Regular article

"Moving Umbrella": Bureaucratic transfers and the comovement of interregional investments in China☆

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ABSTRACT

This paper studies the pattern of interregional investment after bureaucratic transfers across Chinese cities. Using the administrative records of business registration, we find that the transfer of a local leader between prefecture cities is associated with about 3% increase in interregional investment along the direction of transfer. The comoving firms purchase larger parcels of land and at lower prices. They also exhibit a higher likelihood of exiting when the patrons leave the office. Comoving interregional investment does not increase the probability of promotion for transferred leaders, and yet expose them to a higher risk of anticorruption prosecution. The findings highlight the importance of personal connection between firms and bureaucrats in shaping the pattern of interregional investment.

1. Introduction

Despite the conventional wisdom that rigid institutional constraint on executive powers is an indispensable precondition for modern economic growth (Acemoglu et al., 2005; Claessens and Laeven, 2003; La Porta et al., 1999), some of the most vibrant economies in the recent decades are featured with the so-called model of "state capitalism", with ubiquitous state intervention in the market (Baccini et al., 2019; Lamoreaux, 2006; Tsai, 2007). In those countries, it takes more than the Smithian "tolerable administration of justice", but also a variety of special deals and personal favors from powerful political leaders to

induce, facilitate, and sustain the growth of private investments (Bai et al., 2020a). However, it is difficult to study how the interaction between leaders and private firms is played out due to the inherent opacity of those relationships.

This paper delves into the state–business relationship through studying the role of local leaders in shaping the interregional investments in China. Our research strategy departs from the use of static social ties (e.g. hometown homophily) that are widely adopted in the political-economic literature (Fisman et al., 2018; Guo et al., 2021; Markussen and Tarp, 2014) by using the transfers of local leaders as a source

of variation to identify personal connection. Unlike the locally rooted politicians in the Western countries, local leaders in Chinese cities are regularly transferred across different jurisdictions by their political superior. This leads to a challenge how to boost development projects after officials are transferred to a new place. Lacking local knowledge, new leaders in town bear a tremendous cost of finding trustworthy local collaborators to carry out development projects successfully. Facing a relatively short time window, leaders may resort to their personal social networks and work with investors from the regions where they had previously served. The transferred leaders and their connected investors have built mutual trust in the leaders' previous jurisdictions, and their interests are well aligned. In doing so, the leaders effectively provide a "protective umbrella" for the businesses moving along with them,[1] helping clear institutional obstacles and ensuring the security of their connected investments.

Our empirical investigation employs an administrative database of all registered firms and local leaders' career information in 2000–2011. We find a robust pattern of increased investment flow along the direction of a local leader's transfer between prefecture-level cities. Using an aggregate measure on the scale of total paid-in capital upon firm registration, the baseline estimation shows that a transferred leader from city *A* to *B* is associated with approximately 3% increase in investment activities along the same direction. By contrast, a similar pattern of investment from city *B* to *A* or within other randomly matched city dyads are not observed. This result mainly stems from the investment by private firms as opposed to state-owned enterprises. Extending the analysis to the dynamic setting suggests that the transfer of leaders does not affect the investment prior to the transfer, but that impact can persist for over four years as long as the transferred leader stays in the same place.

We explore several demand-side and supply-side channels that may shape the comovement between bureaucratic transfers and interregional investment. Our analyses come down to three findings. First, the firms moving with transferred leaders purchase lands from local governments with a deep discount in price, and they tend to purchase larger parcels of lands. Second, we report a clear divergence in firms' duration in the market. The estimations using Cox proportional hazards model suggest that the comoving firms exhibit the highest survival rate when the transferred leaders are in office. However, they are more likely to exit than other types of firms after the patrons leave office. Third, increasing interregional investment does not enhance the upward career mobility of those leaders, yet expose them to a higher risk of anticorruption prosecution. These findings attest to a pattern of personally motivated opportunism on both sides.

This paper closely relates to a burgeoning literature on the importance of social ties in shaping economic outcomes. Social tie is understood as a context-varying binary relationship that arises from personal interactions between individuals or between an individual and an organization (such as a firm). Sharing a common hometown-origin with a powerful leader is shown to have profound impacts on one's upward mobility in political selection or the probability of winning prestigious academic titles (Fisman et al., 2018, 2020). There is a broad literature investigating how hometown-based regional favoritism of powerful politicians affect the allocation of economic resources and enhance development outcomes (Burgess et al., 2015; Do et al., 2017; Hodler and Raschky, 2014; Kung and Zhou, 2021). A strand of literature explores personal connection of private firms via senior managers or members of the board and find that these connections help boost firms' resources and performance (Amore and Bennedsen, 2013; Chen et al., 2017; Cingano and Pinotti, 2013; Faccio, 2006; Li et al., 2008). Compared with these studies, a defining feature of our approach is that the social ties under investigation are fabricated through bureaucratic transfers, which produce a dynamic political network of cities connected via bureaucratic transfers. The comovements of leaders and investments stem inherently from the institutional setting of the Chinese bureaucracy.

Our paper also speaks to an emerging literature examining how local leaders help overcome institutional frictions. Private investments are often deterred by entry barriers and corruption (Barwick et al., 2020; Brandt et al., 2013; Shi, 2021; Young, 2000; Zhang and Tan, 2007). However, some recent studies suggest that political entrepreneurs may mitigate institutional frictions. Similar to our findings, Bai et al. (2020a,b) argue that Chinese local governments often use their discretionary power to offer preferential treatment to the connected firms in a way that enhances overall economic efficiency. While we do not take a stand on the overall welfare consequences of special deals, our paper complements their study by showing the existence of special deals in the form of comovement between transferred leaders and firm investment. These informal arrangement may be a source of local state capacity in facilitating private investments in a frictional institutional environment.

On specific channels affecting interregional economic exchange, Jiang and Mei (2020) find that rotation of provincial leaders enhances inter-provincial trade and promotes economic welfare in China. Nian and Wang (2019) share a similar research interest of studying economic returns for comoving firms with prefecture-level leaders. They focus on land transactions and report a significant price discount for connected firms and possible efficiency losses associated with these transactions. Our research utilizes the universe of firm registration information and investigate a substantively different question: do bureaucratic transfers impact inter-regional investment? Our findings on the comovement of local leaders and investments are consistent with the insight that patronage network does play a role in resource allocations even under an one-party system (Lei, 2021; Jiang and Zhang, 2020).

