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Power and publications in Chinese academia

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ABSTRACT

In power-oriented societies, academia may not be immune to the influence of power. This paper studies the power-publication link by applying an event-study strategy to a panel dataset of the publication and biographical information of deans of economics schools in Chinese universities. We find that (i) deanship increases an individual's publication by 0.7 articles per year; (ii) the increased publications stem from work coauthored with other researchers within the same university; (iii) the topics of the increased publications are more likely to deviate from the deans' research area prior to becoming deans; and (iv) the power effect is smaller for top universities and leading journals, and for scholars with more pre-dean publications. These patterns appear consistent with the role of power in resource allocation rather than the impact of ability or reputation of the deans and thus have implications on distortions in knowledge production.

1. Introduction

Although the importance of power is well documented in politics, economics, and psychology (e.g., Adams et al., 2005; Acemoglu and Robinson, 2006; Schilke et al., 2015), researchers have paid less attention to its impact in academia, perhaps believing that in this context, resource allocation should be driven primarily by academic merit. In power-oriented societies, however, academia may not be immune to the influence of power. In this paper, we investigate the link between power and publications in Chinese academia and attempt to understand why power matters. By documenting how administrative power affects the quantity and topics of an individual's publications, our study provides evidence on rent seeking in knowledge production. By offering a political economy perspective, it also contributes to a growing literature on the determinants of scientific output (e.g., Aghion et al., 2010; Borjas and Doran, 2015a and 2015b; Iaria et al., 2018).

Our focus is the power-publication link in Chinese universities. This setting is relevant and useful for at least three reasons. First, China has become the world's second-largest producer of research articles behind only the United States. Meanwhile, it faces serious difficulties in improving research quality and efficiency, often attributable to its top-down administrative system (Xie et al., 2014) and factors other than research ability such as connections (Fisman et al., 2018). Second, realizing the importance of scientific output for economic growth, the Chinese government has prioritized higher education since the 1990s and has invested around one trillion US dollars in higher education each year in the recent decade (China Educational Finance Statistical Yearbook 2017). Scholars have argued that the allocation of a large part of these resources has been highly distorted by administrative power. For instance, two leading scientists, Yigong Shi and Yi Rao, pointed out in *Science*, that "to obtain major grants in China, it is an open secret that doing good research is not as important as schmoozing with powerful bureaucrats and their favorite experts" (Shi and Rao, 2010). Third,

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because the administrative system in Chinese universities is part of the country's top-down bureaucratic system, we can have a clear definition of "power". Specifically, we can study the dean of the schools, whose power comes from administrative hierarchy rather than academic performance (as we will show).

To provide systematic evidence on the power-publication dynamics, we narrow our focus to the field of economics and construct a unique 1990–2009 dataset of the publication and biographical information of the heads (hereafter, "deans") of major research schools, departments, and institutions of economics. We focus on publications on Chinese journals (whose turnaround time is typically shorter than one year). Thus, by examining the publication records of these deans before and after their appointment, we can quantitatively measure power's impact on their scholarly publications. We attempt to use a specific field to illustrate the influence of administrative power in Chinese academia, which is widely discussed yet under-researched, particularly in the social sciences.[1]

One major empirical challenge in such an analysis is the possibility of an individual being promoted to dean because of previous productivity. To address this challenge, we use a within-individual event-study strategy that isolates the effect of individual characteristics that do not change quickly over time.[2] Specifically, we include both year and individual fixed effects in our analysis – individual fixed effects control for the factors that do not change or change slowly over time such as personal ability, whereas yearly fixed effects control for the factors that affect all individuals similarly over time such as improvement of research capacity of Chinese universities. In later analysis, we also allow the effect of deanship to vary by the pre-dean publications and hence further control for the influence of ability.

We present four main empirical findings. First, while we find no increasing trend in publications before appointment to dean, we observe a notable and positive change in publications post appointment. In contrast, the publications for the whole school is not affected by the turnover of deans. Second, we find not only that improved publications come from an increase in coauthored publications rather than single-authored publications but that this increase is restricted to collaboration with researchers within the same institution. No similar change is observable for collaboration with researchers outside the dean's university. Third, we find that the topics of the increased publications are more likely to deviate from the dean's research area prior to becoming a dean. Finally, we demonstrate that the power effect is smaller for those working in top universities, for publishing on leading journals, and for scholars with higher pre-dean publications, suggesting that the power effect in Chinese academia does not result from individual ability and power can be constrained by other factors.

