge in Society." *The American Economic Review* 35 (4): 519–530. Accessed April 23, 2016. http://www.jstor.org/stable/1809376.

Hayek, Friedrich A. von. 2011. *The Constitution of Liberty: The Definitive Edition.* Edited by Ronald Hamowy. Chicago: University of Chicago Press. Accessed October 3, 2016. http://site.ebrary.com/id/10578472.

Heemskerk, Eelke M., and Frank W. Takes. 2016. "The Corporate Elite Community Structure of Global Capitalism." *New Political Economy* 21 (1): 90–118. Accessed December 1, 2016. https://doi.org/10.1080/13563467.2015.1041483.

Holbig, Heike. 2014. "Shifting Ideologics of Research Funding: The CPC's National Planning Office for Philosophy and Social Sciences." *Journal of Current Chinese Affairs* 43 (2): 13–32. Accessed November 8, 2019. https://doi.org/10.1177/186810261404300203.

Huang, Philip C. C. 2012. ""State Capitalism" or "Socialist Market Economy"?—Editor's Foreword." *Modern China* 38 (6): 587–590. Accessed July 16, 2020. https://doi.org/10.1177/0097700412459701.

Jia, Ruixue, Huihua Nie, and Wei Xiao. 2019. "Power and Publications in Chinese Academia." *Journal of Comparative Economics* 47 (4): 792–805. Accessed June 23, 2021. https://doi.org/10.1016/j.jce.2019.08.006.

Jowitt, Kenneth. 1975. "Inclusion and Mobilization In European Leninist Regimes." *World Politics* 28 (1): 69–96. Accessed December 28, 2018. https://doi.org/10.2307/2010030.

Kang, Xiaoguang, and Heng Han. 2008. "Graduated Controls: The State-Society Relationship in Contemporary China." *Modern China* 34 (1): 36–55. Accessed February 7, 2022. https://doi.org/10.1177/0097700407308138.

Keahey, Kate, Jason Anderson, Zhuo Zhen, Pierre Riteau, Paul Ruth, Dan Stanzione, Mert Cevik, et al. 2020. "Lessons Learned from the Chameleon Testbed." In *2020 {USENIX} Annual Technical Conference ({USENIX} {ATC} 20),* 219–233. Accessed September 5, 2021. https://www.usenix.org/conference/atc20/presentation/keahey.

Kozlowski, Austin C., Matt Taddy, and James A. Evans. 2019. "The Geometry of Culture: Analyzing the Meanings of Class through Word Embeddings." *American Sociological Review* 84 (5): 905–949. Accessed January 18, 2020. https://doi.org/10.1177/0003122419877135.

Kreitmeyr, Nadine. 2019. "Neoliberal Co-Optation and Authoritarian Renewal: Social Entrepreneurship Networks in Jordan and Morocco." *Globalizations* 16 (3): 289–303. Accessed April 27, 2021. https://doi.org/10.1080/14747731.2018.1502492.

Kreitmeyr-Koska, Nadine. 2016. "Neoliberal Networks & Authoritarian Renewal. A Diverse Case Study of Egypt, Jordan & Morocco." PhD diss., Universität Tübingen. Accessed June 10, 2021. https://doi.org/10.15496/publikation-13300.

Kusner, Matt, Yu Sun, Nicholas Kolkin, and Kilian Weinberger. 2015. "From Word Embeddings To Document Distances." In *International Conference on Machine Learning,* 957–966. Accessed September 15, 2019. http://proceedings.mlr.press/v37/kusnerb15.html.

Landis, J. Richard, and Gary G. Koch. 1977. "The Measurement of Observer Agreement for Categorical Data." *Biometrics* 33 (1): 159–174. Accessed October 6, 2019. https://doi.org/10.2307/2529310.

Leahey, Erin, and James Moody. 2014. "Sociological Innovation through Subfield Integration." *Social Currents* 1 (3): 228–256. Accessed October 31, 2020. https://doi.org/10.1177/2329496514540131.

Lewis, David. 2013. "Civil Society and the Authoritarian State: Cooperation, Contestation and Discourse." *Journal of Civil Society* 9 (3): 325–340. Accessed April 27, 2021. https://doi.org/10.1080/17448689.2013.818767.

London School of Economics. 2011. "Maximising the Impacts of Your Research: A Handbook for Social Scientists." Accessed November 17, 2019. https://blogs.lse.ac.uk/impactofsocialsciences/2011/04/14/maximizing-the-impacts-of-your-research-a-handbook-for-social-scientists-now-available-to-download-as-a-pdf/.

Ma, Ji, and Simon DeDeo. 2018. "State Power and Elite Autonomy in a Networked Civil Society: The Board Interlocking of Chinese Non-Profits." *Social Networks* 54:291–302. Accessed May 11, 2018. https://doi.org/10.1016/j.socnet.2017.10.001.

Ma, Ji, Islam Akef Ebeid, Arjen de Wit, Meiying Xu, Yongzheng Yang, René Bekkers, and Pamala Wiepking. 2021. "Computational Social Science for Nonprofit Studies: Developing a Toolbox and Knowledge Base for the Field." *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations,* accessed October 13, 2021. https://doi.org/10.1007/s11266-021-00414-x.

Madsen, Richard. 1993. "The Public Sphere, Civil Society and Moral Community: A Research Agenda for Contemporary China Studies." *Modern China* 19 (2): 183–198. Accessed April 8, 2016. http://www.jstor.org/stable/189379.

Melton, Oliver. 2016. "China's Five-Year Planning System: Structure and Significance of the 13th FYP." In *State and Market in Contemporary China: Toward the 13th Five-Year Plan,* edited by Scott Kennedy. Rowman & Littlefield.

Menegazzi, Silvia. 2018. "Think Tanks, Knowledge Regimes and the Global Agora." In *Rethinking Think Tanks in Contemporary China,* edited by Silvia Menegazzi, 23–57. Cham: Springer International Publishing. Accessed July 14, 2020. https://doi.org/10.1007/978-3-319-57300-7_2.

Merriam, Charles E. 1944. "The Possibilities of Planning." *American Journal of Sociology* 49 (5): 397–407. Accessed December 4, 2019. www.jstor.org/stable/2770476.

Mikolov, Tomas, Kai Chen, Greg Corrado, and Jeffrey Dean. 2013. "Efficient Estimation of Word Representations in Vector Space." *arXiv:1301.3781 [cs],* accessed May 8, 2019. http://arxiv.org/abs/1301.3781.

Mondak, Jeffery J. 2010. *Personality and the Foundations of Political Behavior.* Cambridge University Press.

Moskaleva, Olga, Vladimir Pislyakov, Ivan Sterligov, Mark Akoev, and Svetlana Shabanova. 2018. "Russian Index of Science Citation: Overview and Review." *Scientometrics* 116 (1): 449–462. Accessed May 12, 2021. https://doi.org/10.1007/s11192-018-2758-y.

Nachiappan, Karthik. 2013. "Think Tanks and the Knowledge‒Policy Nexus in China." *Policy and Society* 32 (3): 255–265. Accessed July 13, 2020. https://doi.org/10.1016/j.polsoc.2013.07.006.

Nathan, Andrew J. 2003. "Authoritarian Resilience." *Journal of Democracy* 14 (1): 6–17. Accessed December 14, 2018. https://doi.org/10.1353/jod.2003.0019.

National Social Science Fund of China. 2019. *Request for Proposal: 2019 Key Project Fund.* Accessed April 7, 2020. http://web.archive.org/web/20191206180900/http://www.npopss-cn.gov.cn/n1/2019/0715/c219469-31235024.html.

Nay, Olivier. 2012. "How Do Policy Ideas Spread among International Administrations? Policy Entrepreneurs and Bureaucratic Influence in the UN Response to AIDS." *Journal of Public Policy* 32 (1): 53–76. Accessed March 16, 2022. https://doi.org/10.1017/S0143814X11000183.

Newman, M. E. J. 2001. "Scientific Collaboration Networks. II. Shortest Paths, Weighted Networks, and Centrality." *Physical Review E* 64 (1): 016132. Accessed March 20, 2020. https://doi.org/10.1103/PhysRevE.64.016132.

Nie, Lin, and Jie Wu. 2021. "Strategic Responses of NGOs to the New Party-Building Campaign in China." *China Information,* 0920203X21995705. Accessed August 9, 2021. https://doi.org/10.1177/0920203X21995705.

Noakes, Stephen. 2014. "The Role of Political Science in China: Intellectuals and Authoritarian Resilience." *Political Science Quarterly* 129 (2): 239–260. Accessed June 16, 2020. https://www.jstor.org/stable/43828651.

Perry, Elizabeth J. 2020. "Educated Acquiescence: How Academia Sustains Authoritarianism in China." *Theory and Society* 49 (1): 1–22. Accessed March 4, 2021. https://doi.org/10.1007/s11186-019-09373-1.