The remainder of this paper proceeds as follows. Section 2 introduces the institutional background for the interaction between local leaders and private sectors. Section 3 describes the data. Section 4 presents the baseline estimates and the tests for several underlying mechanisms. Section 5 investigates the relationship between the leader-firm comovements and career outcomes of transferred leaders. Section 6 concludes.

2. Institutional background

China started to open up its economic system and adopt pro-market reforms since the late 1970s. The economic governance in the contemporary China have four distinguished features compared with the centrally planned system in the Mao's era. First, economic institutions have accommodated a fast expansion of private sectors. After decades of economic liberalization, private sectors contribute to about 60% of GDP, 80% of employment, and 50% of fiscal revenue for the whole country (Zhang, 2019). Moreover, private sectors have been a leading force in technical innovation (Liu and Ma, 2020; Wei et al., 2017). Second, the governance over local economy has been transformed by substantial decentralization and regional competition (Qian and Weingast, 1997; Shen et al., 2012). Third, local governments have significant leverage on local economic policies and the allocation of economic resources. The ubiquitous industrial policies intertwining with the growth of private sectors spells out a model of "developmental state", which was proposed to describe not only the growth model in China, but also those in several East Asian economies (Evans, 2012; Haggard, 2004). Fourth, the central government employs a system of merit-based performance evaluation and promotion criterion to incentivize local bureaucrats for enhancing economic development (Li and Zhou, 2005; Xu, 2011).

These features render a salient role of local leaders to guide the directions of private investments where formal economic institutions are inadequate to induce desirable investment growth. From a "demand-side" perspective of firms, private investors are often encountered with policy uncertainty and a risk of transgression against private properties under a relatively weak system of rule of law. Social ties with local leaders thus serve as a counterweight against predation by other powerful

figures. Moreover, personal friendship with local leaders is instrumental in facilitating new markets for private firms through eliminating local entry barriers, a major source of institutional friction that accounts for a large part of productivity variation across different regions (Brandt et al., 2020). As a result, the demand for personal connections by the private sector investors can be particularly strong in regions with severe institutional frictions (Li et al., 2008; Chen et al., 2011).

From a "supply-side" perspective, helping private sectors grow may serve the best interest of local leaders in a weak institutional environment. First, local leaders can capitalize on their power through reaping private rents from firms. For example, Cai et al. (2011) report that 20% of the wage bills of private firms are expended for maintaining collusive relationships with government officials. Emerging "revolving doors" employments also provide officials a further opportunity of self-enrichment (Chen and Kung, 2018). Second, and more importantly, local leaders are motivated to extend helping hands to private investment and economic growth, which may be used as a basis for their performance evaluation. To facilitate investments, local leaders often grant special deals for certain investment projects that best fulfill their development vision (Bai et al., 2020a). In this process, local leaders and private firms form a mutually beneficial relationship.

Our research studies the interaction between bureaucrats and firms through the specific vein of interregional investment associated with bureaucratic transfers. This is a suitable context for examining the role of local leaders in aiding investments for two reasons. The first reason is that local protectionism rises almost certainly along with interregional economic competition. As a result, entry barrier for outside investors constitutes a tangible form of institutional friction and source of welfare loss (Barwick et al., 2020). The second reason is that local leaders in China are frequently transferred among different jurisdictions and regions by their political superiors without consulting their own opinions. Historically, lateral transfers were employed by imperial rulers primarily as a mechanism of bureaucratic control (Xi, 2019). In the contemporary period, transfers do not follow strict timetables and are not known by transferred leaders *ex ante*. This renders a quasi-random assignment of local leaders to their recipient cities upon transfers.

3. Data

We employ four datasets for empirical analysis. First, the backbone datset is a panel of city-dyads documenting the pattern of intercity investments. The information about inter-city investments is obtained from the State Administration for Industry and Commerce (SAIC), which requires all firms to formally deposit and provide legal documentation for paid-in capital until 2014. Second, we make use of a manually collected biographic dataset of city and provincial leaders with detailed information on their career mobility and personal characteristics. Third, we combine a dataset on land transactions between firms and local governments for estimating the price discount enjoyed by comoving firms. Fourth, firms' duration information can be inferred from SAIC firm registration and cancellation records.

3.1. Inter-city investments

The dataset of inter-city investments is constructed for each directed city-dyads for 296 prefecture-level city units with total 87,320 directed dyads in 2000–2011. The information on firm registration obtained from the SAIC provides thus far the most comprehensive picture for the trend of new investment activities in China.[2]

Investment Flows. The dependent variables are constructed as a measure on the scale of dynamic investment trends across cities. Specifically, we consider a newly registered firm in city j owned by individuals originally from city j as a new investment flow from city i to city j. The construction for total investment flows within each directed dyad thus takes two steps. In the first step, we identify all investment flows thus defined through recognized home origin of a firm's legal representative, as indicated by the first six digits of a person's national identification number. The second step sums over the total paid-in capitals submitted by all moving firms from city i to city j upon registration. This was a stringent legal requirement for all newly registered firms until 2013. Using those information, we are able to construct variable $\log(1 + \text{FLOW}_{ijt})$, as a scale measure for the trend of investment flows from city i to j in year t. Aside from this, we also make use of $1(\text{FLOW}_{ijt} > 0)$, a dummy variable indicating inter-city investment at the extensive margin.

Our construction of the investment flow measure is subject to several caveats. First, to the extent that owners of private firms may not necessarily serve as a legal representative of the firm, our measure may suffer from type II errors and hence underestimate real investment flows. Second, the amount of paid-in capital is not the same as a firm's total assets or real investments. In most cases, the paid-in capital would be smaller than a firm's total assets or investments for the purpose of tax avoidance. According to the Business Law before 2013, however, paid-in capital should be proportional to the scale of a firm's total assets. This gives us cautious optimism in the proposed measure to capture at least the trend of investment flows within a city-dyad. Following this definition, the average scale of per dyad investment flows, as proxied by the total paid-in capital, is about 21.4 million Yuan. The mean of $\log(1 + \text{FLOW}_{ijt})$ among all city dyads in the sample is 1.646. About 10.1% of the dyad-year observations have positive investment flows in the sample. Panel A of Table 1 reports related descriptive statistics on investment measures.

3.2. Career mobility of local leaders

The most important biographic information of local leaders concerns their career records, including officials' administrative ranks, job titles, jurisdictions they served, and records of promotion and prosecution. Using the information on career mobility, we are able to capture bureaucratic transfers across cities and regions. In addition, we explore a rich set of personal characteristics to account for the political and pecuniary incentives of local leaders in facilitating inter-city investments.

