



Friends with benefits: Patronage networks and distributive politics in China[☆]

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ABSTRACT

Existing research on distributive politics mainly focuses on the influence of electoral competition between political parties, but less is known about non-electoral mechanisms of resource allocation inside a dominant party. This study examines how informal patron–client networks within the ruling Communist Party shape the distribution of intergovernmental transfers in China, a major one-party regime. Using a new dataset on city-level fiscal transfers and a novel method to infer informal political connections through past promotions, we show that provincial leaders allocate significantly more transfers to localities governed by officials who are part of their networks. This bias persists even when we use a specification that only exploits variations in connection caused by exogenous turnovers of higher level leadership. We evaluate two plausible motivations behind this bias—network-based policy coordination and collective corruption—and find evidence in stronger support of the former. Our findings suggest that private networks may function as an important, albeit costly, tool of mobilization in one-party systems.

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“A party without factions inside is associated with all sorts of strange things.” –Mao Zedong

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1. Introduction

How politics affects the distribution of public resources is a central topic in political economy. A vast body of research has shown that, in multi-party democracies, electoral competition motivates higher level politicians to allocate more favorably to their co-partisans (Berry et al., 2010; Broilo and Nannicini, 2012; Fournaies and Mutlu-Eren, 2015; Larcinese et al., 2006; Lauderdale, 2008; Solé-Ollé and Sorribas-Navarro, 2008). However, politics also happens *within* a party. Many democracies, including Japan, India, South Africa, and Sweden, have historically been governed by a single dominant political party. One-party regimes are also the most common type of autocracies,¹ accounting for about 60% of the authoritarian

¹ One-party regimes include both single-party regimes, where no opposition party is allowed (e.g., China and Vietnam), and hegemonic party regimes, where opposition parties are permitted but severely constrained (e.g., Singapore, Zimbabwe, and Russia).

regimes in the post-World War 2 era (Magaloni and Kricheli, 2010). Under those systems, allocation of scarce resources is often determined less by electoral pressure or partisan identities than by intra-party maneuvering. However, our understanding of the specific mechanisms and incentives that shape distributive outcomes within a single party still remains limited.

In this study, we investigate whether and how patron–client networks within the Chinese Communist Party (CCP), the ruling party of China, influence the distribution of intergovernmental grants. These informal, personalized relations, variously called by names such as factions, cliques, or patronage networks, are quite common in dominant parties in both democratic and authoritarian settings (Geddes, 1994; Grindle, 1977; Nathan, 1973; Willerton, 1992). Most of the existing studies have focused on these networks' role in facilitating elite advancement (e.g., Jia et al., 2015; Shih et al., 2012).² Some qualitative and ethnographic studies suggest that such networks might also serve as an important mechanism for allocating resources (Bettcher, 2005; Hillman, 2014; Ike, 1972), but systematic, quantitative analysis on how and why they matter in distribution remains limited.

Empirically, there are at least two main challenges in identifying the distributive impact of informal networks. The first challenge is measurement: Informal political alignments are by nature hidden and difficult to observe directly. This is especially the case for authoritarian regimes, wherein the politics is inherently less transparent than in democracies. The second challenge is causal identification: Conditions that give rise to the formation of networks may be simultaneously correlated with other, more objective distributive priorities. Politicians serving in an important locality, for example, may enjoy a level of bargaining power that enables them to both claim more fiscal transfer from above and be a more valuable political ally for other elites.

To address the first problem, we make use of a newly available biographical dataset that contains fully digitized resumes of over 4000 Chinese officials and adopt a novel strategy that infers patron–client relations from past promotions. The key idea behind our measure is to link junior officials with senior leaders who promoted them to important local leadership posts. We show, through various validation tests, that our measure captures the co-movement of the patron's and client's careers with a higher level of precision than the existing alternatives do.

To address the second problem, we exploit a unique feature of China's cadre management system—the regular reshuffling of leading officials at both provincial and city levels, which generates variations in connectedness between city and provincial governments both across time and space. The reshuffling of provincial patrons, in particular, creates disruptions in the existing patron–client networks that are plausibly exogenous to the socioeconomic conditions at the city level. These variations enable us to estimate the causal impact of personal connections while controlling for important leader- and locality-specific heterogeneity through various fixed effects.

Our results provide evidence that informal connections with key decision-makers matter for the allocation of resources inside the CCP. The baseline estimate suggests that, all else equal, a city with political leaders who are clients of the incumbent provincial secretary (i.e., the de facto political leader of a province) receives on average 4–8% more transfers than a city without. This difference amounts to an annual premium of 106 to 226 million yuan (16 to 34 million U.S. dollars) for a city with an average level of transfer in our sample. The estimate remains strong even when we use a highly

restrictive specification that includes fixed effects for every unique city leadership pair—essentially removing all time-invariant heterogeneity associated with city leadership and confining the sources of variation to switches of provincial leaders only.

We then investigate two possible motivations behind favorable allocation to one's clients. One possibility is that informal networks bring resources from above because they strengthen mutual trust between political superiors and subordinates, which provides the basis for policy coordination in settings where principal–agent problems are prevalent. Using new, text-based data on subnational governments' policy priorities, we find that, consistent with this mechanism, city leaders with connections to top provincial leaders are more likely to publicly express support for both the provincial leadership and the policies that the provincial authority prioritizes. This suggests that favoritism may be a way for patrons to advance their policy agenda in a low-trust political environment. In addition to policy coordination, another common explanation for distributive favoritism is that it reflects a form of collective corruption, whereby clients help their patrons steal the money from public coffers (Brollo et al., 2013; Rose-Ackerman, 1999). However, our analysis finds weaker support for this mechanism: Patrons who were governing more corrupt provinces or were investigated for corruption exhibit no greater favoritism toward their clients than do other patrons.

This study contributes to the ongoing debates about the determinants of allocation of intergovernmental transfers. Earlier studies in this literature emphasize the important fiscal and economic functions that intergovernmental transfer serves in a decentralized state, such as supplementing local budget, reducing regional disparity, and financing projects with substantial spillover effects (Besfamille, 2004; Bird and Smart, 2002). However, other studies suggest that transfer may also be motivated by political goals, such as vote-buying or quenching social unrest (Bugarin and Marciniuk, 2017; Carozzi and Repetto, 2016; Treisman, 1996). We provide evidence consistent with the latter view and highlight the important distributive impacts of intra-party rather than inter-party dynamics.

A growing body of research has examined distributive politics in nondemocratic settings. So far, most of the studies in this literature have focused on the role of national leaders and their tendency to favor those who share the same ethnic, tribal, or hometown backgrounds (Dickens, 2018; Do et al., 2013; Franck and Rainer, 2012; Hodler and Raschky, 2014). Our research extends this line of research in two ways. First, we shift the analytical focus from national leaders to subnational politicians, who are known to be important actors in decentralized systems but often do not receive as much attention from researchers as national-level players (Albertus, 2015; Nicholson-Crotty, 2004). Second, we provide a different interpretation of the incentives that drive distributive favoritism, focusing on career-related concerns rather than taste-based preferences. Our findings suggest that one reason why patron–client relations flourish under one-party regimes may be that these informal networks can serve as a mechanism of policy coordination for high-level politicians in an environment where institution-based trust is low.