Perry-Smith, Jill E. 2006. "Social Yet Creative: The Role of Social Relationships in Facilitating Individual Creativity." *The Academy of Management Journal* 49 (1): 85–101. Accessed December 6, 2019. https://doi.org/10.2307/20159747.

Perry-Smith, Jill E., and Christina E. Shalley. 2003. "The Social Side of Creativity: A Static and Dynamic Social Network Perspective." *The Academy of Management Review* 28 (1): 89–106. Accessed March 17, 2020. https://doi.org/10.2307/30040691.

Phelps, Corey, Ralph Heidl, and Anu Wadhwa. 2012. "Knowledge, Networks, and Knowledge Networks: A Review and Research Agenda." *Journal of Management* 38 (4): 1115–1166. Accessed September 23, 2019. https://doi.org/10.1177/0149206311432640.

Pieke, Frank N. 2012. "The Communist Party and Social Management in China." *China Information* 26 (2): 149–165. Accessed December 27, 2014. http://cin.sagepub.com/content/26/2/149.short.

Pielke, Jr, Roger A. 2007. *The Honest Broker: Making Sense of Science in Policy and Politics.* Cambridge, UNITED KINGDOM: Cambridge University Press. Accessed March 16, 2022. http://ebookcentral.proquest.com/lib/utxa/detail.action?docID=293386.

Polanyi, Michael. 1951. *The Logic of Liberty.* Routledge & Kegan Paul.

Prybyla, Jan S. 1987. *Market and Plan under Socialism: The Bird in the Cage.* Hoover Institution Press, Stanford University.

Rawlings, Craig M., Daniel A. McFarland, Linus Dahlander, and Dan Wang. 2015. "Streams of Thought: Knowledge Flows and Intellectual Cohesion in a Multidisciplinary Era." *Social Forces* 93 (4): 1687–1722. Accessed October 31, 2020. https://doi.org/10.1093/sf/sov004.

Rodriguez, Pedro, and Arthur Spirling. 2021. "Word Embeddings: What Works, What Doesn't, and How to Tell the Difference for Applied Research." *The Journal of Politics,* accessed May 13, 2021. https://doi.org/10.1086/715162.

Salmenkari, Taru. 2013. "Theoretical Poverty in the Research on Chinese Civil Society." *Modern Asian Studies* 47 (02): 682–711. Accessed March 18, 2016. https://doi.org/10.1017/S0026749X12000273.

Shi, Shih-Jiunn. 2017. "The Bounded Welfare Pluralism: Public‑Private Partnerships under Social Management in China." *Public Management Review* 19 (4): 463–478. Accessed March 27, 2018. https://doi.org/10.1080/14719037.2016.1183700.

Sigley, Gary. 2006. "Chinese Governmentalities: Government, Governance and the Socialist Market Economy." *Economy and Society* 35 (4): 487–508. Accessed July 16, 2020. https://doi.org/10.1080/03085140600960773.

Simon, Karla W. 2013. "2011—The Remarkable Year!" In *Civil Society in China.* Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199765898.003.0014.

Smith, James A. 1993. *Idea Brokers: Think Tanks And The Rise Of The New Policy Elite.* Simon and Schuster.

Smith, Katherine. 2010. "Research, Policy and Funding – Academic Treadmills and the Squeeze on Intellectual Spaces1." *The British Journal of Sociology* 61 (1): 176–195. Accessed September 19, 2019. https://doi.org/10.1111/j.1468-4446.2009.01307.x.

Spires, Anthony J. 2011. "Contingent Symbiosis and Civil Society in an Authoritarian State: Understanding the Survival of China's Grassroots NGOs." *American Journal of Sociology* 117 (1): 1–45. Accessed December 26, 2014. https://doi.org/10.1086/660741.

Sungurov, Alexander. 2012. ""Think Tanks" and Public Policy Centers in Russia and Other Post-Communist Countries: Development and Function." *The Soviet and Post-Soviet Review* 39 (1): 22–55. Accessed March 16, 2022. https://doi.org/10.1163/187633212X623952.

Teets, Jessica C. 2013. "Let Many Civil Societies Bloom: The Rise of Consultative Authoritarianism in China." *The China Quarterly* 213:19–38. Accessed December 27, 2014. https://doi.org/10.1017/S0305741012001269.

Teets, Jessica C. 2018. "The Power of Policy Networks in Authoritarian Regimes: Changing Environmental Policy in China." *Governance* 31 (1): 125–141. Accessed January 16, 2019. https://doi.org/10.1111/gove.12280.

Toepler, Stefan, Annette Zimmer, Christian Fröhlich, and Katharina Obuch. 2020. "The Changing Space for NGOs: Civil Society in Authoritarian and Hybrid Regimes." *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 31 (4): 649–662. Accessed April 19, 2022. https://doi.org/10.1007/s11266-020-00240-7.

Viera, Anthony J., and Joanne M. Garrett. 2005. "Understanding Interobserver Agreement: The Kappa Statistic." *Family Medicine* 37 (5): 360–363.

Wong, Stan Hok-wui. 2012. "Authoritarian Co-optation in the Age of Globalisation: Evidence from Hong Kong." *Journal of Contemporary Asia* 42 (2): 182–209. Accessed April 27, 2021. https://doi.org/10.1080/00472336.2012.668348.

Wu, Yiyun, Xiwei Zhu, and Nicolaas Groenewold. 2019. "The Determinants and Effectiveness of Industrial Policy in China: A Study Based on Five-Year Plans." *China Economic Review* 53:225–242. Accessed November 1, 2019. https://doi.org/10.1016/j.chieco.2018.09.010.

Wuchty, Stefan, Benjamin F. Jones, and Brian Uzzi. 2007. "The Increasing Dominance of Teams in Production of Knowledge." *Science* 316 (5827): 1036–1039. Accessed October 31, 2020. https://doi.org/10.1126/science.1136099.

Xie, Guanghua, Jianlin Chen, Ying Hao, and Jing Lu. 2019. "Economic Policy Uncertainty and Corporate Investment Behavior: Evidence from China's Five-Year Plan Cycles." *Emerging Markets Finance and Trade* 0 (0): 1–18. Accessed November 1, 2019. https://doi.org/10.1080/1540496X.2019.1673160.

Xin-ning, Su, Han Xin-ming, and Han Xin-ning. 2001. "Developing the Chinese Social Science Citation Index." *Online Information Review* 25 (6): 365–369. Accessed May 12, 2021. https://doi.org/10.1108/EUM0000000006535.

Zhang, Zhibin, and Chao Guo. 2021. "Nonprofit-Government Relations in Authoritarian China: A Review and Synthesis of the Chinese Literature." *Administration & Society* 53 (1): 64–96. Accessed October 14, 2021. https://doi.org/10.1177/0095399720934891.

Zhao, Litao. 2016. "China's 13th Five-Year Plan: Road Map for Social Development." *East Asian Policy,* accessed November 1, 2019. https://doi.org/10.1142/S179393051600026X.

Zhu, Xufeng. 2018. *The Politics of Expertise in China.* London: Routledge. https://doi.org/10.4324/9781315624549.

Zhu, Xufeng. 2020. "Think Tanks in Politically Embedded Knowledge Regimes: Does the "Revolving Door" Matter in China?" *International Review of Administrative Sciences* 86 (2): 295–315. Accessed July 9, 2020. https://doi.org/10.1177/0020852318776362.

5 Online Appendix

How does an authoritarian state co-opt its social scientists studying civil society?

A Data

A.1   Keywords used in search queries

Although civil society, or the nonprofit sector, is extremely diverse and hard to define, scholars have identified that *privateness*, *public purpose*, and *free choice* are its core conceptual features (Salamon and Sokolowski 2016). Following these conceptual features, we first identified a list of keywords from review articles and empirical studies (e.g., Smith 2013; Shier and Handy 2014; Ma and Konrath 2018; Zhang and Guo 2021). Next, an expert group with one doctoral student and two professors was assembled to review and amend the list. The two steps generated the following keywords used in the search queries:

1. Privateness: Social organization (*shehui zuzhi* 社会组织 and *minjian zuzhi* 民间组织), nonprofit organization (*feiyingli zuzhi* 非营利组织), associations (*shehui tuanti* 社会团体, *shetuan* 社团, *xiehui* 协会, *shanghui* 商会), foundations (*jijinghui* 基金会), private non-commercial unit (*minban feiqiye danwei* 民办非企业单位), social service organization (*shehui fuwu jigou* 社会服务机构), philanthropy (*cishan* 慈善), grassroots organization (*caogen zuzhi* 草根组织), nongovernment organization (*feizhengfu zuzhi* 非政府组织), NGO, NPO.