To see the implications of our findings on distortion, we discuss three interpretations of the positive power-publication link. The first, "the ability effect", assumes that those with an increasing productivity trend are more likely to be selected for promotion to dean. They get more publications thanks to their ability. The second, "the reputation effect", refers to the possible influence of dean's reputation that may facilitate publication. Other scholars may believe that including them as authors will increase their chances of publication. Finally, "the resource effect", assumes that power affects resource allocation. Local scholars feel pressured or actively seek to assign authorship to them because such coauthorship is closely related to resource allocation. If the increased publications were mainly driven by the dean's ability and reputation, our findings do not necessarily suggest distortion because local scholars' resources and effort are not necessarily affected. However, various pieces of evidence together suggest these two channels are unlikely to explain our findings. Instead, the resource effect appears most consistent with the data patterns. This implies that resources available to scholars depend on their relationship with the dean. Moreover, since scholars face a choice of spending their time doing research and cultivating a good relationship with the dean, our findings also imply that scholars' effort decision can be distorted.[3]

Our study adds to a growing literature on the determinants of scientific production and academic performance. An earlier line of research have emphasized the role of age and gender (e.g., Cole, 1979; Cole and Zuckerman, 1984; Levin and Stephan, 1991; Oster and Hamermesh, 1998; Xie and Shauman, 1998; Ceci and Williams, 2011). More recently, scholars have expanded our understanding on the role of connections ((Laband and Piette, 1994), spillovers (Borjas and Doran, 2015a; Borjas et al., 2018), international scientific cooperation (Iaria et al., 2018), face-to-face communication (de Leon and McQuillin, 2018) and scientific prizes (Borjas and Doran, 2015b). Our study provides a political economy perspective to the literature on academic performance by documenting the role of administrative power.

Broadly speaking, our study also contributes to an increasing literature on human capital and physical capital misallocation (Murphy et al., 1991; Hsieh and Klenow, 2009; Midrigan and Xu, 2014). Previous studies have revealed misallocation of resources across different industrial sectors. In an efficient capital market, capital should be allocated to producers with higher productivity. Analogically, in an efficiency-orientated academia, resources should be allocated to scholars who can produce more research outputs. In a power-oriented society, however, it is conjectured that researchers with close connections with powerful people, rather than those with high productivity, would obtain resources (e.g., Shi and Rao, 2010). In our context, we find that gaining power increases publications more for those with lower pre-dean productivity, suggesting that the resource effect matters more for those with lower

[1] The impact of administrative power in resource allocation is well recognized by the academia as well as the government. In 2014, the Ministry of Education promulgated a regulation to control the ever-expanding administrative power. But as argued by China observers, "the Regulation cannot solve the problem of administrative power outweighing academic power" (see a report on "who is the gatekeeper of Chinese academic power?" here: http://www.universityworldnews.com/article.php?story=20150330041254595).

[2] An alternative strategy is to find a group of faculties, who were candidates for the dean position but were not promoted to be deans, as the control group. Unfortunately, we do not have such information and thus focus on the within-individual variation. Nevertheless, we also examine the publications of the school, which can be broadly taken as a comparison group.

[3] For instance, Shi and Rao (2010) argue that "a significant proportion of researchers in China spend too much time on building connections and not enough time attending seminars, discussing science, doing research, or training students."

productivity.

Because the administrative system in Chinese universities belongs to the country's bureaucratic system, the administrative power of the dean may be particularly influential in our context. However, the patterns we uncover can be generalized to less extreme cases where universities are less autonomous and more influenced by the state. For instance, based on surveys of faculties in universities in Japan and Hong Kong, scholars find that hierarchical power relations often override intellectual contribution in multiple authorship (Macfarlane and Saitoh, 2009; Macfarlane, 2017). Even in Europe and the U.S., there is variation in the influence of administrative power that matters for research output (Aghion et al., 2010). Thus, while our study focuses on a specific field in China, our findings speak to a general issue in academia, especially in the context where administrative power influences resource allocation.

2. Background and data

2.1. Background

Our sample comprises 95 public universities, which covers all China's Project 211 universities (an abbreviation of the top 100 universities for the 21st century) that have a school (or department) of economics.[4] Among these universities, 29 also belong to Project 985, the best universities in China.[5] We focus on a specific group of scholars who, within their university, hold the highest administrative position among all researchers working in economics or finance. These scholars could be the head of a department, the dean of a school, or an executive vice dean of a school. We call these leaders Deans for simplicity throughout the paper.

In Chinese universities, deans, as administrative leaders of a school, are responsible for teaching, academic research, communication with other institutes, and many other administrative functions (Yang, 2005). They affect the resource available to a scholar in the school via at least three channels: (1) selection and promotion of scholars, (2) eligibility to substantial subsidies from the government, and (3) eligibility to awards and grants provided by the government.

Specifically, within the school, the deans finalizes the decisions in relation to selection and promotion, which determine a scholar's wage and benefits. In addition to the formal wages and benefits, subsidies from both the central and local governments become more important in recent decades via various programs.[6] Because these programs require the recommendation by school, the support of the deans is critical for the eligibility of these subsidies.