2. Background

2.1. Fiscal transfer in China

Fiscal transfers are one of the most important policy resources in contemporary China. Under the current fiscal system, which has been in place since 1994, the center claims the lion's share of the fiscal revenue (~50%), but delegates most (>70%) spending responsibilities to local governments. The gap between revenue and expenditure at the local level is filled by fiscal transfers, which are estimated to account for about half the local expenditure (Shen et al., 2012). Fiscal transfers not only cover the daily operating expenses of local

² Recently, there is also a small but growing body of research on how informal networks affect information aggregation (Dewan and Squintani, 2016) and/or performance of political agents (Hassan, 2017; Jiang, 2018; Xu, 2018) in various systems.

governments, but also fund various policy programs and development projects that are directly connected to the economic and policy performance of local officials.

Transfers to city governments can come both from the province and directly from central ministries. While there is no systematic information regarding the exact breakdown between the two sources, some researchers note that the provincial authority is usually responsible for dispensing the bulk of the funds. Our own calculation based on data from the [Ministry of Finance \(2007\)](#) this observation: At least between 2001 and 2006, transfers from the province made up about 70% of the total transfers received by cities on average, whereas funds directly from central ministries accounted for the remaining 30%. Fiscal transfers fall into one of three categories: earmarked transfers, general-purpose transfers, and tax returns, each accounting for roughly a third of the total amount.

2.2. Patrons, clients, and subnational distributive politics

Patron–client networks have deep roots in the Chinese political culture that can be traced back to Imperial times ([Kracke, 1953](#)) and the Republican era ([Nathan, 1976](#)). This tradition has only been reinforced with the advent of the CCP and the establishment of an all-powerful state. A long-standing line of research on elite politics in China has documented the importance of factions, defined as informal networks of clientelistic ties between leaders and followers, as the primary means by which political leaders exercise power and influence ([Dittmer, 1978](#); [Huang, 2000](#); [Nathan, 1973](#)). The authority structure within the Chinese bureaucracy is characterized as highly personalized, governed not by formal rules but by “human relationships that extend from the leading figure to his deputies” ([Pye, 1995](#), p.39). The extent of a politician’s real political power depends heavily on the breadth and depth of his or her informal power base ([Dittmer, 1978](#)).

While the practice of patronage politics permeates all layers of the Chinese system, our empirical investigation focuses on the interactions between the provincial and the city levels. The key patron of interest, the provincial party secretary, is the head of the provincial party organ and the de facto ruler of a province. The provincial secretary typically has the final say on major political, policy, and economic affairs within a province, and this gives him/her tremendous influence over the allocation of fiscal resources, such as transfers.³ For potential clients, we focus on city party secretaries and mayors, who are leading politicians in city governments. City leaders receive resources from the provincial governments and use them to fund various policy programs in social welfare, public health, education, and infrastructure development. Although nominally the provincial government is supposed to treat all cities equally in fiscal allocation, and every city should use the funds it receives to faithfully carry out the province’s policy order, the actual relationship between city and province is often more contingent and depends on the quality of the personal relationship between individual leaders.

³ The influence can be exerted both ex ante at provincial standing committee meetings where budgetary matters are deliberated and decided on, and ex post, during the actual allocation process. Ex ante, provincial secretaries can determine the location of government programs that come with earmarked transfer support, or renegotiate the formulae used for calculating the general-purpose transfers when they see a need to do so ([Zhang, 2006](#)). Even for grants coming from the central ministry, provincial governments often have to act as gatekeepers ([Hillman, 2014](#), 128–129). This enables provincial leaders to selectively filter applications in advance. Sometimes, the province must also agree to contribute a fraction of the funds (*caizheng peitao zijin*) as a precondition for applications to be approved, and/or be in charge of overseeing the distribution of part of the budget. This means that even the allocation of central grants can be influenced by provincial leaders’ discretion.

As will be discussed in more detail below, provincial secretaries have a very significant say over the appointment of city leaders, and they typically have closer personal ties with the city leaders that they appointed than with those who were appointed by their predecessors.

Existing research suggests that provincial secretaries have at least two plausible reasons to favor their own clients in distributing transfers. One is *collective corruption*. The literature on corruption has long emphasized the supporting role of informal trust networks in corrupt activities ([Rose-Ackerman, 1999](#)), and recent studies on other developing countries suggest that fiscal transfers from above are an important source of local corruption ([Brollo et al., 2013](#)). In the case of China, corruption has similarly been characterized as a “collective venture” ([Gong, 2002](#)), involving a wide range of actors and government officials at several different levels. Provincial leaders may prefer channeling public funds to city leaders within their networks because local clients can help them pocket a greater share of the money for private enrichment.

Alternatively, another reason why provincial leaders may favor clients is because there is better *policy coordination* within networks. Like many other hierarchically organized systems, the top–down transmission of policy orders in one–party systems like China often incurs substantial agency cost. Lower level subordinates can delay, distort, and even intentionally sabotage orders from the higher level when it is not in their interest to implement them. Political superiors therefore often do not have the full confidence that the resources they give to subordinates will be utilized effectively to advance the superiors’ preferred policy goals. As a trust-building institution, informal ties can provide a partial solution to this problem through regular exchange of favors and linked careers ([Rudolph and Rudolph, 1979](#); [Scott, 1972](#)). In this case, those who enjoy personal connections to the provincial secretary may be more willing to expend effort and resources to help their superior professionally because they have a long-term stake in their superior’s career success;⁴ clients’ loyalty will in turn make the provincial secretary more generous in providing resources to them.⁵

It is important to mention, of course, that these two motivations are certainly not mutually exclusive and both are ultimately motivated by private interests. However, they may have quite different effects on the broader society. Generally speaking, bias induced by the coordination motivation may be less pernicious than those motivated by outright stealing, as the effort at policy implementation can sometimes benefit the public at large (although not always). A priori, we do not have a strong position as to which of the incentives (or both) are at work, and will let the matter be determined by the empirical evidence.

3. Data and empirical strategy

3.1. Data on fiscal transfers

The data on fiscal transfers are collected from *Public Finance Statistical Materials of Prefectures, Cities, and Counties (quanguo dishixian*

⁴ One piece of evidence for this is presented in Appendix D.2, where we show that clients enjoy a higher rate of promotion when their patrons advance to high-level national leadership positions.

⁵ As a prominent anecdote in line with patronage networks’ coordination role, during the nationwide policy campaign to curb rising inflation in 2004, the most enthusiastic responses came from provincial secretaries who had close ties with the then incumbent Hu–Wen administration; by contrast, provincial secretaries promoted under the former general secretary showed only lackluster reactions and sometimes even actively resisted it. See <https://goo.gl/XNMHqP> and <https://goo.gl/Ndg5sh>. The use of patronage networks as a tool for policy coordination is also not unique to China. For examples from other one–party regimes, see [Easter \(2000\)](#) and [Willerton \(1992\)](#) on the Soviet Union and [Hassan \(2017\)](#) on Kenya.

caizheng tongji ziliao) from 2001 to 2009. This source is compiled by the Ministry of Finance and contains extensive information about government budgetary revenues and expenditures for all subnational entities. For the analyses below, we use the portion of data from all prefecture and sub-provincial level units, but exclude those in ethnic minority regions (*zizhi qu*) or centrally administered municipalities (*zhixia shi*), which tend to receive more direct transfers from the center. The resulting panel contains observations for 279 localities for 9 years.⁶

3.2. Biographical database for Chinese leaders

The data on political leaders are drawn from the China Political Elite Database (CPED), a new database that contains extensive biographical information about key municipal, provincial, and national leaders in China since the late 1990s. For each leader, the database provides standardized information about the time, place, organization, and rank of every job assignment listed in his or her curriculum vitae (CV), which is collected from government websites, yearbooks, and other trustworthy internet sources (detailed in the Online Appendix A). We match each city-year spell in the panel dataset with a city secretary and a mayor. In cases where multiple leaders hold the same post within a given spell, the person with the longest tenure is chosen.