2. Public purpose: public welfare (*gongyi* 公益), community organization (*shequ zuzhi* 社区组织), civil society (*gongmin shehui* 公民社会 and *shimin shehui* 市民社会), third sector (*disan bumen* 第三部门), community participation (*shequ canyu* 社区参与), community building (*shequ yingzao* 社区营造), public participation (*gongzhong canyu* 公众参与), collective action (*jiti xingdong* 集体行动), political participation (*zhengzhi canyu* 政治参与), social movement (*shehui yundong* 社会运动), government social service contracting (*zhengfu goumai gonggong fuwu* 政府购买公共服务), corporatism (*fatuan zhuyi* 法团主义, *shetuan zhuyi* 社团主义, and *tonghe zhuyi* 统合主义), social management and social governance (*shehui guanli* 社会管理 and *shehui zhili* 社会治理).

Table A1: Lexical analysis of corpus: Most frequent bigrams with *gongyi* 公益

Freq.	Bigram Chinese	Bigram English
584	环境, 公益诉讼	environment, public interest law
355	公益诉讼, 制度	public interest law, institution
321	行政, 公益诉讼	administration, public interest law
319	民事, 公益诉讼	civil, public interest law
173	社会, 公益	society, *gongyi*
116	公益, 信托	*gongyi*, financial trust
108	环境, 公益	environment, *gongyi*
96	公益诉讼, 原告	public interest law, plaintiff
96	提起, 公益诉讼	sue, public interest law
95	公益, 慈善	*gongyi*, charity
87	公益, 创业	*gongyi*, entrepreneurship
76	公益, 慈善事业	*gongyi*, philanthropy
76	公益, 类	*gongyi*, category
68	我国, 公益	China, *gongyi*
64	公益性, 捐赠	*gongyi*, donation
59	公益, 捐赠	*gongyi*, donation
58	公益, 创投	philanthropy, venture capital
56	生态, 公益林	ecology, forest reserves
54	慈善, 公益	charity, *gongyi*
54	社会, 公益事业	society, *gongyi* career

3. Free choice: voluntary organzition (*zhiyuanzhe zuzhi* 志愿者组织 and *zhiyuan zuzhi* 志愿组织), volunteer association (*zhiyuanzhe xiehui* 志愿者协会).

We also considered using regular expressions in the search queries to include the variants of some keywords. For example, the Chinese character *ying* 营 in *feiyingli zuzhi* 非营利组织 can have two forms. Even though one form (i.e., "盈") is not correct in this context, it is still used by a few scholars. Some keywords can be used in a variety of contexts that may not be relevant to this study, for example, *gongyi* 公益, which can be broadly translated as "public interest" or "public good" (Wu 2017). Lexical analysis of the most frequent bigrams indicates that such concern should not be substantial (Table A1).[1] With the keyword list and different searching strategies, we believe our dataset covers the majority of Chinese scholarship on civil society; nevertheless, there may be articles that we missed.

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1. We thank an anonymous reviewer for pointing this out.

A.2 Author disambiguation

We employed two methods of disambiguation: exact matching and social network. Table A2 is the confusion matrix for measuring the performance of the strategies.

Table A2: Confusion matrix for disambiguation

		True	
		Same	Diff.
Predicted	Same	True positive	False positive
	Diff.	False negative	True negative

Exact matching. The underlying assumption is that no scholars studying civil society share the same name and reside at the same institution or address. Therefore, records were labeled as the same person if (1) the Chinese name matched and (2) either the affiliation or correspondence address matched (a few other fields were tested but were too broad and increased errors). These matching criteria are very restrictive and can increase false negative counts (i.e., situations where records should be treated as the same person but are identified as different).

Social network. The underlying assumption is that authors continue to collaborate directly or indirectly with peers in their coauthor networks even when they change their affiliations. Therefore, if records with the same person's name appeared in a connected coauthor network (i.e., a network component), they were identified as the same person. An exception can arise if an author stops collaborating with scholars who have direct or indirect connections with the author's previous coauthors (i.e., the author is completely detached from her previous scholarly network). The algorithm can be described as follows:

1. Order all nodes in the coauthor network graph G from left to right, with the first node on the left end and the last node on the right end.

2. Start from first node $A \in G$. If A does not have a unique author ID (*auid*), set A to a new *auid*, and move to the next step; otherwise, skip A to its next node.

3. Let set α be a collection of nodes that connect to *A* directly or indirectly (in network analysis terms, a component α of graph *G* containing node *A*).

4. Let set β be a collection of nodes that are on the right side of *A*.

5. Let node $B \in \beta$.

6. If (1) *B* and *A* have the same author's name, (2) $B \in \alpha$, and (3) *B* does not have *auid*, give *A*'s *auid* to *B*; otherwise, skip *B* to its next node.

7. Repeat steps 5 and 6 until all nodes in β are iterated.

8. Repeat steps 2–6 until all nodes (except the last) in *G* are iterated.

By combining the two methods, the positive predictive rate ($\frac{True\,positive}{Total\,posive\,predictions}$) is 100% (i.e., all records identified as the same person are correct), and the negative predictive rate ($\frac{True\,negative}{Total\,negative\,predcitions}$) is 76% (i.e., of the records with the same name that are identified as being different persons, 76% of them are correct). According to the sample we manually checked, the records that were falsely identified were usually for isolated individuals in scholarly networks. Therefore, we expect that such errors generated only limited bias on our analysis.

B Control variables

B.1 Network attributes

The topology of scholarly networks can differ in their ability to transmit information and knowledge (Phelps, Heidl, and Wadhwa 2012, 1124). This characteristic can be time and individual variant and therefore bias our estimations. We controlled a set of network attributes from two perspectives: graph attributes (i.e., density, transitivity, average clustering coefficient, and modularity) and point attributes (i.e., node degree and institutional diversity).

1. The *density* of a network measures the connectedness of nodes; that is, $\frac{2m}{n(n-1)}$, where m is the number of edges and n is the number of nodes. The density of a network without edges is 0 and that of a fully connected network is 1. As Phelps, Heidl, and Wadhwa (2012, 1124) summarized, empirical studies suggest that a higher density can increase innovation by making more novel information accessible to individuals (Abrahamson and Rosenkopf 1997, 306; Ebadi and Utterback 1984).

2. The *transitivity* of a network measures the nodes' tendency to form clusters in the form of triangles (i.e., three fully connected nodes; Holland and Leinhardt 1970; Luce and Perry 1949). It presumes that if X chooses Y as a friend, and Y chooses Z as a friend, then X will also choose Z as a friend, and the three nodes will form a clique. Transitivity is calculated as $\frac{\#triangles}{\#triads} \times 3$, where $\#triads$ are the number of possible triangles (i.e., three nodes connected by two edges). It is also called the *global clustering coefficient*. Nodes in a network with high transitivity are clustered into different groups. Although the information within groups can be distributed faster, the increased level of social cohesion can reduce the availability of novel information within groups and therefore reduce innovation (Uzzi and Spiro 2005).

3. The *average clustering coefficient* of a network also measures the nodes' tendency to form clusters, but it takes edge weight into account. The average clustering coefficient of a

network is calculated as $\sum_{v \in G} C_v / n$, where G is a network with n nodes and C_v is the local clustering coefficient of node v calculated according to Onnela et al. (2005).

4. The *modularity* of a network measures how easily a network can be divided into different clusters of nodes (Girvan and Newman 2002). Nodes in a network with a higher modularity score have dense connections within the same cluster but are loosely connected with nodes in other clusters. Modularity plays a key role in influencing the relationship between network measures (Oldham et al. 2019).

5. *Node degree* measures how many collaborators a social scientist has in a scholarly network. Audia and Goncalo (2007, 5) found that the network degree can moderate the relationship between creativity and past success. In our study, node degree can also confound the estimations. For example, scholars with more collaborators may connect different intellectual communities (i.e., have higher betweenness centrality). Because we are considering weighted networks, the node degree not only considers the number of coauthors but also the times of coauthorship. For example, if scholar i coauthored one paper with a and two papers with b in 2012, then i's network degree in 2012 is 3.

6. *Institutional diversity*. Scholars with more connections outside of their own institutions have been found to be more creative (Perry-Smith 2006). We operationalized this measure using the Herfindahl-Hirschman Index of institutions. A higher value of this measure indicates less institutional diversity in connections. For example, if scholar i is affiliated with institution T and connected to four other researchers, whose affiliations are T, P, S, and Q, then $Diversity_i = \frac{2^2 + 1^2 + 1^2 + 1^2}{5^2}$.

B.2   Knowledge contribution

Expert knowledge can help to improve a bureaucracy's performance from a Weberian instrumentalist's perspective, and it can also help policymakers and politicians substantiate the legitimacy of their plans and decisions (Boswell 2009). Therefore, the isomorphism toward

policy plans may be the result of knowledge contribution and policymakers' use of expert knowledge. We used two variables to quantify a scholar's knowledge contribution.