For resources available outside the university such as national-level awards and grants, the recommendation of the deans is important and often a prerequisite. For instance, the major funding organizations such as the National Natural Science Foundation of China (NSFC) and the National Social Science Fund of China (NSSFC) do not accept individual applications.[7] Instead, the schools collect and evaluate all the applications, and then decide which ones are appropriate for submission. Thus, deans' influence matters for most resources available to researchers within a school.

Moreover, in public universities, the administrative system is part of the country's bureaucratic system, so when their terms of office end, deans, like government officials, are usually promoted to a more powerful position or moved to another position with more or less the same power. Thus, their power often persists even after they leave office. Only a few deans in our dataset held no managerial position after leaving office, providing us a useful subsample with which to assess the impact of losing power.

2.2. Data

To construct the dataset, we first hand collect the name of the dean who holds office in 2009. Then, we trace the publication records for each of them from 1990 to 2009. We choose 1990 as the starting year because the number of publications on academic journals has become an important criterion to evaluate researchers only since the 1990s. Our dataset includes 99 deans from the 95 universities (one dean for each university except four universities with multiple units in economics).

Our data come from several sources including: (1) the curricula vitae on the university web sites, (2) the popular online Chinese encyclopedia, *Baidu Baike*, (3) the Chinese Journals Literature Database (CNKI), and (4) the official websites of the National Natural Science Foundation of China (NSFC), the National Social Science Fund of China (NSSFC), and the Humanities and Social Sciences Foundation of the Ministry of Education of China (HSSFC).[8] We focus on the academic journals on economics or finance that are widely used in Chinese universities to evaluate their faculties in economics or finance. Among these journals, *Economic Research Journal, Social Sciences in China, The Journal of World Economy*, and *China Economic Quarterly* are four leading ones and are defined as

[4] The Project 211 was initiated by the central government in 1995, with the intent of raising the research standards of high-level universities. The name for the project comes from an abbreviation of the 21st century and 100 (approximate number of participating universities).

[5] The Project 985 was launched in May 1998 and aimed at promoting world-class universities. It comprises 39 universities, all of which belong to Project 211.

[6] To support scholars, the central government has initiated various programs in the past decades such as the Changjiang Scholars Program, the Recruitment Program of Global Experts (known as the "Thousand Talents Plan"), the National Key Research and Development Program of China (known as the "Ten Thousand Talents Plan"), and others. For instance, the "Thousand Talents Plan" initiated in 2010 grants a lump sum of 500,000 RMB (about 73,000 USD) and research subsidies varying from 1 million to 3 million RMB (about 146,000 USD to 439,000 USD) to a recipient. Most provincial governments have also initiated their local programs to support scholars in their provinces.

[7] See the regulations on grant application here: http://www.npopss-cn.gov.cn/n1/2016/0927/c219469-28744135.html

[8] The official websites of CNKI and *Baidu Baike* are http://www.cnki.net and http://baike.baidu.com, respectively. The official websites of three national grants NSFC, NSSFC and HSSFC are http://www.nsfc.gov.cn, http://www.npopss-cn.gov.cn, and http://www.sinoss.net, respectively.

Top journals. All the others are defined as *Non-top journals*. In addition, we use the affiliation of authors to define local collaboration (with scholars in the same university) and non-local collaboration (with scholars beyond the university). The collaboration events are defined based on authors and one coauthored publication can have multiple coauthors. Thus, the number of collaboration events is slightly higher than the number of coauthored publications. NSFC, NSSFC, and HSSFC provide information of major grants. In addition, we collect university/school characteristics including school faculty size and university research funds. Because it is challenging to get yearly data for these characteristics, we focus on their cross-sectional variation in 2000 and allow their effects to vary over time.

Our main dependent variable is number of publications, which has been employed in the existing literature (e.g., Xie and Shauman, 1998; Combes and Linnemer, 2003; Borjas et al., 2018). Because few individuals in our sample publish in foreign languages, we focus on articles in Chinese. This focus is also important in that the turnaround time of Chinese journals, unlike that of international economics journals, is generally shorter than one year, which allows us to link the publication year with the time of becoming a dean. According to the authors' calculation, for example, it takes around 64 days to publish a paper in *China Industrial Economics* (*Zhongguo gongyejingji*), a highly ranked journal in the field of economics.

To understand the channels through which power has an effect, we count the numbers of single-authored and coauthored publications and also differ local collaborations (coauthored with colleagues or students) from non-local collaborations (coauthored with scholars outside the dean's university). We further examine the topics of the publications to check whether the research topics of the dean's publications also change with administrative power, inspired by a literature on cognitive mobility (e.g., Borjas and Doran, 2015a). Specifically, we define cognitive similarity in topics in two steps. First, based on the titles of the articles published more than five years before one becomes a dean, we identify the top-5 phrases and use them to define one's research area. Second, we calculate the frequency of these top-5 phrases in the titles of the articles published year by year (except for the period more than five years prior to becoming a dean), weighted by the total number of phrases in the titles.