3.3. Measuring patron–client relations

Measuring informal relations in authoritarian regimes has always been a challenge for empirical researchers. In studies of Chinese politics, the most commonly used approach for measuring informal connections is based on whether two individuals had shared work or school experiences in the past, as well as shared hometowns. While overlapping experience is certainly an important prerequisite for establishing personal ties, a potential problem with focusing on joint experience alone is that such experience does not say much about the nature or actual quality of the relationship. Two individuals who have worked together in the past may be competitors instead of friends. Moreover, a practical difficulty of using this overlap-based method in the subnational context is that provincial patrons are typically transferred from outside of a province and hence have few prior ties with lower-level officials, who usually have most of their careers within the province. To overcome these challenges, we exploit unique institutional features of the personnel appointment system to propose an alternative measure. Our measure identifies patron–client relations by linking lower level officials with the provincial leaders who were in power when those officials were first promoted to key city leadership positions. Specifically, we define a city leader *C* as a client of a provincial leader *P* if and only if the following condition is met:

- *C* was first promoted to a prefecture-level city leadership position (as city secretary or mayor) from within the province when *P* was serving as the provincial secretary.

We provide several illustrative examples of how this measure works in Appendix D.1. Focusing on first appointment to city

leadership allows us to reliably measure strong political connections at the subnational level for two reasons. First, city leadership positions are highly valuable positions within the Chinese system. In addition to the political power and ample rent-seeking opportunities that these positions typically offer, experience as a city leader is also a key political credential for promotion to many higher level offices.⁷ Second, under China's current *one-level down* personnel management system, the authority to appoint prefecture-level city leaders lies with the province. The provincial secretary typically has the greatest influence over these appointments, and is often regarded as the "person of first responsibility" (*diyizeren ren*) on personnel issues by the higher authority.⁸ For those officials who are promoted to city leadership for the first time, therefore, we should expect the majority of them to have strong ties with the provincial party secretary. In Appendix D.2, we conduct several validation tests to show that there is indeed a strong correlation between the identified patrons and clients in terms of their subsequent career outcomes: City leaders are significantly more likely to be promoted to the next level after their provincial patrons have advanced to the Politburo (Table A.3), and patrons' political survival strongly predicts whether a city leader will receive a disciplinary sanction in the future (Table A.4). Our measure also appears to yield more precise estimates of these relationships than the overlap-based alternative, suggesting that it may be the more appropriate measure in the subnational context of our study.

One potential concern is that when promoting a candidate to a city leadership post, the superior may take into account a number of considerations, such as the candidate's competence or past performance, which may affect his/her future ability to obtain transfers.⁹ The issue of prior selection is less of a problem for our measurement because regardless of what objective selection criteria are being used, all city leaders have to go through *the same* selection process in order to be observed in the sample. Essentially, our main empirical design is to compare city leaders who are appointed by the current provincial secretaries with those appointed by the previous secretaries. A priori, there is little reason to believe that those selected by the incumbents would be systematically more or less capable than those selected by their predecessors. Later, we also adopt a more restrictive specification with fixed effects for city leader pairs, essentially focusing only on change in transfer within the same leadership duo before and after a change in connection status.

Table 1 presents the summary statistics. According to our measurement, 77% of the city-year observations record at least one of the two leaders being connected to the provincial secretary and 36% of the observations record both; 42% of the observations have a connected city secretary, and 72% have a connected mayor. It is also worth noting that, consistent with our previous discussion about the challenge of applying the conventional overlap-based measure at the subnational level, only about 7% of the observations have provincial secretaries with local working experience (i.e., serving in city-level posts of the same province) and an even smaller fraction of observations are coded as hometowns for incumbent provincial secretaries or governors (0.7% and 2.3%, respectively).

⁷ There are approximately 40,000 positions in China that are of the same rank as city leaders (prefecture/bureau-level), but only about 660 city leadership positions. However, 5 out of the 7 current Politburo Standing Committee (PSC) members and 12 out of the 18 Politburo (PB) members served as city leaders earlier in their careers.

⁸ Personal interview, SH1601, JS1602.

⁹ The question of how clients are recruited is a fascinating one that deserves more future work in itself. Our interviews with government officials suggest that a number of considerations can be at play, including the potential client's intelligence, personality, social capital within the local elite community, and so on.

⁶ In this article, we use "city" to refer specifically to prefecture-level cities (including those with a vice-provincial level status). Provincial-level municipalities (*zhixiashi*) such as Beijing, Shanghai, and Chongqing are not part of our sample. Fig. A.3 in the online appendix provides a visual illustration of the sample of cities covered in our data.

Table 1
Summary statistics.

	Mean	SD	Min	Max	N
<i>Panel A: city leaders' characteristics</i>					
No. of connections with provincial secretary	1.13	0.76	0	2	2496
Connection with prov sec (1 = yes)	0.77	0.42	0	1	2496
City secretary connected to prov sec (1 = yes)	0.42	0.49	0	1	2496
Mayor connected to prov sec (1 = yes)	0.72	0.45	0	1	2496
% clients reaching 57 by next Party Congress (1 = 50%, 2 = 100%)	0.22	0.55	0	2	2496
City secretary: female	1.02	0.15	1	2	2484
Mayor: female	1.05	0.21	1	2	2484
Secretary: attended college before 30	0.49	0.50	0	1	2496
Mayor: attended college before 30	0.49	0.50	0	1	2496
City secretary: tenure length	1.83	1.71	0	9	2484
Mayor: tenure length	1.55	1.57	0	11	2484
City secretary: age >57	0.077	0.27	0	1	2496
Mayor: age >57	0.034	0.18	0	1	2496
<i>Panel B: provincial level covariates</i>					
Local provincial secretary	0.071	0.26	0	1	2496
Prov sec's hometown	0.0068	0.082	0	1	2496
Governor's hometown	0.023	0.15	0	1	2496
Prov sec investigated for corruption	0.11	0.32	0	1	2496
Prov sec connected to general secretary	0.22	0.42	0	1	2496
Firms' average share of entertainment and travel costs (2003 figure)	1.11	0.32	0.69	2.47	2496
Average recovered corrupt funds per case (log)	2.40	0.62	0.82	3.84	1623
Provincial secretary connected to PSC members	0.25	0.43	0	1	2496
Provincial secretary's years at full-ministerial level	7.01	3.43	1	16	2496
<i>Panel C: city-level fiscal and macroeconomic indices</i>					
Log GDP	5.76	1.10	1.56	9.01	2486
Log population	5.73	0.77	2.59	7.04	2496
Population density	0.039	0.030	0.0001	0.27	2496
Fiscal revenue per capita	865.0	1765.9	59.6	34424.1	2486
GDP growth rate	112.3	3.79	64.3	147.9	2493
GDP growth rate: agriculture (%)	105.1	6.37	11.7	189.2	2486
GDP growth rate: industry (%)	115.6	6.92	44.1	229.2	2486
GDP growth rate: service (%)	112.2	3.55	78	161.1	2486
<i>Panel D: city-level policy alignment measures (since 2005)</i>					
Share of work report devoted to province's top priority	0.090	0.038	0.0000090	0.52	1376
Top priority aligned between city and province (1 = yes)	0.21	0.41	0	1	1376
No. of mentions of "provincial party committee"	2.56	1.75	0	10	1377
No. of mentions of "provincial party committee" per 1000 characters	0.17	0.12	0	0.87	1376