The *citation count* of an article is a straightforward measure of influence as perceived by the academic community. As Eq. 3 presents, (1) in year *t*, author *i* published *n* papers, and (2) we obtained the citation of article *j* published by author *i* in year *t* by calculating how many times it had been cited in the entire CSSCI database (i.e., covering 1,269,600 articles published between 1998 and 2018; *PaperCitation*). Then (3) we aggregated the citations of the *n* papers at the author level. Although citation count is a valid method of measuring research quality (Garfield 1955), it should be used with caution and supplemented with other measures (Moravcsik and Murugesan 1975; Baird and Oppenheim 1994).

$$Citation_{it} = \sum_{j=1}^{n} PaperCitation_{jit} \qquad (3)$$

Disrupting or developing knowledge. Researchers can either put forward a new theoretical paradigm (i.e., disrupting knowledge) or use existing theories to consolidate current knowledge (i.e., developing knowledge; Kuhn 1970). An innovative method of scaling a research article's influence on knowledge production (i.e., the *D* measure) was introduced by Funk and Owen-Smith (2016) and applied by Wu, Wang, and Evans (2019). We averaged all the *D* values of an author's articles published in a given year and used this number to measure whether an author's knowledge contribution is extremely disrupting ($D = 1$), extremely developing ($D = -1$), or somewhere in between in that given year.

We validated the *D* measure following one of the strategies from Wu, Wang, and Evans (2019). Because review articles generally synthesize previous original studies, they should be more developing than disruptive. The mean *D* value of the articles that contain "review" in their titles is 0.015 ($SD = 0.082$) and that of the original studies reviewed by these articles is 0.072 ($SD = 0.173$). The two means are substantially different ($t = 25.4$, $p < 0.001$).

B.3 Scholarly credibility

A scholar's personal credibility can also be a time- and individual-variant confounding factor (Bozeman et al. 2019, 269; Bozeman 1986). We included two additional variables to control the influence of credibility: (1) A researcher's *reputation*, which is operationalized by the number of single-authored papers published in the past three years (Gonzalez-Brambila, Veloso, and Krackhardt 2013, 1561), can change over time. Meanwhile, (2) the *h*-index, which attempts to measures an author's productivity and citation impact at the same time, is defined as "the number of papers with citation number $\geq h$" (Hirsch 2005, 16569). Since its invention, it has been widely used in characterizing a scholar's research output and in evaluation for promotion.

B.4 Political factors

We added two variables to measure political influence: (1) the *distance to Beijing* from the researcher's home institution because the locations of different institutions can have different geopolitical implications and (2) a factorial variable of *presidency* because different political leaders have their own governance styles and political preferences.

C   Estimation models and results

C.1   Causal graphs of regression models

We built the estimation models stepwise to primarily consider (1) the possible confounding relationship between the explanatory variables (Models 1–5) and (2) the unobserved variables that are time or individual dependent (Models 6–8). The full model is Model 8.

Figure C1: MODEL 1: FUNDING
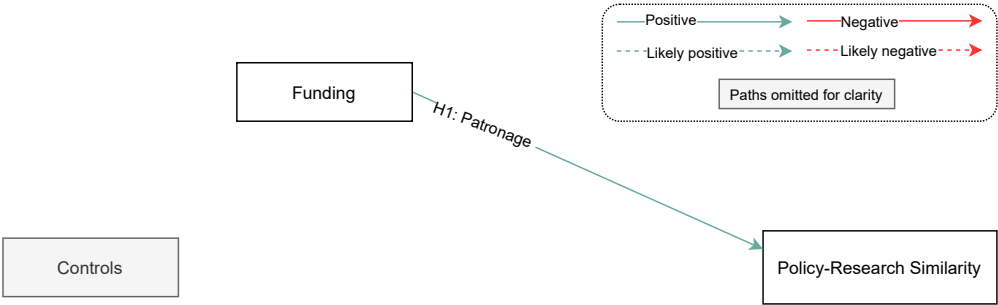
Model 1 tests Hypothesis 1: *Scholars who receive government grants are more likely to align their research with the state's official narratives.* Authors who are funded by the state are expected to adopt the narratives of policy plans.

Figure C2: MODEL 2: FUNDING + NETWORK CENTER
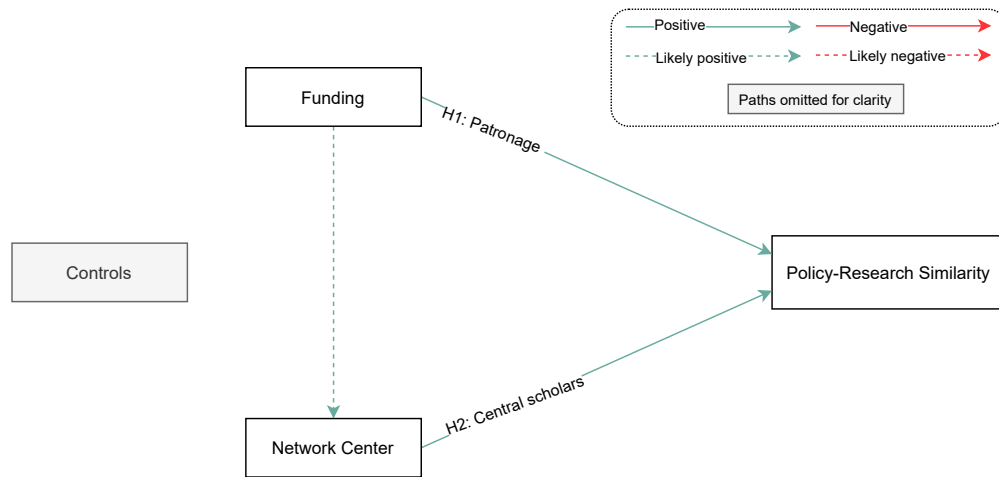
Model 2 tests Hypothesis 2: *Scholars who are at the center of a scholarly network are more likely to align their research with the state's official narratives.* Scholars who are network centers can reach all other intellectuals through the shortest paths. Moreover, these network centers are more capable of being "aware of whatever is going on in the network" and have higher status (Perry-Smith 2006, 88). Therefore, scholars who are network centers are more likely to align their research with the state's official narratives.

Model 2 also tests the possibility that funding can confound the relationship between being network centers and using official narratives. Scholars who are well sourced have more capacity to expand their collaboration networks. Therefore, these scholars are more likely to be network centers (i.e., close to everyone in the network).

Figure C3: MODEL 3: FUNDING + NETWORK BROKER
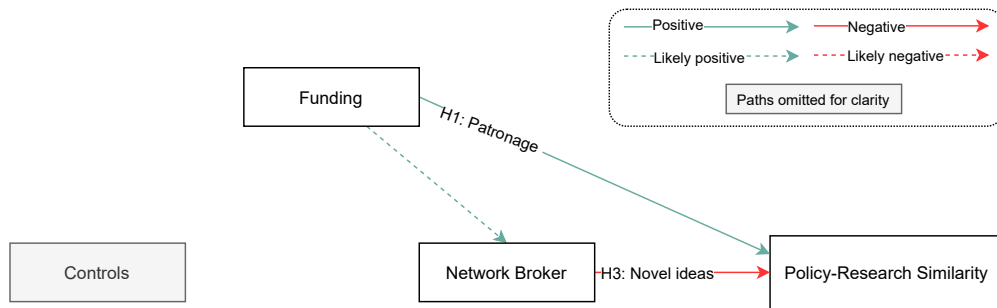
Model 3 tests Hypothesis 3: *Scholars who are brokers between different intellectual communities are less likely to align their research with the state's official narratives.* Intellectual brokers understand how to communicate using different ways of thinking and have more flexibility in adjusting their research agendas and narratives. Therefore, they have more options when facing the state's co-optation and may be less likely to adopt the narratives of policy plans.

Meanwhile, the model also tests if funding can confound the relationship between being network brokers and using official narratives. If the funded individuals strategically posit themselves across different intellectual communities and only connect to researchers who are the stars within an intellectual community, the funded scholars are more likely to be intellectual brokers (i.e., effective bridges between different intellectual communities).

Figure C4: MODEL 4: NETWORK CENTER + BROKER
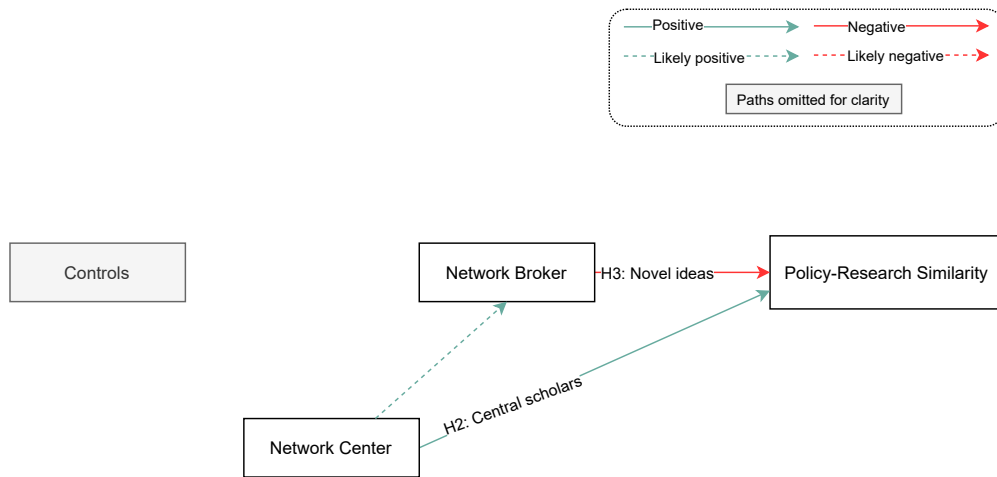
Model 4 considers the potential confounding relationship between being network brokers and being network centers. Existing literature suggests that the relationship between the two variables is generally positive but also depends on the typology of the network (with special emphasis on modularity, which is included as a control variable; Brandes, Borgatti, and Freeman 2016; Schoch, Valente, and Brandes 2017; Oldham et al. 2019).