Finally, we collect data on the major grants awarded by the central government, including those from NSFC, NSSFC, and HSSFC. Such information provides suggestive evidence for the impact of power on resource allocation.

Definitions of the key variables are summarized as follows. *Dean* is a dummy variable equal to 1 post appointment to dean. This is our main explanatory variable. *Age* is calculated based on the birth year in one's resume. *The number of publications* is the number of articles of an individual published on academic journals each year. *The number of publications of the school* is the number of academic publications of all researchers affiliated to the dean's school each year. *The number of single-authored publications* is the number of an individual's single-authored articles published on academic journals each year. *The number of co-authored publications* is the number of an individual's academic publications co-authored with other researchers each year. *Events of local collaboration* is the sum of collaboration events each year, with researchers who are from the university with which the dean is affiliated. The collaboration events are defined based on authors and one coauthored publication can have multiple coauthors. Thus, the number of collaboration events is slightly higher than the number of coauthored publications. *Cognitive similarity* measures the similarity in the topics in the publications compared with those published six or more years before one becomes a dean. *Receiving a major grant* is a dummy variable

Table 1
Summary Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Time-Variant Variables					
Deanship	1951	0.317	0.466	0	1
#Publications	1951	1.906	2.966	0	26
#Single-authored	1951	0.603	1.381	0	17
#Coauthored	1951	1.303	2.544	0	26
Collaboration events	1951	1.720	3.568	0	43
Local collaboration	1951	1.343	3.020	0	34
Cognitive similarity (vs. 6+ yrs pre-dean)	825	0.052	0.089	0	0.6
School-level publications	1292	54.802	70.337	0	497
Any major grant (NSFC/NSSFC/HSSFC)	1951	0.076	0.266	0	1
Time-Invariant Variables					
Male	99	0.939	0.240	0	1
Oversea PhD	99	0.111	0.316	0	1
Age of becoming a dean	99	44.162	5.415	33	66
Deanship at a Project-985 univ.	99	0.263	0.442	0	1

Notes: (i) Individual characteristics such as gaining of power (dean), age of becoming a dean, age, gender, and oversea PhD are collected from individuals' curriculum vitae and the popular online Chinese encyclopedia, *Baidu Baike* (http://baike.baidu.com).
(ii) Collaboration events including local collaboration events are calculated by the authors using university names from individuals' publications.
(iii) Cognitive similarity measures the similarity in topics compared with those published six or more years before one becomes a dean. By definition, this variable is not available for the publications six or more years pre deanship.
(iv) The number of publications of schools are collected from CNKI (http://www.cnki.net). Because the publications before 1995 at CNKI usually only report univeristy names but not school/department names. As a result, we miss publications at the school/department level for the earlier years.
(v) Any major grant is collected from the official website of NSFC (http://www.nsfc.gov.cn), NSSFC (http://www.npopss-cn.gov.cn), and HSSFC (http://www.sinoss.net).

Table 2
Power and publications.

Mean Dep. Var.	(1) Individual's publications 1.906	(2)	(3)	(4)	(5) Pub. of the school 58.310
6+ years pre dean	−0.935	−0.306	−0.098	−0.258	14.347
	(0.649)	(0.518)	(0.453)	(0.464)	(20.698)
5 years pre dean	−0.479	−0.130	−0.095	−0.127	8.243
	(0.520)	(0.475)	(0.479)	(0.522)	(14.062)
4 years pre dean	−0.364	−0.100	−0.067	−0.255	2.611
	(0.369)	(0.356)	(0.349)	(0.392)	(10.843)
3 years pre dean	−0.326	−0.145	−0.127	−0.279	−3.380
	(0.362)	(0.341)	(0.350)	(0.386)	(6.787)
2 years pre dean	−0.393	−0.299	−0.293	−0.271	−2.403
	(0.289)	(0.281)	(0.288)	(0.328)	(4.584)
year of promotion	0.561**	0.458*	0.470*	0.373	0.453
	(0.275)	(0.275)	(0.281)	(0.335)	(4.035)
1 year post dean	0.980***	0.773**	0.811**	0.888***	−4.001
	(0.298)	(0.309)	(0.311)	(0.326)	(6.994)
2 years post dean	1.098***	0.806*	0.850**	0.885*	−4.472
	(0.398)	(0.413)	(0.419)	(0.466)	(9.723)
3 years post dean	1.352***	0.935**	0.932*	1.070*	2.867
	(0.445)	(0.465)	(0.475)	(0.539)	(13.419)
4 years post dean	2.273***	1.746***	1.760***	2.095***	13.448
	(0.538)	(0.578)	(0.588)	(0.642)	(17.346)
5 years post dean	1.404**	0.873	0.851	1.104	11.781
	(0.537)	(0.608)	(0.637)	(0.721)	(19.778)
6+ years post dean	2.914***	1.932**	2.138**	2.590***	32.749
	(0.671)	(0.918)	(0.888)	(0.962)	(27.270)
Year FE	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes
Individual FE	No	No	Yes	Yes	Yes
Sch./Uni. controls	No	No	No	Yes	Yes
Observations	1951	1951	1951	1619	1107
R-squared	0.198	0.252	0.479	0.490	0.800
Average Effect	1.729***	1.069***	0.731***	0.805***	−1.429
	(0.380)	(0.366)	(0.271)	(0.289)	(6.054)