3.4. Identification

The variations for identification in our models come from two sources: First, holding the identities of the city leaders constant, the connectedness of a city to the provincial leadership can change as a result of leadership change at the provincial level. When an old provincial secretary is replaced by a new one, for example, all cities that were previously connected to the old secretary will see their connections drop from a positive number to 0 as the new secretary is not connected to anyone upon arrival. The second source of variation comes from turnovers of city leaders while the provincial leaders remain the same. If an unconnected city leader is replaced by a connected one, the city's connectedness will increase. Compared to the first, the second source of variation is more likely to raise concerns about endogeneity, since provincial leaders can move city leaders to localities with high or low transfers for reasons unrelated to patronage. We estimate a model that includes fixed effects for every unique city leadership duo (i.e., the city secretary and the mayor). Since our measurement assumes that the identity of the patron is fixed for every individual city leader for the period he/she is observed in the sample, city leaders can only lose but not gain a connection after the first year of appointment. By controlling the pair fixed effects, our estimation essentially only uses connection losses induced by turnovers of provincial leaders. Although provincial-level turnovers are certainly not random,

existing evidence suggests that when rotation will happen is mainly a function of the incumbent leader's tenure and (in some cases) high-level political factors orthogonal to city-level conditions.¹⁰ This identification strategy is similar to those used in Jia and Nie (2017) and Xu (2018).

Fig. 1 shows the frequencies for both types of variations and their change over time. Overall, we can see that variations in connection status are more frequently observed in years following major reshuffles of the central leadership (i.e., 2003 and 2008), which presumably triggered a chain of appointments down the political hierarchy. The number of variations is generally balanced between city party secretaries and mayors, but slightly in favor of the latter, reflecting the fact that government executives tend to have shorter tenures than party chiefs. Within our dataset, there are a total of 954 city-year spells that record changes in cities' connection status with the provincial secretary, of which 491 (48%) are positive changes (gaining a connection) and 553 (52%) are negative ones (losing a connection). Among all the positive changes, 231 (47%) were due to appointment of a

¹⁰ In Table A.8 of Online Appendix, we analyze the determinants of provincial leadership change using a province-level panel dataset. We find that the incumbent provincial leader's tenure length is the strongest predictor of the likelihood of leadership change. Other covariates, such as a province's economic condition and the provincial leader's political connections, have much weaker predictive power.

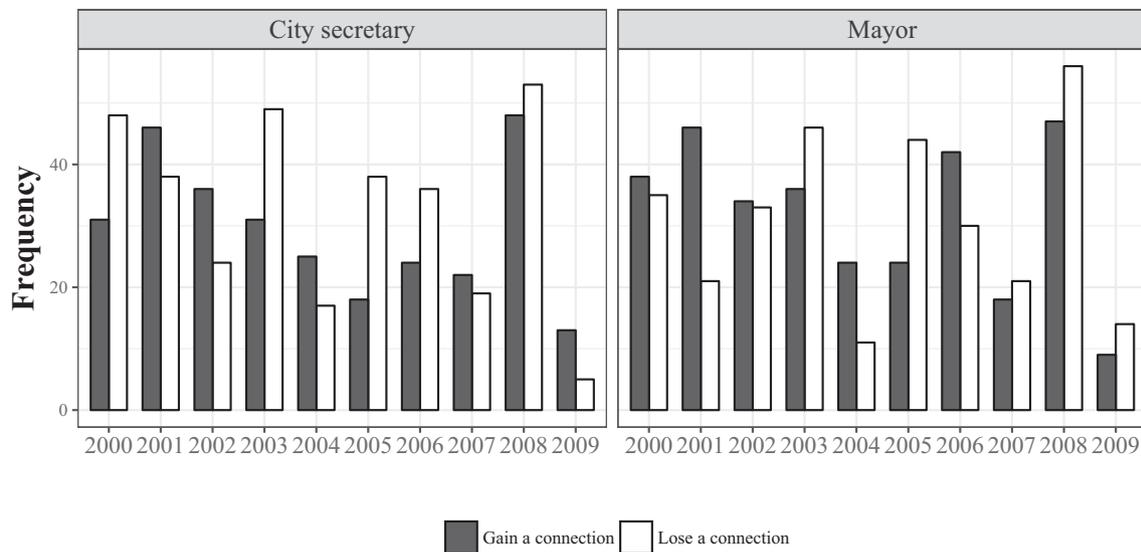


Fig. 1. Variations in connectedness.

city secretary who is connected to the provincial chief and 260 (53%) to appointment of a mayor. For negative changes, 259 of the 553 incidences (46%) were due to city secretaries losing their connections after incumbent provincial secretaries left office, and the other 294 (54%) were due to mayors' loss of connections. A detailed list of provincial leadership changes covered in our sample can be found in Table A.1 of the Online Appendix.

3.5. Empirical specification

Our baseline regression is a fixed effects model with the following specification:

$$\text{Log Fiscal Transfer}_{i,p,t+1} = \delta^S \text{No. of Connections with Provincial Secretary}_{ipt} + \mathbf{X}_{ipt}\boldsymbol{\beta} + \eta_i + \gamma_{pt} + \epsilon_{ipt}, \quad (1)$$

where i , p , and t index city, province, and year respectively. We use *Log Fiscal Transfer* in the next fiscal year ($t + 1$) as our dependent variable, as transfers are usually determined as part of the annual budget produced in the previous year. The main independent variable, *No. of Connections with Provincial Secretary*, is a count variable bounded by 0 (no connection) and 2 (both city secretaries and mayors are connected).¹¹ The city fixed effects η_i capture the time-invariant heterogeneity in the levels of transfer across cities, while the year fixed effects γ_{pt} are allowed to vary arbitrarily by province to absorb any province-specific economic or political shocks on transfers, such as those induced by changes in the provincial leadership or the central government's regional policies. In this specification, variations in connection can come from both the appointment of new city leaders and the exit of incumbent provincial leaders. Later, we also estimate a more restrictive model that includes fixed effects for every unique pair of city leaders. When controlling for city leader pair fixed

effects, the variations that we use for estimation will only come from changing the identity of provincial secretaries.

\mathbf{X} is a vector of covariates for time-varying political and economic conditions in a city and the career backgrounds of the two city leaders. For economic covariates, we control for *Log GDP*, *GDP Growth*, *Log Population*, *Population Density*, and *Per capita Own-Source Revenue* to account for the possibility that connected officials may be systematically assigned to cities that differ from unconnected ones in key socioeconomic conditions. Leadership controls include a set of standard demographics, such as *Gender*, *Ethnicity*, and *College Education*, for both the city secretary and the mayor. We also control for whether the city leader is over the age of 57, which is the de facto age ceiling for city leaders (Kou and Tsai, 2014). Because those promoted by the incumbents tend to have relatively shorter tenures as city leaders, we also include controls for city leaders' tenure length.