Figure C5: MODEL 5: FUNDING + NETWORK CENTER + BROKER
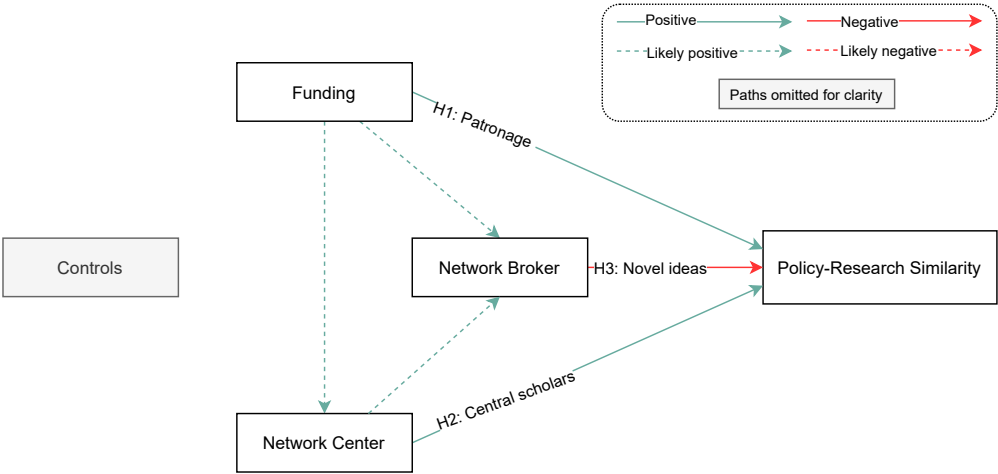
Model 5 considers all explanatory variables in a pooled OLS model. The model tests the three

main hypotheses and possible confounding relationships.

Figure C6: MODEL 6: FUNDING + NETWORK CENTER + BROKER + TIME-FE
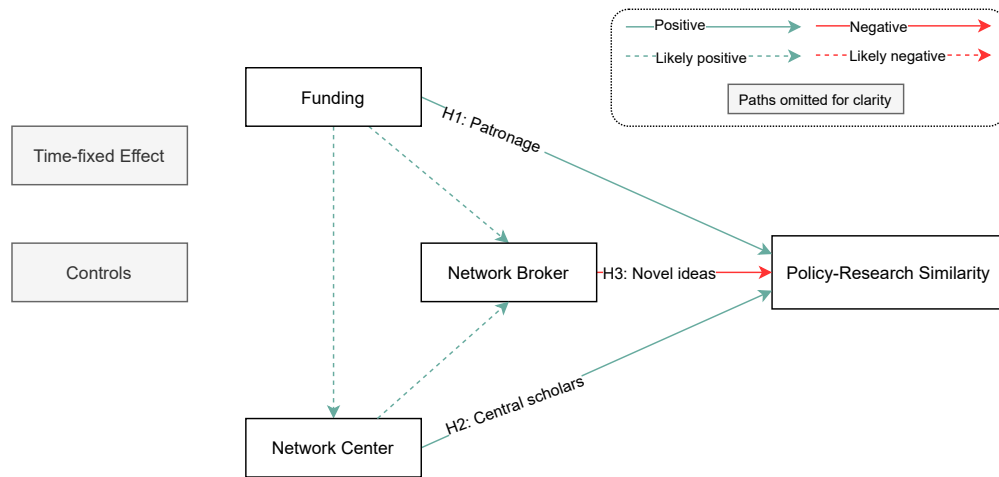
There may be unobserved variables that are consistent across entities but vary over time. For example, funding opportunities increased dramatically over the years (Figure 4), and the pressure to align research with official narratives has also increased since 2000 (Perry 2020). As a result, the positive association between funding and policy-research similarity can only be a function of time. Model 6 includes the time fixed effect to control these time-dependent unobserved variables.

Figure C7: MODEL 7: FUNDING + NETWORK CENTER + BROKER + INDIVIDUAL-FE
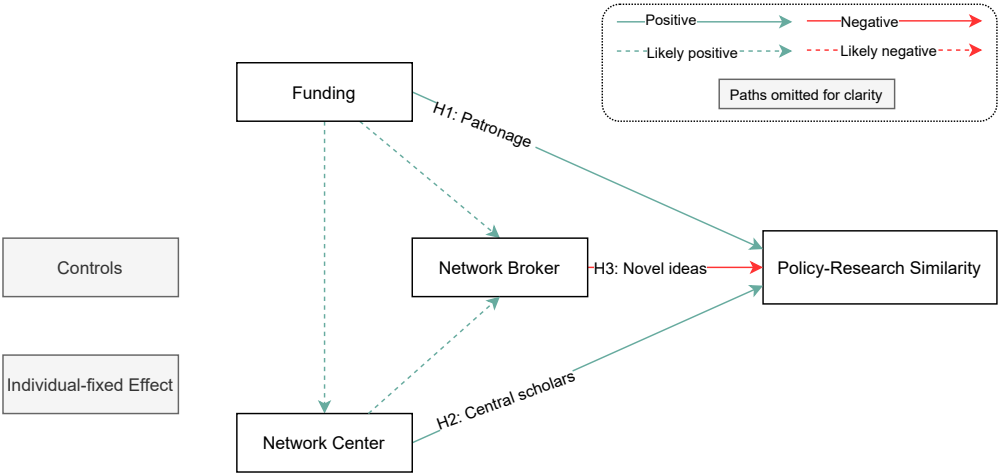
Unobserved variables at the individual level are also a concern. For instance, funding opportunities are disproportionately distributed among Chinese universities, with elite universities receiving most of the resources. Therefore, scholars in top institutions have access to more resources but also face more pressure to align their research with policy plans and government goals (Perry 2020, 14). Model 7 includes the individual fixed effect to consider the institutional and personal traits that are invariant at the individual level.

Figure C8: MODEL 8: FUNDING + NETWORK CENTER + BROKER + TWO-WAY-FE
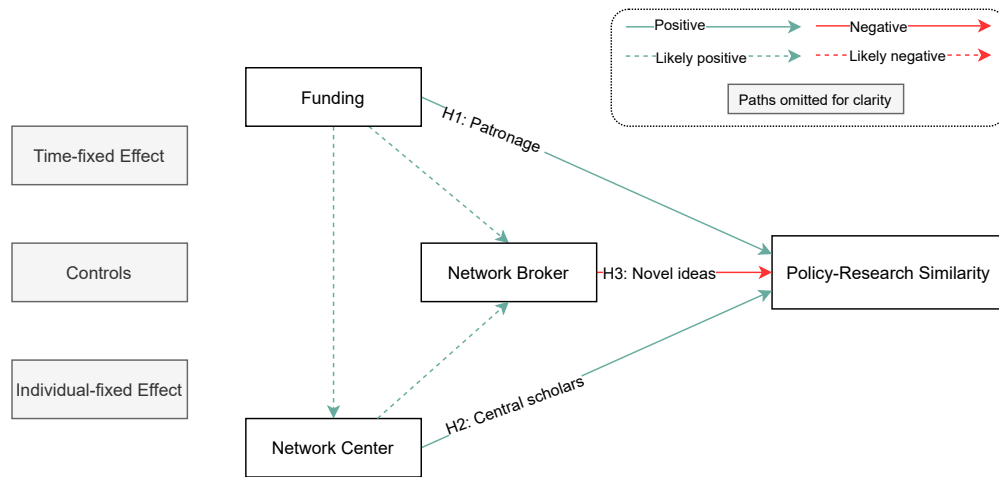
Model 8 is the full model as Eq. 2 describes.

C.2 Regression results

Table C1 presents the detailed statistics of all regression models.