Notes: The table shows that the number of publications of an individual increases significantly after one becomes a dean. However, becoming a dean has no effect on the number of publications of the school. Individual controls include gender, age, age squared and oversea degree. School and university controls include school faculty size and university research budget in 2000 and their interactions with year fixed effects. Standard errors in parentheses are clustered at the individual level. *** significant at 1%, ** significant at 5%, * significant at 10%.

equal to 1 if a dean obtains any grant from NSFC, NSSFC, and HSSFC in a year.

Table 1 reports the summary statistics for the key variables. The average age of becoming a dean is 44.2. Among all 99 deans (one for each university except four cases), only 6 are women and 11 obtained their Ph.D. degree abroad (from either the United States or Europe). On average, each individual publishes 1.9 papers per year, 1.3 of which are coauthored. 94% of these publications appear in non-top journals. Local collaboration is about four times as frequent as non-local collaboration. The mean of obtaining a major grant is 7.6%.

3. Estimation strategy

The within-individual event-study strategy used to evaluate the impact of a dean's power is based on two empirical specifications. In the first, we investigate its year-by-year effects using the following flexible specification:

$$y_{it} = \alpha_i + \gamma_t + \sum_{j=-6+}^{-2} \beta_j before_{ij} + \sum_{j=0}^{6+} \beta_j after_{ij} + \delta X_{it} + \varepsilon_{it}, \quad (1)$$

where the dependent variable, y_{it}, is the outcome of interest of individual i in year t. The individual fixed effects α_i indicate that all the unobserved and time-invariant individual factors, such as innate ability, are controlled for. We also control for the year fixed effects γ_t to deal with shocks common to all scholars (e.g., the general productivity of a Chinese university increases with China's gradual opening to the world). Our key explanatory variables are $before_{ij}$ and $after_{ij}$, which are dummies measuring the distance to the year of promotion to dean. For example, for $j = -3$ ($j = 3$), $before_{ij}$ ($after_{ij}$) equals 1 if the time is three years before (after) dean i is promoted and 0 otherwise. To focus on the period during which an individual becomes a dean, we calculate the publications for $-5 \leq j \leq 5$ and group all publications six years before (after) promotion into the time $j = -6+$ ($j = 6+$). We use the year before promotion to dean ($j = -1$) as the comparison period.

We include two sets of control variables in X_{it}. The first set is individual characteristics including age, gender, and overseas

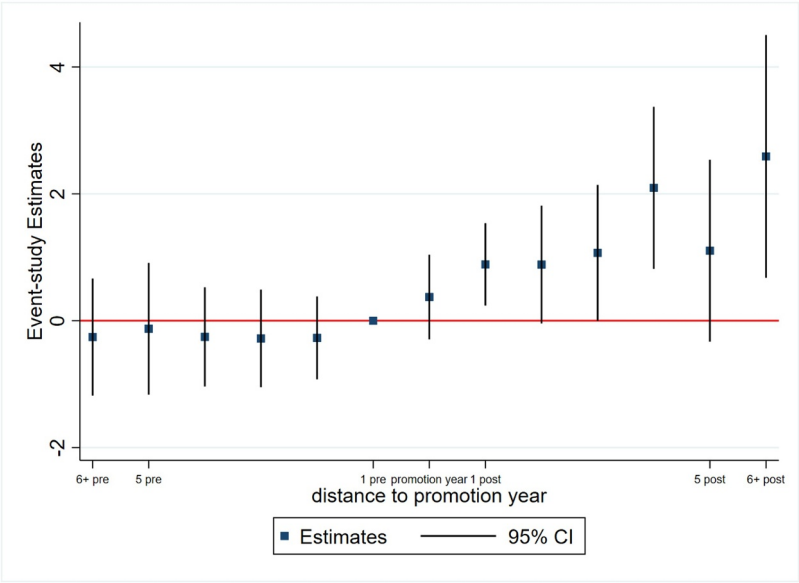

Fig. 1. Power and Publications: Event-Study Estimates.
Notes: This figure plots the estimates from column (4) of Table 2. Two patterns are apparent. First, we observe a notable increase in the number of publications following promotion. Second, in contrast with the post-dean publications, the analysis yields no significant pre-promotion coefficients, indicating no trend of increased publications prior to promotion.

doctoral degree. Once we control for individual fixed effects α_i, the characteristics that do not vary over time (e.g., gender and overseas education) are absorbed, leaving age as the only time-variant variable. Because some studies on productivity lifecycle patterns claim that the age-productivity relation is nonlinear (Cole, 1979; Levin and Stephan, 1991; Oster and Hamermesh, 1998), we allow for a flexible effect of age on publications by controlling for both age and its squared term. The second set in X_{it} includes university funds and school faculty size in 2000 and their interactions with year fixed effects. By including the interactions, we allow the effects of these characteristics to vary over time. All standard errors are clustered at the individual level.