4. Results

4.1. Baseline results

Table 2 presents the baseline results on the effects of patronage ties on the distribution of fiscal transfers. We begin with a parsimonious model with only the connection variable and the city and province \times year fixed effects. Models 2 and 3 incrementally add economic and leadership controls. Starting from Model 4, we introduce a more restrictive specification that includes fixed effects for every unique pair of city secretaries and mayors (a total of 1186 pairs). With the pair fixed effects included, we essentially remove all the time-invariant, individual-level heterogeneity for city leader pairs (e.g., ability of city leaders) and estimate the impact of connection using only variations created by turnovers of provincial leadership, which are more exogenous. Model 5 uses a continuous measure of the number of provincial chiefs' city-level clients, Model 6 uses a binary indicator for if either of the two city leaders is connected, and Model 7 distinguishes between the city secretaries' and mayors' connections.

The results from the baseline regressions confirm the important influence of informal networks on intra-party resource distribution. The estimated effect of patronage ties on fiscal distribution ranges from 3.7% to 5.2% for one connection, and 5.8% to 7.7% for two connections. Since the amount of transfer received by an average city

¹¹ In addition to the count measure, we also use several different coding strategies, including two dummy variables for 1 and 2 connections (0 connections as the benchmark) or a binary indicator for whether any connection is present.

Table 2
Baseline results.

	DV: Log Fiscal Transfer at $t + 1$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. of connections with prov sec							
<i>One connection</i>	0.052*** (0.015)	0.044*** (0.013)	0.044*** (0.015)	0.044 (0.035)			
<i>Two connections</i>	0.068*** (0.019)	0.058*** (0.017)	0.059*** (0.020)	0.077** (0.035)			
No. of connections with prov sec					0.037** (0.016)		
Any connection with prov sec						0.056* (0.033)	
City secretary connected to prov sec							0.050** (0.023)
Mayor connected to prov sec							0.024 (0.023)
City- and province-year FE	✓	✓	✓	✓	✓	✓	✓
City leader pair FE				✓	✓	✓	✓
Economic controls		✓	✓	✓	✓	✓	✓
Leadership controls			✓	✓	✓	✓	✓
Number of cities	279	279	279	279	279	279	279
Observations	2496	2475	2456	2456	2456	2456	2456

Note: This table presents the effects of patronage ties with provincial secretaries on fiscal transfers. The dependent variable is the log of fiscal transfer in the next fiscal year. City economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. City leader controls include the following variables for both the city secretary and the mayor: *Age*, *Gender*, *Ethnicity*, *College education*, and *Tenure length*. Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

in our sample is about 3.5 billion yuan (560 million U.S. dollars) per year, the regression coefficients suggest that a city receives an additional 106 to 151 million yuan (16 to 23 million U.S. dollars) per year if one of its serving leaders was first promoted to become mayor or city secretary under the *incumbent* provincial party secretary, and 169 to 226 million yuan (25 to 34 million U.S. dollars) per year if both of them were. Column 7 further suggests that city secretaries' connections are somewhat more effective in eliciting funds than mayors' connections, although the difference between the two is not statistically significant. This is consistent with our general impression that party secretaries are the more powerful figure in the local leadership duo.

One common concern with the panel fixed effects analysis is whether the parallel trends assumption is met. It is possible, for example, that connected leaders are simply appointed to localities that tended to receive more top-down funding historically. To investigate this possibility, we adopt a more flexible specification that includes a number of dummies for whether a city will be, is currently, or used to be connected to the incumbent secretary.

$$\text{Log Fiscal Transfer}_{i,p,t} = \sum_{\tau=-3}^{+3} \delta_{\tau}^{\zeta} \text{Connected to Provincial Secretary}_{ip(t+\tau)} + \mathbf{X}_{ipt}\boldsymbol{\beta} + \eta_i + \gamma_{pt} + \epsilon_{ipt}, \quad (2)$$

where *Connected to Provincial Secretary* _{$ip(t+\tau)$} is a set of binary indicators for whether city i is connected to the provincial secretary at time $t + \tau$. The whole set of dummies encompasses connection statuses ranging from 3 years before forming a connection to 3 years after losing one. If our results were driven purely by pre-existing differences, we would expect the patterns of transfers to connected cities to be already quite different from those in unconnected ones, even before the arrival of connected leaders. According to Fig. 2, however, the conjecture is not supported. Favoritism does not seem to exist until a connected leader is actually appointed and deteriorates quickly after

the connected leader has left office. This provides reassuring evidence that fiscal allocations to cities hosting connected leaders are not significantly different from those to the rest of the cities during the pre-connection period.

4.2. Robustness checks

4.2.1. Alternative measures of fiscal transfer

We conduct a series of additional tests to evaluate the robustness of our results. First, we use different measures of fiscal transfer. The first column of Table 3 uses the original linear measure of fiscal transfer (in million yuan) as the dependent variable and the second column uses *Log Transfer per Capita*. The main results remain strong in both models. Columns 3 through 5 further examine three different types of fiscal transfer: earmarked, general-purpose, and tax returns. General-purpose transfers and tax returns are calculated by fixed formulae and are usually less influenced by personal discretion than earmarked items. Consistent with this, we find that the effect of patronage ties is positive and statistically significant for earmarked transfers, but relatively weak for the other two.

4.2.2. Alternative measures of connection

We also investigate whether our results are sensitive to the specific choices we made in constructing the connection variable. In Table 4, we present the results from using two modified versions of the connection measure. The first modification that we adopt is to include movements from mayor to city secretary in our definition of promotion. Although this type of movement is quite common and usually not as substantial as a fresh appointment to city leadership, it could be argued that elevating a mayor to the more senior position of city party secretary still reflects some degree of personal endorsement by the provincial leader. Column 1 of Table 4 shows the regression result using this modified connection measure. We can see that the coefficient estimate for connection remains positive and statistically significant, but the magnitude is somewhat smaller than

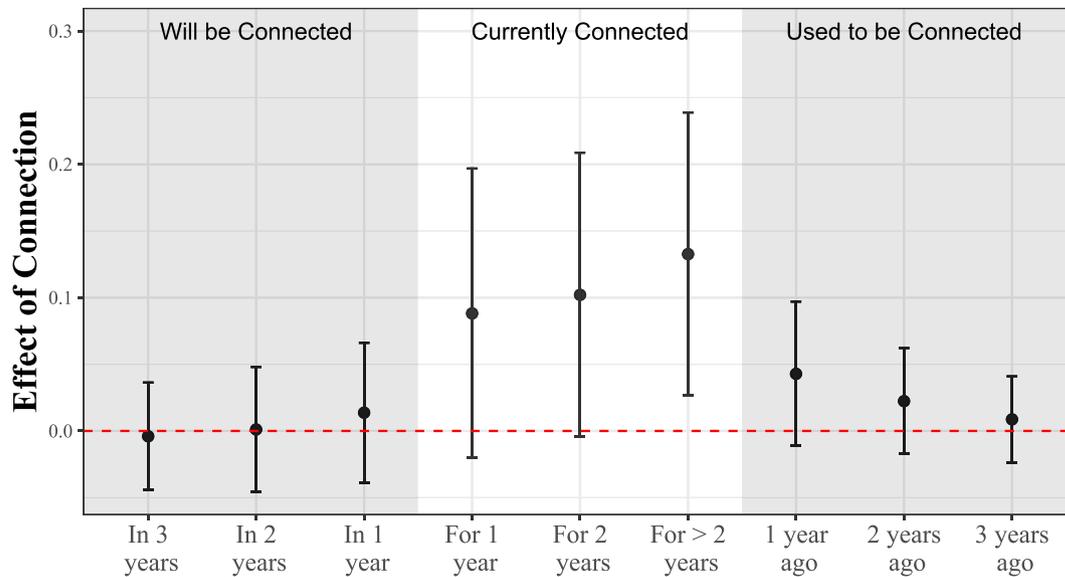


Fig. 2. The dynamic effects of connections on log fiscal transfers. Note: This figure illustrates the dynamic effects of patronage ties for cities before, during, and after being connected to the incumbent secretary. Each dot indicates the coefficient estimate and the vertical bars show the 90% confidence intervals.

in the baseline results, suggesting that mayor-to-secretary promotions may not be as strong an indicator of personal ties as first-time appointments to city leadership posts.