Table C1: PREDICTING THE POLICY-RESEARCH SIMILARITY INDEX

|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent								
Funding	.23***	.23***	.23***		.23***	.20***	.029	−.049
	(9.4)	(9.3)	(9.4)		(9.3)	(8.2)	(.44)	(−.68)
Brokers			−.015*	−.021*	−.022*	−.019*	−.028^{+}	−.031**
			(−2.0)	(−2.2)	(−2.5)	(−2.2)	(−1.9)	(−2.7)
Centers		.15***		.19***	.17***	.16***	.16*	.18*
		(3.7)		(4.4)	(4.1)	(3.9)	(2.5)	(2.2)
Controls								
Density	−.13***	−.21***	−.13***	−.24***	−.22***	−.98	−.22**	−5.1*
	(−7.6)	(−7.9)	(−7.6)	(−8.9)	(−8.2)	(−.76)	(−3.1)	(−2.1)
Transitivity	.024^{+}	.025*	.024^{+}	.027*	.025*	.092	−.020	.37*
	(2.0)	(2.0)	(1.9)	(2.2)	(2.0)	(.97)	(−.68)	(2.2)
Clustering	.095***	.098***	.095***	.11***	.099***	.077	.078**	−.060
	(7.5)	(7.8)	(7.5)	(8.2)	(7.8)	(1.3)	(2.6)	(−.53)
Degree	−.0027	−.075**	.00090	−.074**	−.078**	−.069*	−.099^{+}	−.097^{+}
	(−.14)	(−2.7)	(.050)	(−2.7)	(−2.8)	(−2.6)	(−1.9)	(−1.8)
Diversity	−.0055	−.0030	−.0054	.0029	−.0027	−.0038	−.038	−.039
	(−.40)	(−.22)	(−.40)	(.22)	(−.20)	(−.28)	(−1.3)	(−1.4)
Citation	.028***	.025***	.031***	.030***	.029***	.031***	.011	.012
	(3.8)	(3.4)	(4.1)	(3.8)	(3.9)	(3.7)	(1.0)	(1.0)
D value	.0094	.0080	.0092	.0063	.0076	.013	.017	.029
	(.86)	(.73)	(.85)	(.57)	(.69)	(1.1)	(.69)	(1.2)
Reputation	−.0088	−.012	−.0064	−.0069	−.0084	−.0093	.021*	.020*
	(−.99)	(−1.3)	(−.75)	(−.76)	(−.99)	(−1.1)	(2.0)	(2.1)
h-index	.022*	.023*	.021*	.025**	.022*	.020*	.065***	.022
	(2.4)	(2.5)	(2.4)	(2.7)	(2.5)	(2.2)	(4.2)	(1.3)
Distance BJ	−.020^{+}	−.019^{+}	−.020^{+}	−.012	−.019^{+}	−.018^{+}	−.10	−.099
	(−1.9)	(−1.8)	(−1.9)	(−1.2)	(−1.8)	(−1.8)	(−1.0)	(−.91)
Fixed effects								
Presidency	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-fixed						Yes		Yes
Individual-fixed							Yes	Yes
Observations	7898	7898	7898	7898	7898	7898	7898	7898
Adjusted R^2	.074	.075	.074	.065	.075	.084	.083	.11

Note: Dependent variable = Policy-Research Similarity Index. See 2.3 Estimation Strategy and Online Appendix C for the interpretation of the models. We use the Z-score for all continuous variables. Within group R^2 values are reported for the fixed effect models. *t* statistics are in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

D Description of select control variables

Citation pattern. Figure D1 presents the distribution of civil society studies by citation counts and percentages. Only a very small proportion of scientific literature is cited, and the percentages of papers that are cited x times is almost between $x^{2.5}$ and x^3 (the dashed lines in Figure D1; Price 1965, 511). Compared to the English civil society research community, the Chinese community is surprisingly more active yet largely isolated, emphasizing the problem of geographic representation on this topic (Ma and Konrath 2018, 1144; Wiepking 2021).

Figure D1: DISTRIBUTION OF CITATIONS
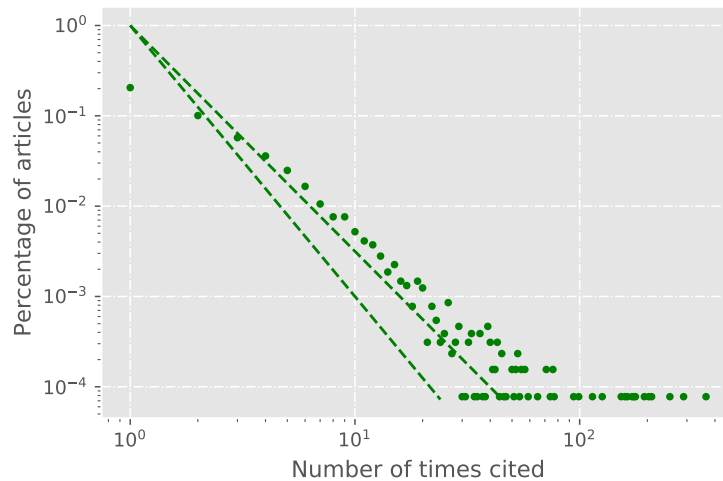
Research novelty. Based on a calculation involving 1,269,600 articles and the 7,993,932 references cited by these articles, Figure D2 visualizes the distribution of D values (see Appendix B.2 for details) of all CSSCI-indexed articles between 1998 and 2018 (both ends included). A research article can be extremely developing ($D = -1$), neutral ($D = 0$), or extremely disrupting ($D = 1$). The mean D value of all CSSCI papers is 0.022 ($SD = .097$), and the values for the 5%, 50%, and 95% quantiles are -0.009, 0, and 0.167, respectively (the green dashed lines in Figure D2). Compared to the distribution reported in Wu, Wang, and Evans (2019, 379; Figure 1), the CSSCI has more articles near both ends, suggesting that the Chinese social science community has more developing and disrupting studies.

Figure D2: CHINESE SOCIAL SCIENCES CITATION INDEX ARTICLES' DISRUPTION VALUES, 1998–2018
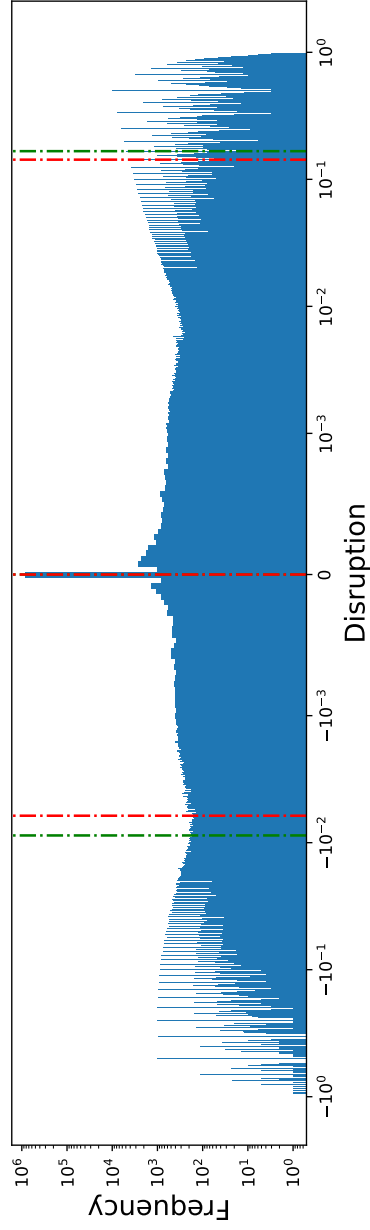
Note: The histogram presents the disruption values of all CSSCI-indexed articles between 1998 and 2018 (both ends included). A research article can be extremely developing ($D = -1$), neutral ($D = 0$), or extremely disrupting ($D = 1$). The values are calculated from 1,269,600 articles and the 7,993,932 references cited by these articles. The green dashed lines show 5%, 50%, and 95% quantile values for all the CSSCI papers, respectively; the red dashed lines show the same quantile values for civil society papers. Technical details and extensive validations have been introduced by Wu, Wang, and Evans (2019) and Funk and Owen-Smith (2016). CSSCI = Chinese Social Sciences Citation Index.

Table D1: *h*-INDEX DISTRIBUTION OF SCHOLARS STUDYING CHINA'S CIVIL SOCIETY

h-index	#Scholars	%
0	6603	46.87
1	6473	45.95
2	703	4.99
3	179	1.27
4	65	0.46
5	28	0.20
6	14	0.10
7	7	0.05
8	5	0.04
9	3	0.02
10	5	0.04
15	1	0.01
18	1	0.01
19	1	0.01

Note: Using the Chinese Social Sciences Citation Index, 1998–2018.

The mean *D* value of all civil society papers is 0.022 ($SD = .092$), and the values for the 5%, 50%, and 95% quantiles are -0.006, 0, and 0.143, respectively (the red dashed lines in Figure D2). The distribution of civil society literature is mostly concentrated around neutral knowledge (i.e., neither developing nor disrupting) in comparison to the Chinese social science literature as a whole (the green dashed lines in Figure D2). This suggests that instead of developing new or disrupting existing theoretical paradigms, scholars of civil society are more likely to apply existing frameworks.

h-index. Table D1 presents scholars' *h*-index distribution. The median *h*-index is 1, which means an author has one paper that is cited at least once. Only one author has the highest *h*-index of 19, indicating this author has 19 papers and each of these papers has been cited at least 19 times. The distribution is highly disproportionate—more than 92% of all authors have an *h*-index that is less than 2. The most productive and prestigious scholars are a very selective group.