In addition to power's year-by-year impact, we estimate the following equation to measure power's average effect:

$$y_{it} = \alpha_i + \gamma_t + \beta dean_{it} + \delta X_{it} + \varepsilon_{it}, \tag{2}$$

where $dean_{it}$ is a dummy variable equal to one if individual i is a dean in year t. The parameter of interest β measures the average impact of power (i.e., of being a dean) on the outcomes of interest.

4. Empirical results

4.1. The impact of power on publications

By using Eq. (1) to estimate the year-by-year effects, we show that becoming a dean significantly increases a scholar's publication rate in Table 2. For example, with year fixed effects, column (1) shows that there is a notable jump in the number of publications following promotion, an effect that generally increases over time, ranging from 0.5 to 2.9 articles per year. The result in column (2), when gender, oversea experience, age and age squared are controlled for, is similar, indicating that our finding is not explainable by a lifecycle effect. With individual fixed effects added in column (3) presents a similar result. Finally, when further controlling for number of faculty members in a school and research funds of a university (column (4)), the effect of becoming a dean on publications is similar to those from the other specifications.

We visualize the estimates from column (4) in Fig. 1. Two patterns are clear. First, we observe a notable increase in the number of publications following promotion. Second, in contrast with the post-dean publications, the analysis yields no significant pre-promotion coefficients, indicating no trend of increased publications prior to promotion. In other words, productivity does not seem to be the reason for promotion to dean.

One possible concern, however, is that it may reflect the role of omitted variables at the school level, such as an increase in human or physical capital over time that affects the publications of all researchers including deans. In column (5) of Table 2, therefore, we report the results using publications for the whole school as the dependent variable. The absence of any significant increase in school publications after promotion to dean indicates that our baseline finding is unlikely to be driven by shocks at the school level.[9]

[9] Because the faculty size is slowly increasing over time, this finding also implies that publications per capita at the school does not increase discontinuously with the promotion event.

Table 3
Unpacking the power effect by authorship.

Mean Dep. Var.	(1) Single-authored 0.603	(2) Coauthored 1.303	(3) Local collaboration 1.343	(4) Non-local collaboration 0.377
6+ years pre dean	−0.116	−0.142	−0.333	0.081
	(0.202)	(0.388)	(0.478)	(0.219)
5 years pre dean	0.120	−0.247	−0.341	−0.008
	(0.260)	(0.411)	(0.543)	(0.193)
4 years pre dean	−0.000	−0.254	−0.310	−0.034
	(0.149)	(0.375)	(0.467)	(0.193)
3 years pre dean	−0.026	−0.253	−0.229	−0.058
	(0.142)	(0.356)	(0.459)	(0.151)
2 years pre dean	−0.115	−0.157	−0.309	0.010
	(0.129)	(0.301)	(0.378)	(0.160)
year of promotion	0.086	0.287	0.170	−0.100
	(0.133)	(0.281)	(0.318)	(0.146)
1 year post dean	0.015	0.873***	0.860**	0.158
	(0.197)	(0.275)	(0.355)	(0.172)
2 years post dean	0.136	0.749*	0.785	0.106
	(0.208)	(0.420)	(0.545)	(0.222)
3 years post dean	−0.011	1.081**	1.036	0.110
	(0.199)	(0.532)	(0.671)	(0.192)
4 years post dean	0.074	2.021***	2.434***	0.109
	(0.252)	(0.606)	(0.790)	(0.239)
5 years post dean	0.118	0.986	0.868	0.213
	(0.288)	(0.662)	(0.861)	(0.282)
6+ years post dean	−0.034	2.624***	3.069**	0.639*
	(0.239)	(0.919)	(1.286)	(0.323)
All controls	Yes	Yes	Yes	Yes
Observations	1619	1619	1619	1619
R-squared	0.391	0.503	0.472	0.257
Average Effect	0.095	0.710***	0.655**	0.018
	(0.186)	(0.262)	(0.305)	(0.116)

Notes: This table shows that the increase in publications is mainly driven by co-authorship, especially local collaboration. We include all the controls employed in column (4) of Table 2. Standard errors in parentheses are clustered at the individual level.

*** significant at 1%,.

** significant at 5%,.

* significant at 10%.

We also present the average effects in the last rows of Table 2. On average, deanship is associated with 0.7–0.8 more articles per year, about 37–42% of the mean number of publications. These findings are also robust to using Poisson and negative binomial regressions (presented in Table A1 in the *Appendix*). When using these nonlinear models, we find average marginal effects around 0.5–0.6 more articles per year.