A second modification that we experiment with is to regard certain types of horizontal rotations also as promotions. Since cities in China are of different sizes and political significance, moving from a smaller city to the same office in a larger metropolis may be a promotion in disguise. While the exact hierarchy of Chinese cities is difficult to ascertain, the general consensus is that provincial capitals and vice-provincial cities (VPCs) are more important than prefecture-level cities.¹² In the modified measure, we treat a city leader as the client of the provincial secretary if the former moved from an ordinary city to the capital or the VPC of the same province under the latter's watch. As shown in the second column of Table 4, the coefficient estimate remains largely the same.

To further ensure that our results are not driven by peculiarities in how we have constructed the patronage measure, we create several placebo connection measures and examine how they perform relative to the actual one. These results are presented in Table 5. In the first column, we examine whether the observed distributive favor also exists for city leaders promoted under the *former* provincial secretary (i.e., the incumbent's predecessor). The second column further narrows the measure down to those promoted by the former secretary immediately before (≤ 1 year) the arrival of the incumbent leader. If city leader appointment is a purely impersonal process, these city leaders should be most similar to the "connected" ones in terms of incentives and policy outlooks because they were appointed closest to the connected ones. However, they are much less likely to be part of the current provincial secretary's network because they were chosen by the predecessor. If personal ties play no role in shaping fiscal distribution, then we should expect these city leaders to receive about the same level of transfer as the connected ones. The results, however, suggest the opposite. The coefficient estimate for city leaders promoted by the previous provincial secretary (column 1) is virtually zero, and, even for those promoted within one year of the incumbent's arrival, the estimated effect is less than 1/14 of the actual connection measure (0.003 vs. 0.038). This suggests that

distributive favoritism is highly specific to those promoted *after* the arrival of the incumbent provincial leader.

Moreover, the third column of Table 5 includes a similar measure for whether a city leader was promoted under the current governor, who is the head of the provincial government. Although governors also have some influence over fiscal distribution, they typically have much less influence over personnel issues. Therefore, the promotion-based measure will not be as effective in capturing their connections with city-level subordinates. Consistent with this, Column 3 of Table 5 shows that, while connection to the provincial secretary is highly significant, a similarly constructed measure for governor is not.¹³ This suggests that the promotion-based measure only has a meaningful impact when it is constructed for the person who is actually in charge of personnel decisions.

4.2.3. Subsamples

One important potential concern is whether our results are driven by a small number of special cities that receive large amounts of transfer. To address this concern, Table 6 presents estimation results using several different subsamples. In Column 1, we add back the minority regions that were excluded in the baseline analysis. In Column 2, we exclude provincial capitals and VPCs, which usually have a different fiscal arrangement with their provinces than ordinary prefecture-level cities. The third column excludes cities where at least one of the two top leaders have an administrative rank higher than the prefecture level (the most common rank for city leaders). The main results remain strong to these sample modifications. Moreover, Columns 4 and 5 report separate estimates for connections in coastal and interior provinces. We see that the estimated impacts of patronage ties are roughly comparable between the two regions: The effect size is slightly larger for the coastal region but the coefficient is more precisely estimated for the interior. These patterns suggest that our findings are not driven by peculiarities of any specific region.

4.2.4. Alternative estimation strategy

We also conduct estimation using an alternative, regression-discontinuity style approach. This approach focuses on comparing

¹² There are 15 VPCs in China, of which 5 are not provincial capitals. A province typically has at most one non-capital VPC but many have none.

¹³ We are able to separately estimate the effects of the two leaders because both are rotated regularly across provinces and their terms never overlap entirely.

Table 3
Alternative measures of fiscal transfer.

	DV: Fiscal Transfer at $t + 1$				
	(1) Linear (million yuan)	(2) Per capita	(3) Earmarked	(4) General-purpose	(5) Tax return
No. of connections with prov sec	463.900** (186.192)	0.038** (0.017)	0.066*** (0.023)	0.014 (0.064)	0.006 (0.014)
City- and province-year FE	✓	✓	✓	✓	✓
City leader pair FE	✓	✓	✓	✓	✓
Economic controls	2456	2456	2432	2457	2464

Note: This table shows results using alternative measures of fiscal transfer. Economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. We also control for both city leaders' *Tenure length* in all models. Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Table 4
Alternative measures of connection.

	DV: Log Fiscal Transfer at $t + 1$	
	(1) Include mayor to city secretary	(2) Include rotation to larger cities
No. of connections with prov sec	0.032** (0.015)	0.037** (0.017)
City- and province-year FE	✓	✓
City leader pair FE	✓	✓
Economic controls	2456	2456

Note: This table shows results using two alternative codings of connections. Economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. We also control for both city leaders' *Tenure length* in all models.

Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

the amount of transfer a city receives immediately before and after a change in connection status (i.e., losing a connection or gaining a connection). Compared to the baseline fixed-effects specification, identification under this alternative approach does not require the entire period after a provincial leadership turnover to be comparable to the period before the turnover in counterfactuals, but instead only assumes that the unobserved confounders are held constant during a

small window around the time of leadership change. The advantage of the approach is that it enables us to estimate the immediate effect of patronage ties with weaker assumptions, but the drawback is that it introduces more noise to the estimates (due to smaller sample size) and cannot say anything about the longer-term impact of connection.

Fig. 3 visualizes the effects of city secretaries' and mayors' connections separately using local polynomial regressions. The x-axis is

Table 5
Comparing actual and placebo connection measures.

	DV: Log Fiscal Transfer at $t + 1$		
	(1)	(2)	(3)
No. of connections with prov sec	0.038*** (0.013)	0.038** (0.019)	0.038** (0.016)
City leader promoted by former prov sec	0.000 (0.012)		
City leader promoted 1 year before incumbent prov sec		0.003 (0.021)	
No. of city leaders promoted under current governor			-0.015 (0.009)
City- and province-year FE	✓	✓	✓
City leader pair FE	✓	✓	✓
Economic controls	2456	2456	2456

Note: This table shows results using several placebo connection measures, including former provincial secretaries' connections and individuals promoted under current governors. Economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. We also control for both city leaders' *Tenure length* in all models.

Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Table 6
Subsample analysis.