Bureaucratic Transfers. The main independent variable is TRANSFER_{ijt}, a dummy indicating whether there was at least one incidence of bureaucratic transfer from city i to j in year t. We consider five categories of high-ranking bureaucrats: mayor, party secretary of a city, provincial governor, provincial party secretary, and member of a provincial party standing committee. The first two types of officials are considered as a "prefecture leader", and the last three types are considered as a "provincial leader". A transfer TRANSFER_{ijt} is registered if any of these officials governing over j had served his or her immediate previous position in city i. The coding scheme is straightforward for the transfer of a prefecture leader. For example, Sun Ruibin was the mayor of Cangzhou (a prefecture city in Hebei province) in 2005–2006, and the party secretary of Handan (a prefecture city in Hebei province) in 2007–2008 before he was transferred to the next jurisdiction. During

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[2] We focus on the 2000–2011 sample for empirical analyses. The 2000–2011 period was featured with fast expansions in infrastructure investment and manufactures, in which local leaders played an active role. The massive anti-corruption campaign initiated after Xi Jinping's ascendance to power in 2012, however, led to the downfalls of thousands of high-ranking bureaucrats and

was bound to deter the interplay between local leaders and the private sectors. Moreover, the State Council implemented a set of reforms to streamline firm registration in 2014, including removing the requirement for paid-in capital, while pilot reforms began as early as in 2012 in some places. Hence, we consider the information of paid-in capital a much noisier measure of real investments after 2012.
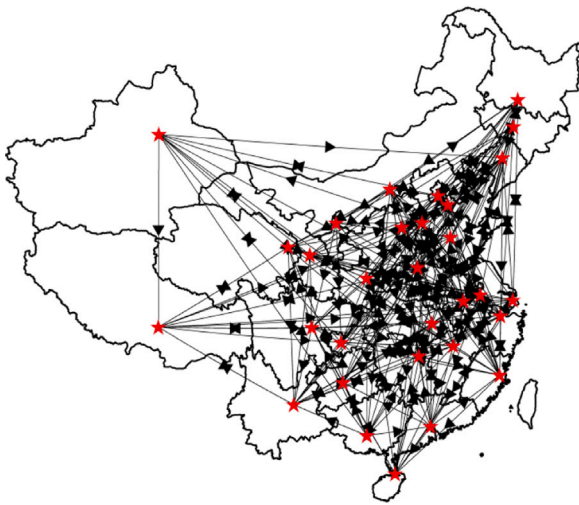
Fig. 1. Network of transferred provincial leaders. Notes: The figure shows the pattern of inter-province transfers of provincial leaders between 2000 and 2011. Each arrow between provincial capital cities indicates that there was at least one transfer within the directed dyad for that period.

2005 and 2006, there were no other leaders presiding Handan whose previous jobs were in Cangzhou. In turn, the transfer dummy is coded as 0 for the "Cangzhou→Handan" dyad for 2005–06 and as 1 for 2007–2008.[3]

The assignment of provincial leaders to a specific prefecture-level city is more complicated as their jurisdictions usually cover all cities in the province. We define the jurisdictions of a provincial leader (governor, provincial party secretary, and other members of a provincial party standing committee) as all cities in the province if he or she does not serve as a mayor or party secretary in a prefecture city or capital city in a province. As a result, when a provincial leader who was not a city-executive was transferred from the provincial government or party committee in province *A* to another position in province *B*, our coding scheme requires that the transfer dummy equal one for each directed pair from any city *i* in *A* to any city *j* in *B*.[4] In case the official served in multiple jobs at the same time, the coding follows the jurisdiction with the highest administrative ranking. Fig. 1 shows the pattern of inter-province leader transfers during the sample period.

Turnovers and Prosecutions. We try to account for the political economy of inter-city investment flows after bureaucratic transfers. For this purpose we obtain a set of indicators of political turnover and prosecution from the Chinese Officials' Data (COD), assembled by the research team at the China Center for Economic Research.

TURNOVER is a measure of political turnover coded for each official's term. It is equal to 0 if the official's political career is terminated after the term[5]; it is coded as 1 for lateral transfer, i.e. the official served in another jurisdiction with equal rank as the previous one; and 2 for

promotion.[6] In the sample, 23.5% of the leader-terms ended up with termination, 67.4% remained at the same ranking, and 9.1% received a promotion. We also construct a dummy variable Caught$_i$ for each official. The dummy takes the value 1 if that official was investigated or prosecuted for corruption as of the end of 2017. The information is obtained from the official website of the Central Commission for Discipline Inspection (CCDI) of the CPC.[7] Among all the 506 leaders who were transferred at least once in the sample period, a tenth were later prosecuted for corruption.

Officials' Characteristics. We also investigate how the pattern of inter-city investment flows is related to officials' political and pecuniary incentives. For this purpose we explore several salient variables of officials' personal characteristics in the political economy of development.

First, political leaders with stronger local connections are believed to be in a better position of coordinating with local interest groups. Motivated by those observations, we construct a dummy variable NATIVE$_{ij}$, which indicates that a leader who was transfer from city *i* to *j* happens to have been born in city *i*.

Second, we try to account for the impact of officials' age on their promotion incentives. City leaders face a binding retirement age at 60 and provincial leaders face a binding retirement age at 65. A *de facto* norm of bureaucratic selection in China mandates that officials have little chance of promotion if they do not get promoted three years before reaching the retirement age. This implies that officials beyond age 63 and 58 will have a considerably smaller chance of promotion and are likely to be transferred to ceremonial positions. Following this reasoning, we construct a dummy variable $1(AGE \geq RL)$ indicating whether an official reached the *de facto* retirement age. In our sample, a small portion (5%) of the observations actually reached this age threshold when they were in office.[8]

Third, we consider the possibility that officials' incentives of colluding with private firms may be correlated with the length of their tenure. The dummy variable $1(TENURE \geq 5YR)$ indicates that an official has served in the previous jurisdiction for more than five years. A longer tenure serving in a place implies stronger local connections and a higher probability of facilitating inter-city investment. In our sample, 28.8% served for in the previous city for more than five years. Panel B of Table 1 summarizes the key variables of local leaders.

3.3. Land transaction

We obtain the land transaction data from the Ministry of Land and Resources.[9] The data document specific details of transactions, including the location and time of transaction, the type of land usage, purchaser, the size of the land parcels, and the total price for all transactions granted by local governments from 2000 to 2016. Among all the land transactions, only 43% of the transactions were purchases

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[3] We also consider alternative measures taking into account officials' non-immediate previous positions. The results are presented in Table A1 in the online appendix.