Another way to investigate power's role is to look at its loss, which in our context is rare because deans tend to be promoted to higher positions after leaving office. In fact, in our 1990–2009 dataset, only two deans lost power. We thus extend our sample from 2009 to 2015 to obtain a small subsample of 13 deans who left office without moving on to any other managerial position. We find that losing power is associated with a notable decrease in publications (see Table A2 in the *Appendix*). This finding provides further support for the finding that power matters for deans' academic performance.

4.2. Unpacking the power effect

We have shown that power is associated with increased publications. This section will unpack the power effect by examining collaboration patterns, publication topics, as well as the heterogeneous impacts by journal and university quality.

4.2.1. Local collaboration vs. non-local collaboration

To explain this increase in publications, we first examine single-authored and coauthored papers separately and show that the increase stems from the latter. As shown in columns (1)–(2) of Table 3, there is a jump in coauthored publications after becoming a dean. The year-by-year estimates likewise reveal no pre-appointment trends in publications (see columns (1)–(4) of Table 2). An analysis of the average effect shows that becoming a dean increases coauthored papers by 0.71 a year, over 50% of the mean (1.303), but has little effect on single-authored papers (the last row in column (1)).

For the coauthored papers, we further use the affiliation of authors to define local collaboration events (with scholars in the same university) and non-local collaboration events (with scholars beyond the university). As before, the year-by-year estimates reveal no pre-appointment trends in publications (columns (3)–(4) of Table 3). However, following promotion, there is a significant increase in local collaboration events. Our estimations of average effects reveal that the increase in publications is driven by local collaboration:

Table 4
Cognitive mobility: topic similarity of the publications.

Mean Dep. Var.	(1)	(2)	(3)	(4)
	Cognitive similarity (vs. 6+ years-pre-dean publications)			
	0.052			
5 years pre dean	0.040	0.050	0.037	0.011
	(0.031)	(0.031)	(0.028)	(0.036)
4 years pre dean	0.029	0.038*	0.029	0.007
	(0.021)	(0.022)	(0.022)	(0.027)
3 years pre dean	0.000	0.008	0.006	0.003
	(0.022)	(0.022)	(0.021)	(0.023)
2 years pre dean	−0.010	−0.008	−0.008	−0.022
	(0.019)	(0.020)	(0.019)	(0.020)
year of promotion	−0.052***	−0.046***	−0.026*	−0.024
	(0.015)	(0.015)	(0.015)	(0.017)
1 year post dean	−0.058***	−0.055***	−0.033**	−0.035*
	(0.017)	(0.017)	(0.016)	(0.019)
2 years post dean	−0.068***	−0.067***	−0.043**	−0.029
	(0.017)	(0.017)	(0.017)	(0.021)
3 years post dean	−0.063***	−0.065***	−0.038**	−0.029
	(0.017)	(0.017)	(0.017)	(0.022)
4 years post dean	−0.074***	−0.078***	−0.049**	−0.032
	(0.019)	(0.019)	(0.019)	(0.025)
5 years post dean	−0.073***	−0.078***	−0.044**	−0.029
	(0.020)	(0.019)	(0.019)	(0.027)
6+ years post dean	−0.086***	−0.101***	−0.046**	−0.019
	(0.019)	(0.019)	(0.021)	(0.030)
Year FE	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Individual FE	No	No	Yes	Yes
Sch./Uni. controls	No	No	No	Yes
Observations	825	825	825	699
R-squared	0.161	0.209	0.584	0.611
Average Effect	−0.066***	−0.070***	−0.027***	−0.021*
	(0.012)	(0.012)	(0.009)	(0.012)

Notes: This table shows that topics of the publications post deanship are more different. Individual controls include gender, age, age squared and oversea degree. School and university controls include school faculty size and university research budget in 2000 and their interactions with year fixed effects. Standard errors in parentheses are clustered at the individual level.

*** significant at 1%,.

** significant at 5%,.

* significant at 10%.

becoming a dean increases local collaboration events by 0.655 a year, around 49% of the mean (1.343).[10] The impact on non-local collaboration, in contrast, is minimal and insignificant.

Another way to look at these patterns is to enumerate the number of coauthors. An average individual in our dataset has 8.1 coauthors pre deanship but 13.7 coauthors post deanship, suggesting that more people would like to coauthor with a dean. Taken together, these findings document how power affects research output: local scholars, who tend to work with or for the dean, are more likely to be influenced by the dean's power, which in turn increases the dean's own publications.