Although not directly comparable, a study of the United Kingdom's social sciences can contextualize these numbers. The average *h*-index for a lecturer (equivalent to an assistant

professor in the United States) is 1.91 in sociology or 1.20 in political science. For a senior

lecturer (associate professor), it is 2.50 in sociology or 2.07 in political science. And for a

professor (full professor), the number is 3.67 in sociology or 3.43 in political science (London

School of Economics 2011, 87).

E   Robustness tests

E.1   Testing the lag between funding and publication

A funded project often starts to generate publications in a few years. As Figure 4 presents, the lag is usually within two years in Chinese academia. Table E1 shows the regression results of the models by lagging 0–2 years, respectively. The results do not substantially alter our findings.

E.2   Testing the influence between independent variables and collinearity

Models 1–3 in Table E4 show that by adding independent variables singly into the models, the influence between these variables is marginal. Table E2 shows the correlation matrix of the major explanatory variables, and Table E3 presents the correlation matrix of the major regression coefficients. Both tables suggest a low probability of collinearity between the explanatory variables. The only concern is the high correlation ($r = 0.79$) between being a network center and density as shown in Table E2. Because collinearity increases standard errors but does not bias the estimated coefficients, the correlation should not alter our initial findings given that the coefficient of being a network center is already significant. Models 4 and 5 in Table E4 provide supportive evidence.

E.3   Testing robustness using a lagged dependent variable

We used a lagged dependent variable to test robustness (Wilkins 2018). Because researchers can also influence an upcoming FYP, we used the PRSI-L as a dependent variable in Table E4's Model 6, and the results are consistent with the proceeding analyses.

Table E1: TESTING THE LAG BETWEEN FUNDING AND PUBLICATION

	Year + 0	Year + 1	Year + 2
Independent			
Funded	−.049	−.037	−.051
	(−.68)	(−.51)	(−.72)
Brokers	−.031**	−.028*	−.030*
	(−2.7)	(−2.5)	(−2.5)
Centers	.18*	.15$^+$	.14$^+$
	(2.2)	(1.8)	(1.8)
Controls			
Density	−5.1*	−4.5$^+$	−4.7$^+$
	(−2.1)	(−1.9)	(−1.9)
Transitivity	.37*	.35*	.36*
	(2.2)	(2.0)	(2.0)
Clustering	−.060	−.059	−.053
	(−.53)	(−.51)	(−.45)
Degree	−.097$^+$	−.097$^+$	−.083
	(−1.8)	(−1.8)	(−1.6)
Diversity	−.039	−.042	−.041
	(−1.4)	(−1.5)	(−1.5)
Citation	.012	.013	.0085
	(1.0)	(1.2)	(.69)
D value	.029	.032	.029
	(1.2)	(1.3)	(1.2)
Reputation	.020*	.019*	.021*
	(2.1)	(2.0)	(2.2)
h-index	.022	.020	.021
	(1.3)	(1.2)	(1.2)
Distance BJ	−.099	−.094	−.040
	(−.91)	(−.91)	(−.37)
Fixed effects			
Presidency	Yes	Yes	Yes
Time-fixed	Yes	Yes	Yes
Individual-fixed	Yes	Yes	Yes
Observations	7898	7898	7898
Adjusted R^2	.11	.11	.11
bic	990	950	1000
rho	.64	.64	.64

Note: *t* statistics in parentheses. $^+$ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table E2: CORRELATION MATRIX OF MAJOR EXPLANATORY VARIABLES

	Brok.	Cent.	Dens.	Tran.	Clus.	Degr.	Dive.	Cita.	D	Repu.	h	Dist.
Broker	1.0											
Center	.22	1.0										
Density	.090	.79	1.0									
Transitivity	−.0033	.18	.24	1.0								
Clustering	.038	.24	.33	.34	1.0							
Degree	.15	.45	−.036	.023	.038	1.0						
Diversity	−.093	−.27	.019	.0083	−.014	−.56	1.0					
Citation	.27	.13	.063	−.023	−.026	.053	−.069	1.0				
D value	.024	.086	.067	−.016	−.021	.011	−.021	.12	1.0			
Reputation	.23	.067	.029	−.0049	.010	.0051	−.018	.29	.012	1.0		
h-index	.074	−.0040	−.034	.0015	.032	.051	−.042	.17	.0054	.27	1.0	
Distance BJ	−.019	−.033	.0016	−.0010	−.011	−.046	.047	−.042	−.054	−.017	−.014	1.0

Table E3: CORRELATION MATRIX OF MAJOR REGRESSION COEFFICIENTS

	Fund.	Brok.	Cent.	Dens.	Tran.	Clus.	Degr.	Dive.	Cita.	D	Repu.	h	Dist.
Funded	1.0												
Broker	−.036	1.0											
Center	−.038	−.44	1.0										
Density	.18	−.037	−.0000	1.0									
Transitivity	−.15	.00090	−.014	−.92	1.0								
Clustering	.065	.042	.017	.52	−.76	1.0							
Degree	−.12	.014	−.55	.022	−.029	.012	1.0						
Diversity	−.060	.063	.019	.0074	−.051	.024	.36	1.0					
Citation	.096	.13	−.040	.038	−.023	.015	−.042	−.058	1.0				
D value	.00090	−.025	.098	.050	−.031	−.016	−.089	.045	−.13	1.0			
Reputation	−.090	−.25	−.097	−.025	.012	.023	.19	−.0027	−.49	.055	1.0		
h-index	−.31	.0098	.066	−.039	−.036	.053	.012	−.019	−.033	.011	.24	1.0	
Distance BJ	−.083	−.028	−.0042	.019	−.029	.055	−.018	−.066	.028	−.022	−.021	−.0021	1.0

Table E4: ADDITIONAL ROBUSTNESS TESTS

	(1)	(2)	(3)	(4)	(5)	(6)
Independent						
Funded	−.045	−.042	−.049	−.049	−.042	.035
	(−.61)	(−.57)	(−.68)	(−.68)	(−.57)	(.38)
Brokers		−.022*	−.031**	−.031**	−.022*	−.027*
		(−2.2)	(−2.7)	(−2.7)	(−2.2)	(−2.3)
Centers			.18*	.18*		.15$^+$
			(2.2)	(2.2)		(1.9)
Control						
Density	−4.9*	−5.0*	−5.1*		−5.0*	1.3
	(−2.1)	(−2.1)	(−2.1)		(−2.1)	(.41)
Transitivity	.36*	.37*	.37*	−.069	.37*	−.21
	(2.1)	(2.2)	(2.2)	(−.84)	(2.2)	(−1.6)
Clustering	−.053	−.059	−.060	.069	−.059	.099
	(−.47)	(−.52)	(−.53)	(.72)	(−.52)	(.77)
Degree	−.045	−.026	−.097$^+$	−.097$^+$	−.026	−.13$^+$
	(−1.0)	(−.56)	(−1.8)	(−1.8)	(−.56)	(−1.9)
Diversity	−.039	−.041	−.039	−.039	−.041	−.053
	(−1.4)	(−1.4)	(−1.4)	(−1.4)	(−1.4)	(−1.4)
Citation	.012	.010	.012	.012	.010	.010
	(1.0)	(.92)	(1.0)	(1.0)	(.92)	(.80)
D value	.028	.027	.029	.029	.027	.036
	(1.1)	(1.1)	(1.2)	(1.2)	(1.1)	(1.3)
Reputation	.016$^+$	.022*	.020*	.020*	.022*	.020*
	(1.7)	(2.3)	(2.1)	(2.1)	(2.3)	(2.0)
h-index	.023	.018	.022	.022	.018	.016
	(1.2)	(.97)	(1.3)	(1.3)	(.97)	(.61)
Distance BJ	−.099	−.098	−.099	−.099	−.098	−.051
	(−.92)	(−.90)	(−.91)	(−.91)	(−.90)	(−.28)
Fixed effects						
Presidency	Yes	Yes	Yes	Yes	Yes	Yes
Time-fixed	Yes	Yes	Yes	Yes	Yes	Yes
Individual-fixed	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7898	7898	7898	7898	7898	5710
Adjusted $R^{2.0}$	.11	.11	.11	.11	.11	.12
bic	1000	1000	990	990	1000	31
rho	.64	.64	.64	.64	.64	.63

Note: Models 1–3: Entering independent variables singly. Models 4 and 5: Test the influence of collinearity between being network center and density. Models 1–5 use PRSI, and Model 6 uses PRSI-L, as dependent variables. Using Z-score for all continuous variables. Within group R^2 reported for fixed effect models. *t* statistics in parentheses. $^+$ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

References

Abrahamson, Eric, and Lori Rosenkopf. 1997. "Social Network Effects on the Extent of Innovation Diffusion: A Computer Simulation." *Organization Science* 8 (3): 289–309. Accessed March 31, 2020. https://doi.org/10.1287/orsc.8.3.289.