[4] An exception is made in two cases: (1) If a provincial leader in province A was appointed as a city executive in city b in another province B, we will register a bureaucratic transfer from all cities in province A to city b, but not all cities in province B. (2) If a city executive in city *a* was appointed as city executive of another city *b*, and both *a* and *b* are located in the same province, only the transfer from *a* to *b* is registered even if the official is a provincial leader as the same time.

[5] The case of termination bundles multiple scenarios, including formal retirement, being sanctioned for corruption or negligence, such as severe workplace accidents, health issues, and so on.

[6] We document the following categories of administrative rank for local officials: (1) prefecture-level city; (2) subprovincial level; (3) provincial level; (4) deputy national level. We code an appointment as promotion for any of the following scenarios: (a) The official was formerly a mayor of the city and reappointed as the party secretary of the city; (b) The official was transferred as mayor or party secretary in a prefecture-level city to a subprovincial or provincial capital city; (c) The official was transferred as mayor or party secretary in a prefecture-level city to a position of subprovincial level in the provincial government or provincial Party committee; (d) The official was transferred from a subprovincial position to a provincial position; (e) The official was transferred from the current position to any other position of higher administrative rank. All other types of transfers between equal-rank positions are defined as a lateral transfer.

[7] http://www.ccdi.gov.cn

[8] Note that this means the official continued serving in the current jurisdiction after 58, not that he or she was further promoted after 58.

[9] http://www.mnr.gov.cn/

by registered business corporations.[10] We match the land transaction data to our registered firm data according to the name of the purchaser. We are able to match 90% of the purchases by registered firms. For our purpose, we focus on the sample from 2000 to 2011. Among all the land transactions in the investigated sample period, approximately 4% were purchased by comoving firms with local leaders. Panel C of Table 1 summarizes the key land transaction variables.

3.4. Firms' duration

The information of firms' duration in the market is obtained directly from the registration data at the SAIC. Before 2014, all firms in China were annually inspected by local bureaus of industry and commerce. Firms quitting the market are legally mandated to cancel their registration at local bureaus of industry and commerce for tax purposes. Using this information, we consider a firm as exiting in case it files a cancellation or its business license was revoked. We differentiate four categories of firms according to their connections. The first group CONNECT_HOLD includes all comoving firms with local leaders who were staying in the same city. The second group is CONNECT_LEAVE, referring to moving-along firms with local leaders transferred further away from the city. The third group LOCAL indicates all firms established by local residents. The default group consists of all firms established by individuals from cities not connected with the place of registration through any transferred bureaucrats. Panel D of Table 1 reports the shares of the four categories. It shows that the share of comoving firms is similar to that of unconnected firms but considerably smaller than local firms.

4. Main results

4.1. Bureaucratic transfers and investment flows

The baseline model for estimating the effect of bureaucratic transfer on interregional investment is specified as follows.

$$\log(1 + \text{FLOW}_{ijt}) = \alpha \, \text{TRANSFER}_{ijt} + X_{ijt}\beta + \lambda_{ij} + \gamma_t + \delta_t \times \eta_{R,S} + u_{ijt} \quad (1)$$

In Eq. (1), the subscript "ijt" specifies the direction of investment flows from city i to j within year t. α is the main parameter of interest. X_{ijt} is a vector of control variables, including the logarithm of real per capita GDP and the logarithm of the populations of both cities, and a constant term. λ_{ij} denotes city-dyad fixed effects. γ_t indicates year fixed effects, which we control for throughout the estimations. Controlling for city-dyad and year fixed effects addresses two types endogeneity. First, some city-dyads are more closely connected to each other than others, and they have more frequent exchanges of leaders and greater inter-city investments. Second, it is possible that the frequency of bureaucratic transfer and the trend of inter-city investments move more in sync during some years, presumably due to political business cycles. Another concern is that the industrial structure in China tends to be regionally clustered due to the legacy of planned economy. As a result, the momentum of economic development may be affected by region-time specific shocks, such as weather shocks or regional policies. These shocks may bias the estimation if they are simultaneously correlated with inter-city investments and bureaucratic transfers. To relieve this concern, we control for region-specific time trends ($\delta_t \times \eta_{R,S}$) for the following six macro-regions: North, Northeast, East, South, Southwest, and Northwest.[11] Finally, u_{ijt} is the term of random disturbance.

Table 2 presents the baseline estimates. In all the specifications, we cluster the standard errors at the city-dyad level. In the column (1) of Table 2, we control for city-dyad fixed effects, year fixed effects, regional time trends, and economic control variables for both cities. The coefficient for TRANSFER$_{ijt}$ is 0.027 and significant at the 0.05 level. Column (2) presents the estimates using only city-dyads that experienced at least one bureaucratic transfer during the sample period. The result is qualitatively similar. Column (3) reports the estimates for the probability that inter-city investments ever occurs. The coefficients for Transfer$_{ijt}$ is 0.03 and statistically significant at the conventional level. The result in column (3) implies that a leader who is transferred from city i to j increases the probability of investment flowing from i to j in the years throughout the leader's tenure by three percentage points. Since the average chance of observing positive intercity investment in 10 percentage points, this result implies that a discrete increase of bureaucratic transfer induces 30% of the average intercity investment flow in the sample.

The estimates presented by columns (4) and (5) distinguish the correlation between bureaucratic transfers and inter-city investments by firm ownership. Following the discussion in Section 2, we expect the result to be more significant for private firms, as they face a higher entry barrier when moving to a new market and need more supports from government officials. The results confirm this intuition. We decide the type of ownership through identifying whether the effective controller of a firm is a representative of the state (or a state-owned enterprise, SOE) or a private person. The results in columns (4) and (5) suggest that bureaucratic transfers have a significant positive effect on the flow of investment by private firms, but not on the flow of investment by SOEs.

We also examine whether the importance of transferred leaders vary in the degree of institutional friction. Intuitively, local leaders may play a more pivotal role in helping firms enter a new market where the entry barrier for outsiders is higher. We follow Brandt et al. (2020)'s approach of using prefecture-level wedges as a measure of entry barrier, and split the sample into two groups with higher and lower entry barriers, as proxied by whether the share of state sectors in the prefecture is high or low.[12] Consistent with the argument that local leaders can be motivated agent to overcome institutional frictions, we find that the effect of bureaucratic transfer on inter-city investments is stronger in the recipient cities with a higher level of entry barrier (column (6)). For the recipient cities with lower entry barrier, the estimated coefficient is insignificant and very small.