	Subsample				
	(1) Include minority regions	(2) Exclude capital and VPC	(3) Exclude cities with high-ranking leaders	(4) Coastal	(5) Interior
No. of connections with prov sec	0.032** (0.014)	0.039** (0.017)	0.042** (0.020)	0.039 (0.025)	0.033* (0.018)
City- and province-year FE	✓	✓	✓	✓	✓
City leader pair FE	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓
Observations	2874	2215	2115	750	1706

Note: This table shows results from various subsample analyses. City economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. We also control for both city leaders' *Tenure length* in all models.

Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

the normalized time variable with the year of connection change set as $t = 0$, and the y-axis is the residualized fiscal transfer.¹⁴ The two top panels are for city secretaries and mayors losing connections, respectively, and the bottom panels are for gaining connections. In all four graphs, we can see that the average level of transfer residual tends to be higher when a connection is present (red). When we focus on the discontinuity only, the most salient effect comes from city secretaries losing a connection, which is consistent with our previous finding (see Model 7 of Table 2). The numerical estimate (see Appendix A.5) suggests that, for city secretaries, losing a connection will on average lead to a 0.01-unit ($p = 0.04$), or 16% of a standard deviation, immediate reduction in transfer residual. This magnitude is more than twice what we get from the fixed effects estimate.¹⁵

5. Discussion of potential mechanisms

5.1. Network-based policy coordination

Why do provincial leaders allocate transfers more favorably to those within their political networks? This section explores two possible motivations: network-based policy coordination and collective corruption. To evaluate the policy coordination mechanism, a key empirical challenge is to develop a measure of local governments' policy agenda that is comparable across time and localities. We overcome this challenge by making use of full-text documents of local government work reports (GWRs), which are comprehensive policy blueprints issued by local governments annually.¹⁶ In an earlier study, Jiang et al. (2019) applied Latent Dirichlet Allocation (LDA) models to analyze the GWRs and extracted 20 policy priorities from the entire corpus (as well as their respective proportions in each document).¹⁷ Using these estimates, we create two variables that measure policy alignment between city and provincial governments. The first one measures how much of its GWR a city devotes

to discussing the policy topic that has the highest share in the same year's provincial GWR. The second measure is a binary indicator for whether a city's top policy priority (i.e., the topic that has the highest share in its GWR) is the same as its provincial government's top priority. In addition to these two measures, we also adopt a more direct measurement strategy by counting the number of times a city GWR mentions "provincial party committee". While some mentions of provincial party leadership are almost inevitable in an official document like a GWR, frequent mentions are usually a coded way for city leaders to demonstrate loyalty and support to their provincial superior.¹⁸ In Appendix F.3, we provide several randomly selected examples to illustrate how this term is used in GWRs. They are typically associated with phrases that either praise the province for correct and strong political leadership or discuss policies supported by the provincial authority.

To test the policy coordination hypothesis, we estimate:

$$\text{Policy Alignment}_{i,p,t+1} = \gamma \text{Connected to Provincial Secretary}_{ipt} + \mathbf{X}_{ipt}\boldsymbol{\beta} + \eta_{ic} + \sigma_{pt} + \epsilon_{ipt}. \quad (3)$$

where i , p , and t index city, province, and year respectively. The key coefficient that we are interested in here is γ , which tells us how much more a connected city leader aligns with the provincial government's policy priority relative to an unconnected one. We expect γ to be positive and statistically significant for all the alignment variables if the coordination mechanism holds. The results are presented in Table 7. Column 1 indicates that compared to the unconnected city leaders, the connected ones tend to devote a larger share of their GWRs to discussing policy issues that their provincial superiors care most strongly about. The size of the coefficient estimate suggests an approximately 16% increase from the sample average (-0.09). The second column uses a binary dependent variable that measures whether the top city and provincial policy priorities are aligned, and finds a similar pattern (albeit somewhat noisier). Columns 3 and 4 turn to the frequency of mentions for provincial leadership. Again, we find that city leaders connected to top provincial politicians are significantly more likely to acknowledge provincial leadership in GWRs than those without such connections. These results suggest that better policy alignment may be a reason why provincial leaders prefer to allocate more resources to those who are connected to them. One possible interpretation of these findings is that there

¹⁴ The residuals are obtained by regressing log fiscal transfer on city leader pair and province \times year fixed effects.

¹⁵ The estimates for party secretary's connection in Model 6 of Table 2, for example, is equivalent to about 6% of a standard deviation.

¹⁶ The GWR is one of the most important policy documents that local governments produce in a year. The report has to be collectively read and approved by the local party standing committees before being delivered at the annual session of local People's Congress. GWRs have a highly standardized structure. They usually start with a brief description of the overall national and local conditions, followed by a summary of the governments' achievements in the past year, and the bulk of the document is devoted to describing plans and directions for the next year.

¹⁷ These topics encompass a range of issues, including economic development, public safety, culture, education, and social welfare. We provide more details on the estimation procedure and the results, including all topics and their associated keywords, in Appendix F.2.

¹⁸ Examining the frequency of special political terms in key party and government documents is an approach commonly used by China observers to decipher elite relations within the political system. For other examples, see Li (2004) and MacFarquhar and Schoenhals (2006).