Audia, Pino G., and Jack A. Goncalo. 2007. "Past Success and Creativity over Time: A Study of Inventors in the Hard Disk Drive Industry." *Management Science* 53 (1): 1–15. Accessed March 18, 2020. https://www.jstor.org/stable/20110671.

Baird, Laura M., and Charles Oppenheim. 1994. "Do Citations Matter?" *Journal of Information Science* 20 (1): 2–15. Accessed November 10, 2019. https://doi.org/10.1177/016555159402000102.

Boswell, Christina. 2009. *The Political Uses of Expert Knowledge: Immigration Policy and Social Research.* Cambridge University Press.

Bozeman, Barry. 1986. "The Credibility of Policy Analysis: Between Method and Use." *Policy Studies Journal; Urbana, Ill.* (Urbana, Ill., United States, Urbana, Ill.) 14 (4): 519–539. Accessed March 16, 2020. https://search.proquest.com/docview/1300124535/citation/F01F660CD024E56PQ/1.

Bozeman, Barry, Jan Youtie, Eriko Fukumoto, and Marla Parker. 2019. "When Is Science Used in Science Policy? Examining the Importance of Scientific and Technical Information in National Research Council Reports." *Review of Policy Research* 36 (2): 262–289. Accessed February 29, 2020. https://doi.org/10.1111/ropr.12324.

Brandes, Ulrik, Stephen P. Borgatti, and Linton C. Freeman. 2016. "Maintaining the Duality of Closeness and Betweenness Centrality." *Social Networks* 44:153–159. Accessed June 9, 2021. https://doi.org/10.1016/j.socnet.2015.08.003.

Ebadi, Yar M., and James M. Utterback. 1984. "The Effects of Communication on Technological Innovation." *Management Science* 30 (5): 572–585. Accessed March 31, 2020. https://doi.org/10.1287/mnsc.30.5.572.

Funk, Russell J., and Jason Owen-Smith. 2016. "A Dynamic Network Measure of Technological Change." *Management Science* 63 (3): 791–817. Accessed October 10, 2019. https://doi.org/10.1287/mnsc.2015.2366.

Garfield, Eugene. 1955. "Citation Indexes for Science: A New Dimension in Documentation through Association of Ideas." *Science* 122 (3159): 108–111. Accessed November 10, 2019. https://doi.org/10.1126/science.122.3159.108.

Girvan, M., and M. E. J. Newman. 2002. "Community Structure in Social and Biological Networks." *Proceedings of the National Academy of Sciences* 99 (12): 7821–7826. Accessed January 5, 2015. https://doi.org/10.1073/pnas.122653799.

Gonzalez-Brambila, Claudia N., Francisco M. Veloso, and David Krackhardt. 2013. "The Impact of Network Embeddedness on Research Output." *Research Policy* 42 (9): 1555–1567. Accessed October 10, 2019. https://doi.org/10.1016/j.respol.2013.07.008.

Hirsch, J. E. 2005. "An Index to Quantify an Individual's Scientific Research Output." *Proceedings of the National Academy of Sciences* 102 (46): 16569–16572. Accessed November 14, 2019. https://doi.org/10.1073/pnas.0507655102.

Holland, Paul W., and Samuel Leinhardt. 1970. "A Method for Detecting Structure in Sociometric Data." *American Journal of Sociology* 76 (3): 492–513. Accessed April 9, 2019. https://www.jstor.org/stable/2775735.

Kuhn, Thomas S. 1970. *The Structure of Scientific Revolutions.* Second Edition, Enlarged. International Encyclopedia of Unified Science. Foundations of the Unity of Science, v. 2, No. 2. Chicago: University of Chicago Press.

London School of Economics. 2011. "Maximising the Impacts of Your Research: A Handbook for Social Scientists." Accessed November 17, 2019. https://blogs.lse.ac.uk/impactofsocialsciences/2011/04/14/maximizing-the-impacts-of-your-research-a-handbook-for-social-scientists-now-available-to-download-as-a-pdf/.

Luce, R. Duncan, and Albert D. Perry. 1949. "A Method of Matrix Analysis of Group Structure." *Psychometrika* 14 (2): 95–116. Accessed March 15, 2020. https://doi.org/10.1007/BF02289146.

Ma, Ji, and Sara Konrath. 2018. "A Century of Nonprofit Studies: Scaling the Knowledge of the Field." *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 29 (6): 1139–1158. Accessed November 27, 2018. https://doi.org/10.1007/s11266-018-00057-5.

Moravcsik, Michael J., and Poovanalingam Murugesan. 1975. "Some Results on the Function and Quality of Citations." *Social Studies of Science* 5 (1): 86–92. Accessed November 10, 2019. https://doi.org/10.1177/030631277500500106.

Oldham, Stuart, Ben Fulcher, Linden Parkes, Aurina Arnatkevičiūtė, Chao Suo, and Alex Fornito. 2019. "Consistency and Differences between Centrality Measures across Distinct Classes of Networks." *PLOS ONE* 14 (7): e0220061. Accessed June 9, 2021. https://doi.org/10.1371/journal.pone.0220061.

Onnela, Jukka-Pekka, Jari Saramäki, János Kertész, and Kimmo Kaski. 2005. "Intensity and Coherence of Motifs in Weighted Complex Networks." *Physical Review E* 71 (6): 065103. Accessed March 15, 2020. https://doi.org/10.1103/PhysRevE.71.065103.

Perry, Elizabeth J. 2020. "Educated Acquiescence: How Academia Sustains Authoritarianism in China." *Theory and Society* 49 (1): 1–22. Accessed March 4, 2021. https://doi.org/10.1007/s11186-019-09373-1.

Perry-Smith, Jill E. 2006. "Social Yet Creative: The Role of Social Relationships in Facilitating Individual Creativity." *The Academy of Management Journal* 49 (1): 85–101. Accessed December 6, 2019. https://doi.org/10.2307/20159747.

Phelps, Corey, Ralph Heidl, and Anu Wadhwa. 2012. "Knowledge, Networks, and Knowledge Networks: A Review and Research Agenda." *Journal of Management* 38 (4): 1115–1166. Accessed September 23, 2019. https://doi.org/10.1177/0149206311432640.

Price, Derek J. de Solla. 1965. "Networks of Scientific Papers." *Science* 149 (3683): 510–515. Accessed February 13, 2015. https://doi.org/10.1126/science.149.3683.510.

Salamon, Lester M., and S. Wojciech Sokolowski. 2016. "Beyond Nonprofits: Re-conceptualizing the Third Sector." *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 27 (4): 1515–1545. Accessed August 4, 2016. https://doi.org/10.1007/s11266-016-9726-z.

Schoch, David, Thomas W. Valente, and Ulrik Brandes. 2017. "Correlations among Centrality Indices and a Class of Uniquely Ranked Graphs." *Social Networks* 50:46–54. Accessed June 9, 2021. https://doi.org/10.1016/j.socnet.2017.03.010.

Shier, Micheal L., and Femida Handy. 2014. "Research Trends in Nonprofit Graduate Studies A Growing Interdisciplinary Field." *Nonprofit and Voluntary Sector Quarterly* 43 (5): 812–831. Accessed November 26, 2014. https://doi.org/10.1177/0899764014548279.

Smith, David Horton. 2013. "Growth of Research Associations and Journals in the Emerging Discipline of Altruistics." *Nonprofit and Voluntary Sector Quarterly,* 0899764013495979. Accessed August 18, 2016. http://nvs.sagepub.com/content/early/2013/07/15/0899764013495979.abstract.

Uzzi, Brian, and Jarrett Spiro. 2005. "Collaboration and Creativity: The Small World Problem." *American Journal of Sociology* 111 (2): 447–504. Accessed March 31, 2020. https://doi.org/10.1086/432782.

Wiepking, Pamala. 2021. "The Global Study of Philanthropic Behavior." *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 32 (2): 194–203. Accessed January 9, 2022. https://doi.org/10.1007/s11266-020-00279-6.

Wilkins, Arjun S. 2018. "To Lag or Not to Lag?: Re-Evaluating the Use of Lagged Dependent Variables in Regression Analysis*." *Political Science Research and Methods* 6 (2): 393–411. Accessed November 14, 2019. https://doi.org/10.1017/psrm.2017.4.

Wu, Fengshi. 2017. "An Emerging Group Name "Gongyi": Ideational Collectivity in China's Civil Society." *China Review* 17 (2): 123–150. Accessed March 21, 2022. https://muse.jhu.edu/article/664745.

Wu, Lingfei, Dashun Wang, and James A. Evans. 2019. "Large Teams Develop and Small Teams Disrupt Science and Technology." *Nature* 566 (7744): 378. Accessed May 4, 2019. https://doi.org/10.1038/s41586-019-0941-9.

Zhang, Zhibin, and Chao Guo. 2021. "Nonprofit-Government Relations in Authoritarian China: A Review and Synthesis of the Chinese Literature." *Administration & Society* 53 (1): 64–96. Accessed October 14, 2021. https://doi.org/10.1177/0095399720934891.