We are aware of the existence of alternative explanations for the pattern of inter-city investments established by the baseline estimations presented in Table 2. A salient argument is that the connection between cities established by immediate bureaucratic transfers may be confounded by other types of networks. Thus, our estimates may capture impacts of other types of connections, such as hometown affiliation, favoritism toward one's previous jurisdiction, or simply the density of social network among officials. Table A1 in the online appendix provides several robustness tests to address the alternative mechanisms. First, we estimate model (1), additionally controlling for a dummy variable $1(\text{OTHER})_{ijt}$, which indicates that there is an incumbent leader in j who was transferred from a city other than i. This test addresses the concern that newly transferred leaders are motivated to promote external investments across all cities. Second, we randomly assign the indicator of bureaucratic transfers across city-dyads in proportion to the number of real transfers and re-estimate the baseline results. Third,

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[10] The rest of land was purchased or transferred to local governments, public enterprises (such as schools and hospitals), and NGOs.

[11] The subscript R stands for the grand region which city i belongs to, S stands for the grand region which city j belongs to.

[12] The original wedge indexes computed in Brandt et al. (2020) use manufacturing firms only. This may not be representative for all firms due to industry heterogeneity. Nevertheless, Brandt et al. (2020) show a strong correlation between the entry barrier and the share of state-owned enterprises. We thus use the share of state-owned enterprises in the total paid-in capital at the city level to define the high and low entry barrier cities.

Table 1
Summary statistics.

	N	Mean	Std. Dev.	Min	Max
Panel A: City-Dyad Data on Investments					
log(1+ FLOW)	1,047,840	1.65	2.09	0	17.63
1(FLOW> 0)	1,047,840	0.10	0.30	0	1
1(TRANSFER)	1,047,840	0.06	0.24	0	1
log(GDP Per Capita, Origin)	1,047,840	5.79	0.75	0	8.11
log(GDP Per Capita, Destination)	1,047,840	5.79	0.75	0	8.11
log(Population, Origin)	1,047,840	9.83	1.65	0	17.48
log(Population, Destination)	1,047,840	9.83	1.65	0	17.48
NATIVE	1,047,840	0.01	0.07	0	1
LONG_TERM	1,047,840	0.02	0.13	0	1
Panel B: Biographic Data on Officials					
Turnover	712	0.86	0.55	0	2
1(Caught)	506	0.10	0.30	0	1
log(Connected Capital Flow, Term)	712	2.43	4.48	0	15.53
log(Connected Capital Flow, Career)	506	4.52	5.37	0	15.53
Share (Official-term)	712	0.061	0.183	0	1
Share (Official)	506	0.215	0.338	0	1
Panel C: Land Transaction Data					
log(unit price)	657,002	6.038	1.354	0	16.480
log(area)	657,002	1.190	0.972	0.0004	8.778
log(capital)	657,002	9.001	1.897	0	13.917
1(Connected)	657,002	0.038	0.049	0	1
Panel D: Firm Survival Data					
1(Death)	2,438,195	0.37	0.49	0	1
CONNECT_HOLD	2,438,195	0.02	0.13	0	1
CONNECT_LEAVE	2,438,195	0.02	0.12	0	1
LOCAL	2,438,195	0.719	0.45	0	1
log(Paid-in Capital)	2,438,195	4.19	1.72	0.000	24.02

Table 2
Baseline results.

Dependent Variable	log(1+FLOW)		l(FLOW>0)	log(1+SOE_FLOW)	log(1+PRIVATE_FLOW)	log(1+FLOW)	
Sample	FULL	FULL	FULL	FULL	FULL	SOE share > median	SOE share < median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1(TRANSFER)	0.027**	0.030**	0.003**	−0.005	0.034***	0.058***	0.001
	(0.012)	(0.012)	(0.001)	(0.004)	(0.011)	(0.017)	(0.016)
Controls	Y	Y	Y	Y	Y	Y	Y
Dyad FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y
Regional Political Cycles	Y	Y	Y	Y	Y	Y	Y
Transferred Dyads Only	N	Y	N	N	N	N	N
R-squared	0.067	0.034	0.021	0.001	0.072	0.022	0.022
Observations	1,047,840	222,632	1,047,840	1,047,840	1,047,840	524,620	523,220
Number of City Dyads	87,320	18,636	87,320	87,320	87,320	57,568	59,480

Notes: The sample covers 87,320 city-dyads from 2000 to 2011. In all columns, city-dyad and year fixed effects are included. Controls include log per capita real GDP and log population of both the origin and the destination cities. Regional political cycles refer to the interaction between six region dummies and a dummy for the year in the national political cycle. * 10%, ** 5%, *** 1%.

we estimate the baseline model using the inverted variable for transfer, that is, using TRANSFER_{jit}, instead of TRANSFER_{ijt}, as the explanatory variable for the investment from i to j. Fourth, we estimate the effect of non-immediate bureaucratic transfers on the inter-city investment. It turns out that alternative measures do not affect inter-city investments with the only exception of hometown connection.

4.2. Dynamic patterns

Although officials cannot have a direct control over the places they are transferred to, their political superiors may still coordinate the assignment of officials to jurisdictions for development purposes. This gives rise to a concern about reverse causality to the extent that officials may carry on some specific mandates of development. A test on the dynamic trends of investments within dyads before and after the occurrence of a transfer will partially relieve this concern of endogeneity. The estimated model is specified as follows.

$$\log(\text{FLOW}_{ijt}) = \sum_{\tau=-d_1}^{0} \alpha_\tau \, \text{TRANSFER}_{ijt} \times \rho_{ij,t+\tau}$$
$$+ \sum_{\kappa=2}^{d_2} \alpha_\kappa \, \text{TRANSFER}_{ij,t+\kappa} \times \mu_{ij,t+\kappa}$$
$$+ X_{ijt}\beta + \lambda_{ij} + \gamma_t + u_{ijt} \qquad (2)$$