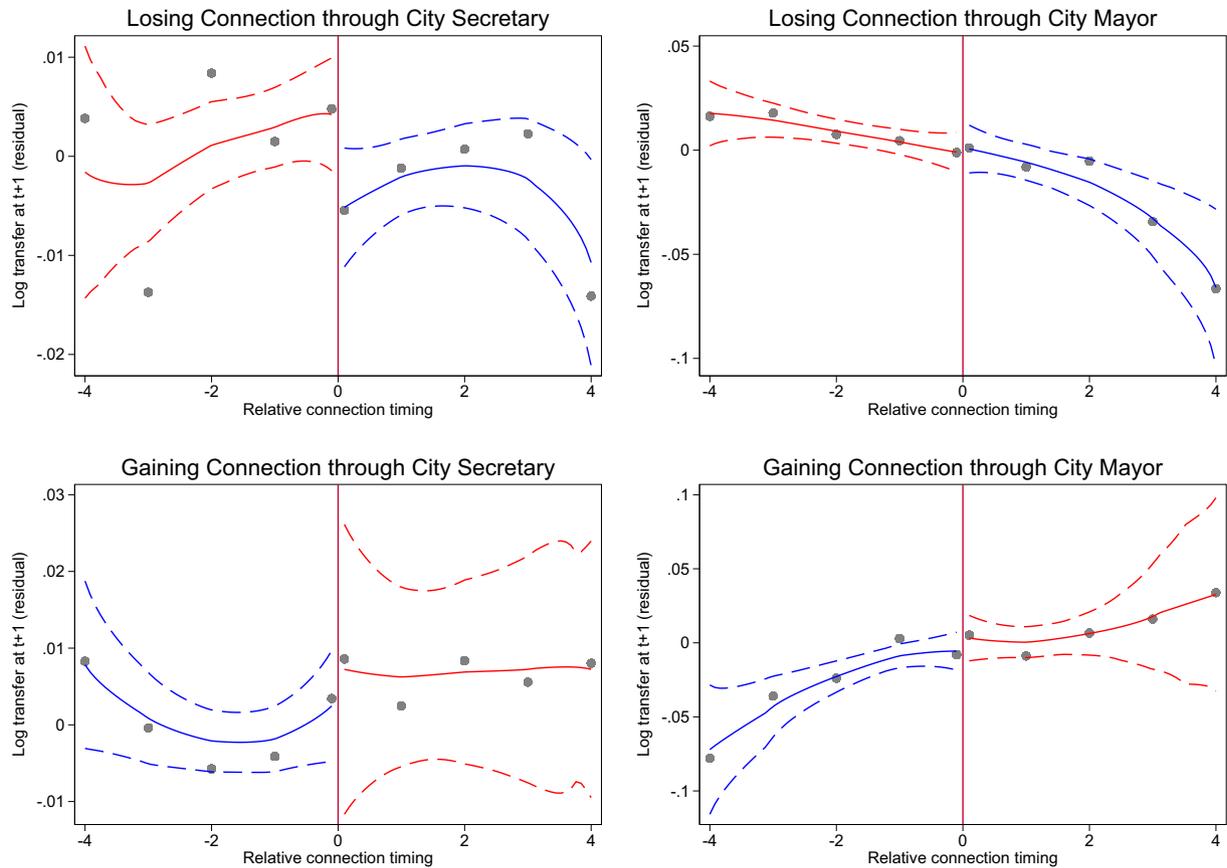


Fig. 3. Regression discontinuity-style estimation. Note: This figure illustrates the results from RD-style estimation with non-parametric fit. The x-axis indicates the normalized timing with the year of connection status change set at 0. Cubic polynomials (along with 90% confidence intervals) are fitted and plotted on both sides of 0. Red color represents the period *with* connection and blue the period *without*. The circles represent the average value of transfer residual in a given year. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

may exist a trust-based separating equilibrium: connected leaders may find it less costly to signal their loyalty to their patrons through greater policy alignment (because of preexisting trust), and receive positive feedback from their patrons in the form of additional fiscal transfers.

5.2. Collective corruption

Second, we evaluate the role of collective corruption in explaining the distributive favoritism. If the corruption mechanism holds,

we may expect the effect of connection to be greater in settings where the leaders or provinces involved are more corrupt. To accurately measure the level of corruption, of course, is a major empirical challenge. We use a number of proxies. The most direct measure is whether the provincial patron was later investigated for corruption, but the problem with this measure is that the number of high-level corruption prosecutions is quite small and some cases may be politically motivated. To address this problem, we also use information from the trial verdicts to create a second variable that records the amount of corruption that one has committed (in million yuan). The

Table 7
Testing the coordination mechanism.

	Alignment with provincial priorities at $t + 1$		Attributing credit to provincial leadership at $t + 1$	
	(1) Share of city GWR devoted to top provincial priority	(2) Top priority aligned (1 = yes)	(3) No. of mentioning	(4) Mentioning per 1000 characters
Connection with prov sec (1 = yes)	0.014** (0.006)	0.191 (0.134)	0.793** (0.370)	0.054** (0.024)
City and province-year FE	✓	✓	✓	✓
City leader pair FE	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓
Observations	1221	1221	1298	1294

Note: This table shows the effect of connection on the alignment of policy priorities between city and provincial governments. City economic controls include *Log GDP*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. The sample period is between 2005 and 2009 due to data availability. Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Table 8
Testing the corruption mechanism.

	DV: Log Fiscal Transfer at $t + 1$				
	(1)	(2)	(3)	(4)	(5)
Connection with prov sec × corrupt prov sec	-0.145** (0.067)	-0.037 (0.087)			
Connected to prov sec × corrupt prov sec (amount)		-0.001 (0.001)			
Connection with prov sec × land sale discounts			0.006 (0.015)		
Connection with prov sec × per case corrupt amount (province average)				0.001 (0.033)	
Connection with prov sec × share of entertainment and travel cost					-0.100 (0.111)
Connection with prov sec (1 = yes)	0.073** (0.035)	0.071** (0.035)	0.028 (0.040)	0.101 (0.064)	0.155 (0.132)
City and province-year FE	✓	✓	✓	✓	✓
City leader pair FE	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓
Observations	2456	2456	1387	1592	2456

Note: This table presents the effects of patronage ties with provincial leaders on fiscal transfers. City economic controls include *Log GDP*, *GDP growth rates*, *Log population*, *Log fiscal revenue*, *Log expenditure*, *Fiscal revenue per capita*, and *Population density*. City leader controls include the following variables for both the city secretary and the mayor: *Gender*, *Ethnicity*, *College education*, and *Tenure length*.

Standard errors clustered at the city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

assumption here is that, conditional on investigation, the amount of corrupt funds involved should reflect more or less how corrupt an official actually is.¹⁹ In addition to individual-level corruption, we also draw from the existing literature three different measures for the level of corruption in a province, including *Chen and sing Kung's (2018)* measure of land sale discount to politically connected firms, *Zhu's (2017)* measure on the average amount of corrupt funds recovered per case in each province-year, and *Cai et al.'s (2011)* measure on the share of entertainment and travel costs in local firms' expenditure. *Table 8* presents regression results where these corruption measures are interacted with the connection variable. Interestingly, our estimates indicate that the distributive bias does not become noticeably larger when more corrupt patrons or localities are involved. While these results certainly cannot fully rule out the presence of corrupt motives in transfer allocation, they do seem to suggest that the magnitude of patronage-based favoritism does not merely reflect the level of corruption in a province.

6. Concluding remarks

Much of the research on politically motivated distribution focuses on electoral competition between parties, yet limited attention has been paid to politics that takes place inside a dominant party. This article uses China as a case to illustrate how informal intra-party networks shape the distribution of intergovernmental grants from provincial and city governments. We find that provincial secretaries systematically favor cities led by members of their informal networks in the allocation of fiscal transfers. Using new, text-based measures of policy priorities, we further find evidence that clients are more likely to support for provincial secretaries' policy agenda than to non-clients, suggesting that better policy coordination may be a reason why patrons allocate more favorably to their clients.

While our empirical analysis focuses on China, the finding that political patronage can function as an important tool of intra-elite coordination has broad relevance outside of China. Researchers have documented similar phenomena of network-based mobilization in several other major one-party regimes. *Grindle (1977)*, for example, argues that patronage networks within the Institutional Revolutionary Party, the ruling party of Mexico between 1929 and 2000, were instrumental for politicians to marshal support for policy change and carry out key government activities. Similarly, in a study of early state building in the Soviet Union, *Easter (2000)* notes that patron-client relations between central and local leaders helped the central authority exercise effective control over remote territories. More recently, *Hassan (2017)* has shown that, in Kenya, political leaders rely heavily on co-ethnic ties to secure electoral victory in swing areas.²⁰ These examples, along with our own findings, suggest that patronage networks may be an important source of informal state capacity in regimes with relatively weak formal institutions.

It is equally important to note, however, that this informal mode of coordination does not come without costs. One potential cost is in resource misallocation. When a patron picks the wrong policy to spend resource on, for example, the overall efficiency loss created by distributive distortion may exceed the potential gain from better performance on that particular policy. More worryingly, patron-client ties may also be used to protect clients' illicit behaviors and lead them to undercut performance in areas that their patrons do not prioritize. Future research needs to take these trade-offs into account when assessing the welfare implications of patronage politics.

Online Appendix

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpubeco.2020.104143>.

¹⁹ With city leader pair fixed effects included, the variations for identifying the interactive effect come from city leaders who are previously connected to a potentially corrupt provincial secretary losing such connections when their provincial patron leaves office.

²⁰ Similar dynamics are also present in democracies with a strong tradition of intra-party patronage. *Persico et al. (2011)*, for example, develop a theoretical model on how members of a faction would coordinate among themselves to deliver public projects that would help them win elections.

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