In Eq. (2), investment flows from i to j at time t are evaluated dynamically within the time window $[t-d_1, t+d_2]$. The dummy variable TRANSFER_{ijt} indicates that an incumbent leader presiding city j at time t was previously transferred from city i. The dummy variable $\rho_{ij,t+\tau}$ indicates whether the official from city i was first appointed to j at time $t + \tau$. The subscript τ is an indicator of time periods prior to t, and d_1 represents the period leading to t for four years or more. In turn, the coefficient α_τ captures the post-trend of the effect
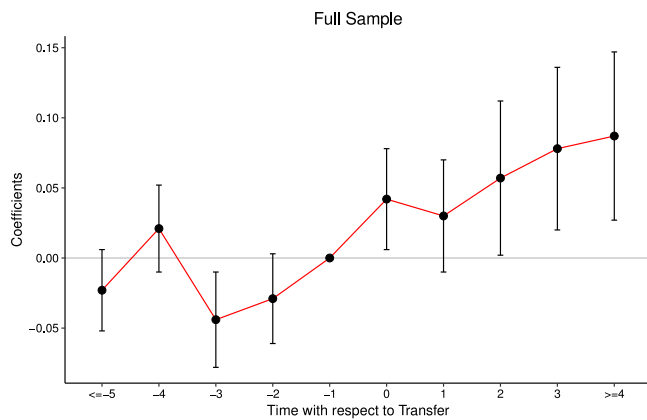
Fig. 2. Dynamic effects of the transfers. Notes: The figures illustrate the dynamic effects of a leader transfer on $\log(1 + \text{FLOW}_{ijt})$. In both figures, the horizontal axis indicates the year since a city-dyad experienced a leader transfer. Time 0 indicates the first year of the new leader's tenure. The vertical axis corresponds to the estimated dynamic effects. The results are estimated using the baseline specification (with controls, city-dyad fixed effects and year fixed effects) with the difference that the transfer dummy is replaced by the interaction terms of the transfer dummy and a set of time dummies. The coefficient at time -1, the last year before new leader's arrival, is normalized to 0. The 95% confidence interval around each plotted coefficient is reported, with standard errors being clustered at the city-dyad level.

Table 3
Comoving firms and land transactions.

Dependent variable	log(Unit land price)		log(Land area)	
1(CONNECTED)	−0.115***		0.023***	
	(0.004)		(0.003)	
CONNECT_HOLD (β_1)		−0.164***		0.028***
		(0.004)		(0.003)
CONNECT_LEAVE (β_2)		−0.135***		0.017***
		(0.004)		(0.003)
p-value for $\beta_1 = \beta_2$		0.000***		0.004***
Control variables	Y	Y	Y	Y
Usage dummies	Y	Y	Y	Y
Transaction mode dummies	Y	Y	Y	Y
City dummies	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y
R-squared	0.655	0.660	0.705	0.705
Observations	610,389	608,322	614,222	612,152

Notes: Firm-level controls include the log paid-in registry capital, ownership dummies, year-of-establishment dummies. Land-level controls include the distance to the city center, usage dummies, supply mode dummies. * Significant at 10%, ** 5%, *** 1%.

of leader transfer on investment flows: that is, how a newly transferred leader affects investment flows throughout his or her tenure as leader of city j. By contrast, the dummy variable $\text{TRANSFER}_{ij,t+\kappa}$ characterizes whether there is a transferred leader from i to j at time $t + \kappa$, and the dummy $\mu_{ij,t+\kappa}$ indicates that the leader was *not* in office at time t. The superscript d_2 represents the period lagging t for five years or more. Following these definitions, α_κ captures the pre-trends of the moving leaders' effect on investments: how a transferred leader may "affect" investment flows before he or she assumes power.

Fig. 2 presents the dynamic effects of a transferred leader on the investment flows within a city-dyad. We normalize the effect at $t = -1$. The coefficients at $t = -2, -3, \ldots$ represent α_κ, the pre-trends of difference between the treated group and the control group. The coefficients at $t = 0, 1, 2 \ldots$ represent α_τ, the post-trends of difference between the treated group and the control group. It is clear from Fig. 2 that a transferred leader from any city i to j does not make investment flow from i to j faster than within other city-dyads for all the years before the transfer occurs. The estimated pre-trend differences are negative or insignificant in most cases. At the same time, the post-trend differences between the treated and control groups are positive and highly significant for most cases. The dynamic pattern lends supports to the idea that transferred leaders themselves, rather than policy coordination at the upper levels, have played a major role in inducing investment flows along the same direction as the transfers.

4.3. Land transactions

We also leverage the administrative data on land transactions between local governments and private firms to demonstrate the pattern of favor exchange associated with inter-city investments. Chen and Kung (2018) employ firm-level transaction data to show that firms with strong connections to the top leadership of the CCP enjoyed a significant price discount in land purchases. Our investigation is motivated by this idea but extends the definition of personal connection to one with local leaders. We are agnostic about whether a price premium enjoyed by connected private firms is an evidence of outright corruption or subsidy granted by local governments to promote jobs and investments. It is usually very difficult to disentangle these two channels due to the opacity of the business-bureaucrats relationship.

However, because local governments have a larger discretion over the price of transferred land rights, the existence of such a price premium for comoving firms manifests an active role of these officials in brokering these investments.

A notable example is Qiu He, the party secretary of Kunming (the provincial capital city of Yunnan province) from 2007 to 2011. Soon after Qiu He's transfer from Jiangsu province to Kunming in 2007, a small real estate company originally from Suqian, a city in Jiangsu province, followed Qiu He to establish new housing projects in Kunming. Within Mr. Qiu's tenure as the party secretary of Kunming, the comoved real estate developer grew from 5 million RMB to a multi-billion company and was able to control 8% of the total urban area of development projects in Kunming. Qiu He was promoted to vice party secretary of Yunnan province in 2011 and was later investigated and prosecuted for corruption in 2015. The CEO of the developer Liu Minggao resigned from his role in the same year. The company largely canceled its business in Yunnan province after 2015.

Table 3 presents the regressions at land transaction level examining whether comoving firms behaved systematically different in land purchases. The key variable of interest is 1(CONNECTED), indicating that the firm purchasing a parcel of land was a newly established firm moving along with a transferred leader, as defined in the previous sections. We further break down 1(CONNECTED) into two categories: CONNECT_HOLD, indicating comoving firms with which the transferred leader remained in the same place; and CONNECT_LEAVE, indicating those that the transferred leader did not serve in the same place any more. We also control for a set of dummies and economic variables to alleviate potential endogeneity due to unobservable effects varying at the city, industry, temporal levels and across different types of land usage.

Column (1) of Table 3 shows that comoving firms enjoyed a significant discount (11.5%) than other types in the unit land price. The result in column (2) further demonstrates that the premium due to personal connection is even larger for comoving firms connected to an incumbent (transferred) leader than those associated with a former leader, notwithstanding a significant premium for both compared with unconnected firms. In columns (3)–(4), we estimate the effects of personal connection on the area of purchased land. The results show that comoving firms tend to purchase a larger parcel of land compared with unconnected firms. The results allude to a considerable amount of rent-seeking activities behind the comovement of local leaders and firms.

Table 4
Firm survival: Cox proportional hazard rate.

Dependent Variable	Hazard Rate			
Sample	FULL	FULL	FULL	Private firms
	(1)	(2)	(3)	(4)
CONNECT_HOLD	−0.235***	−0.217***	−0.159***	−0.236***
	(0.013)	(0.013)	(0.013)	(0.015)
CONNECT_LEAVE	0.182***	0.186***	0.154***	0.196***
	(0.012)	(0.012)	(0.012)	(0.013)
LOCAL	−0.026***	−0.086***	−0.146***	−0.087***
	(0.003)	(0.003)	(0.003)	(0.003)
log(CAPITAL)		−0.213***	−0.216***	−0.214***
		(0.001)	(0.001)	(0.001)
Provincial Dummies	Y	Y	Y	Y
Establishment Year Dummies	N	N	Y	Y
Log pseudo-likelihood	−13,086,401	−13,031,786	−12,979,282	−10,259,987
Observations	2,438,195	2,438,195	2,438,195	1,950,557

Notes: The sample covers more than two million firms established during 2000–2011. Base group: unconnected & established by people outside the province. We randomly sampled one sixth of the full sample to avoid calculation difficulties. * Significant at 10%, ** 5%, *** 1%.

4.4. Firm survival

The findings that local leaders play an important role in facilitating inter-city investments may have further implications for firm performance and behavior. The literature provides mixed views on the economic impacts of personal connection. Politically connected firms are often found to have an advantage in terms of access to credit and other benefits granted by the government, such as price discount in land purchases (Chen et al., 2017; Cingano and Pinotti, 2013). This logic implies that comoving firms are more likely to survive in the market. On the other hand, however, the dependence on political rent-seeking may undermine the incentive for innovation and lower comoving firms' productivity in the long run (Baumol, 1990; Earle and Gehlbach, 2015; Fisman, 2001). Lacking detailed information on firms' investments and profits to estimate firm productivity, instead, we estimate a Cox Proportional Hazards model as in Eq. (3) to evaluate the duration of firms with different types of personal connection. The data for each firm's duration in the market is inferred through the time of registration and cancellation in the SAIC's data.

$$h_{m,p}(t) = h_0(t) \exp[\alpha_1 \text{ CONNECT\_HOLD}_{m,t} + \alpha_2 \text{ CONNECT\_LEAVE}_{m,t}$$
$$+ \alpha_3 \text{ LOCAL}_{m,t} + \beta \text{ log(CAPITAL}_m) + \delta_p + \mu_t] \quad (3)$$

$h_{i,p}(t)$ is the hazard of firm i located in province p dropping out at time t. $h_0(t)$ represents the nonparametric baseline hazard of exit. The key independent variables are three dummies characterizing the types of firms. CONNECT_HOLD$_{m,t}$ and CONNECT_LEAVE$_{m,t}$ are defined as in Table 3. LOCAL$_{m,t}$ specifies whether the legal representative of that firm is a local resident at time t. The base group consists of firms with legal representatives from cities other than the firm's location and incumbent leaders' previous job location. The four categories are mutually exclusive and the coefficients of α_1 to α_3 reflect the differentiated likelihoods of dropping-out for the three groups in proportion to that of the base group. In addition, we control for the logarithm of paid-in capital, province fixed effects, along with year dummies indicating the year the firms were established.

Table 4 presents the estimates. Column (1) shows that firms established by local people have longer duration than those by unconnected non-locals. Interestingly, the survival rates are bifurcated between nonlocal comoving firms and firms whose connected patrons were transferred away. The coefficients of CONNECT_HOLD and CONNECT_LEAVE are, respectively, −0.235 and 0.182. This implies that the firms in the first category are 21% less likely to exit the market $(1 − \exp(−0.235) = 0.21)$ than the base group, but the same set of firms can become 20% more likely to exit the market once the

connected leaders are gone $(1 − \exp(0.182) = 0.20)$. Unsurprisingly, firm survival is positively associated with the scale measured by the paid-in capital. But neither the scale, province dummies, nor establish-year dummies change the estimates qualitatively, as columns (2) and (3) show. Column (4) presents the estimates using private firms only, as the pattern of firm-official comovement is mainly driven by the transfers of private firms. The results presented in column (4) are close to those obtained from the full sample.

The results presented in Table 4 should be interpreted with a caveat. Firms' duration in the market, as manifested by their presence in the SAIC's database and cancellations, is a coarse measure of their performance. Paradoxically, a well connected firm may be quick to pull out of the local markets and further moving along with their patrons even if these firms are in a good shape. The bifurcation between CONNECT_HOLD and CONNECT_LEAVE thus may partially capture opportunism, rather than low performance, of comoving firms. Both scenarios are consistent with the premise that local leaders play a personal role in facilitating those investments across cities.

5. Accounting for political incentives

We now examine how the officials' career-concerned incentives interplay with their roles in activating inter-city investments. To the extent that new investments are instrumental for bringing forth jobs and boosting economic growth, they may contribute positively to the political career of transferred leaders. At the same time, however, the interaction between officials and firms may be a risky business due to potential rent-seeking. Thus, by personally facilitating inter-city investment flow, a transferred leader can face a higher probability of being investigated for corruption.

To account for these potential mechanisms, we conduct an analysis on how the magnitude of coordinated business movement is correlated with the probabilities of promotion and prosecution for corruption. This analysis, however, faces a salient challenge of sample selection problem. Not all local leaders have an equal chance of being transferred, and thus whether a leader can be transferred at certain point along career path may be correlated with his or her prospect of promotion. It is infeasible to estimate the effect of coordinated firm movements on the turnover of non-movers due to the lack of a proper counter-factual. Keeping this caveat in mind, we estimate a ordered logit model *a la* Li and Zhou (2005) on the categorical changes in the career mobility of local leaders who were transferred among different cities for at least

Table 5
Impacts on officials' career outcomes.

Dependent Variable	TURNOVER		CAUGHT	
	Ordered Logistic		Logistic	
	(1)	(2)	(3)	(4)
SHARE	0.122	0.106	0.748*	0.730*
	(0.449)	(0.455)	(0.406)	(0.407)
log (CAPITAL +1)	−0.0268	−0.0268		0.006
	(0.0208)	(0.0216)		(0.006)
Constant cut1	−2.020**	−36.03		
	(0.566)	(49.65)		
Constant cut2	1.350**	−32.66		
	(0.567)	(49.64)		
Province FE	Y	Y	Y	Y
YEAR FE	Y	Y	Y	Y
Rank FE	N	Y	N	Y
Age Cohort FE	N	Y	N	Y
Rank ×AGE FE	N	Y	N	Y
Log Pseudo-likelihood	−584.6	−598.1	−161.5	−151.1
Pseudo R2	0.038	0.015	0.025	0.058
Observations	712	712	506	506

Notes: Results in columns (1) to (2) are obtained from using individual-term data, and results in columns (3) to (4) are obtained from using individual data. The official ranking dummies in columns (1) to (2) refer to the official's current ranking for the term, and the results those in columns (3) to (4) refer to dummies for the highest ranking throughout the official's career. * Significant at 10%, ** 5%, *** 1%.

once.

$$\Pr[\text{TURNOVER}_{ir} = 0] = \Lambda(\alpha_1 - X\beta),$$
$$\Pr[\text{TURNOVER}_{ir} = 1] = \Lambda(\alpha_2 - X\beta) - \Lambda(\alpha_1 - X\beta), \quad (4)$$
$$\Pr[\text{TURNOVER}_{ir} = 2] = 1 - \Lambda(\alpha_2 - X\beta)$$

with

$$X\beta = \beta_0 \, \text{SHARE}_{ir} + \beta_1 \log(\text{CAPITAL}_{ir} + 1) + X_{ir}\beta_2 + \delta_{ir}$$

The dependent variable TURNOVER in Eq. (4) is a categorical variable taking three values: 0 for the termination of a leader's tenure, 1 for lateral transfer, and 2 for promotion to a higher-ranked position. The specific definitions of lateral transfer and promotion are provided in Section 3.2. The observation for TURNOVER is separately coded for each local leader at the end of each term.[13] The main variable of interest is SHARE, the share of paid-in capital of comoving firms among all newly registered firms during term r. To ease the concern that the prevalence of connected investments may be correlated with leaders' genuine effort of investment enhancement, we also control for $\log(\text{CAPITAL}_{ir} + 1)$, the scale of all local and nonlocal paid-in capital from all cities accumulated during leader i's term r. δ_{ir} indicates a set of dummies representing unobservable provincial and official-term effects. $\Lambda(\cdot)$ specifies the cumulative logistic distribution function. α_1 and α_2 are two cut-off values to be estimated.

$$\Pr[\text{CAUGHT}_i = 1] = \Lambda[\beta_0 \, \text{SHARE}_i + \beta_1 \, \log(\text{CAPITAL}_i + 1) + X_i\beta + \delta_i],$$
$$(5)$$

Eq. (5) estimates the probability of being prosecuted for corruption among all transferred leaders. The dependent variable, CAUGHT_i, is a dummy indicating whether the leader was prosecuted for corruption as of the end of 2016. Similarly as in Eq. (4), SHARE stands for the share of connected paid-in capital and $\log(\text{CAPITAL}_i + 1)$ is the total amount of paid-in capital throughout the leader's tenure in the sample period. δ_i represents a set of dummies capturing provincial and leader features.

Table 5 present the estimates for the correlation between political turnover and anti-corruption investigation. In columns 1–2, *Province FE* refer to the dummy variables indicating specific province an official-term was located in. *Year FE* are the dummy variables indicating the year when the official-term started. *Age cohort* and *Rank FE* are respectively a set of dummy variables indicating the categories of officials' age and administrative rank for the starting year of each official-term, as defined in Section 3.2. The dummy variables used for columns 3–4 follow similar rules of definition, with the only difference that they are defined for each official according to the starting year of their most recent term.[14] Columns 1–2 show that the comovement of local leaders and investments does not increase the probability of promotion for officials. Columns 3–4 report that the coefficients for SHARE are positive and weakly significant. Controlling for the scale of investments does not make a difference for promotion or the pattern of anti-corruption prosecution. While these results are far from conclusive in telling apart the career-concerned and rent-seeking motives of local leaders in inducing interregional investments, they nevertheless raise a possibility of opportunism and personal enrichment from those deals.

Table A2 in the online appendix provide more tests on the variation in the strength of leader-firm comovement for different types of local leaders. We found that leaders induced more comoving investments when they left their hometowns and when their ages have passed the *de facto* promotion age limit. Countering the career-concerned explanations, these results are consistent with a pattern of opportunism by local leaders: officials having promotion incentives are more cautious and refrain from a deep involvement in the leader-firm interaction. Meanwhile, a hometown tie may help reduce the information cost for the leaders in deciding whether to collude with private firms (Jia and Nie, 2015).

6. Conclusion

This paper documents the spatial correlation between bureaucratic transfer and interregional investment across Chinese cities in 2000–2011. Using comprehensive administrative data on business registration records, we find a significant pattern of comovement of local leaders and firms across prefecture level cities, with the effects persistent for over 4 years when the transferred leaders stay in power in the same place. This correlation stems from private but not state-owned enterprises and is more pronounced when the recipient cities are featured with a higher entry barrier. We also provide suggestive evidence showing that the comoving firms purchase larger parcels of land and at lower prices. Moreover, those firms had the highest survival rate in the market when the transferred leaders stay in office, but lost this advantage after their connected patrons were transferred further away.

These findings highlight the role of local leaders in shaping private investment. Our empirical analyses do not spell out an exhaustive answer for the overall welfare implication of the interaction between local leaders and private firms. Considering that these investment flows have to overcome institutional frictions in the first place, local leaders may be instrumental for expanding the market. In this case, the enhancement of private investments are often obtained through personal favoritism as opposed to through an improvement on institutional quality across the board. Our research thus echoes the literature on the utility of relation-based special deals in economic development (Allen et al., 2005; Bai et al., 2020a).

However, relation-based deals come with a price. Our findings show that personal favor for comoving firms may crowd out unconnected ones and hence potentially inhibit productive entrepreneurship, as

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[13] That is, if a leader i is transferred from city A to B, we code her career in A and B as two separate terms.

[14] For example, suppose an official serves in city A during 2002–2004, and in city B during 2005–2008. The dummy variables will be coded according to her term in city B in 2005.

suggested by Baumol (1990) and Murphy et al. (1991). Moreover, the political rents accrued to local leaders may reinforce the incentive to preserving institutional obstacles, thus leading to perpetuated resource misallocation and a repression of entrepreneurship. Future research may be extended to studying the distortions and unintended spillovers associated with the comovement of local leaders and firms.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.jdeveco.2021.102717.

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