4.2.2. Cognitive mobility: change in research topics

We further investigate the topics of the publications pre and post deanship, which will shed light on the change in deans' cognitive mobility. As explained above, we use the articles published more than five years pre-deanship as the benchmark to define one's research area and examine cognitive similarity in publications year by year. We find a pattern of cognitive mobility after one becomes a dean (presented in Table 4): the topics of the post-dean publications are more likely to deviate from one's earlier research. Similar to our baseline analysis on the number of publications, the effect on cognitive mobility did not occur until the deanship. On average, the last row in Table 4 shows that the cognitive similarity decreases by about two percentage points, around 38% of the mean (5.2 percentage points). This finding suggests that deanship does not only affect the quantity but also the topics of publications.

4.2.3. The power effect by university quality

To examine the heterogeneous effect of power across universities, we divide the universities into those in and outside the Project-985 group (i.e., top vs. non-top universities). The estimates of the year-by-year effects are presented in columns (1)-(2) of Table 5. As before, there is no pre-promotion increase in publications. After promotion, we observe an increase in publications and the increase is

[10] This effect is also large compared with the average number of publication coauthored with non-dean colleagues (0.415 per year).

Table 5
Heterogeneous effects in universities and journals.

Mean Dep. Var.	(1) Top university 2.639	(2) Non-top university 1.561	(3) Top journal 0.107	(4) Non-top journal 1.862
6+ years pre dean	0.583	−0.705	0.016	−0.273
	(0.750)	(0.760)	(0.099)	(0.471)
5 years pre dean	1.014	−0.795	0.043	−0.170
	(0.891)	(0.721)	(0.069)	(0.528)
4 years pre dean	0.700	−0.828	−0.004	−0.250
	(0.641)	(0.573)	(0.055)	(0.395)
3 years pre dean	0.860	−0.725	−0.048	−0.231
	(0.694)	(0.514)	(0.059)	(0.384)
2 years pre dean	0.391	−0.644	−0.026	−0.245
	(0.445)	(0.528)	(0.038)	(0.331)
year of promotion	1.259**	−0.120	−0.006	0.379
	(0.568)	(0.412)	(0.050)	(0.324)
1 year post dean	1.260**	1.003**	0.021	0.867***
	(0.576)	(0.451)	(0.070)	(0.316)
2 years post dean	1.166	0.715	−0.071	0.956**
	(0.880)	(0.599)	(0.078)	(0.455)
3 years post dean	0.999	1.188	0.012	1.058**
	(0.842)	(0.832)	(0.099)	(0.519)
4 years post dean	1.639	2.251**	−0.081	2.175***
	(1.042)	(0.934)	(0.103)	(0.648)
5 years post dean	1.010	1.331	−0.039	1.142
	(1.116)	(1.033)	(0.115)	(0.715)
6+ years post dean	2.101	3.256**	0.050	2.540**
	(1.344)	(1.469)	(0.112)	(0.972)
All controls	Yes	Yes	Yes	Yes
Observations	613	1006	1619	1619
R-squared	0.450	0.555	0.321	0.477
Average Effect	0.565	0.854**	0.002	0.803***
	(0.441)	(0.414)	(0.058)	(0.280)

Notes: This table shows that the power effect is less important for top universities and non-top journals. The top universities refer to those listed in the Project-985, roughly the top-40 in China. We include all the controls employed in column (4) of Table 2. Standard errors in parentheses are clustered at the individual level. *** significant at 1%, ** significant at 5%, * significant at 10%.

more significant in the non-Project 985 universities. We report the average effects in the last row of Table 5. Among the non-Project 985 universities, becoming a dean increases publications by 0.854 a year, around 54.7% of the mean (1.561). Among the Project-985 universities, however, the effect is not significant and much smaller, with a magnitude around 0.565, only about 21.4% of the mean (2.639). These results verify that the power effect in top Chinese universities is weaker than in non-top universities. Multiple channels can account for this pattern. For instance, there is more competition among peers in elite universities, which can constrain the abuse of power. Another factor is that faculty members tend to have fewer outside options in non-elite institutions, and thus have stronger incentive to bribe the leader. While we do not attempt to explain the pattern with one single channel, our finding suggests power can be constrained by institutions.

4.2.4. The power effect by journal quality

We also examine the results by the quality of journals. By examining top-tier and non-top-tier journals separately, we demonstrate that achieving the power of deanship only increases publications in the latter. As shown in columns (3)–(4) of Table 5, both the year-by-year estimates and the average estimates indicate that there is no effect of power for the top-4 journals. These results verify the heterogeneity of the power effect between top and non-top journals. They further suggest that an increase in publication quantity does not imply a similar improvement in quality.

To summarize, Table 5 shows that: (1) the power effect is statistically and economically significant only for deans from the non-elite universities (those outside the 985-Project); (2) the power effect is significant only for publications in low-quality journals.

4.3. Why does power matter?

Having shown that power increases Chinese deans' publication rate by attracting more local collaboration, we now explore three possible interpretations of power's role—the ability effect, the reputation effect, and the resource effect—to determine which best fits our findings. As pointed out in the introduction, distinguishing between these channels is useful in understanding the implications of our findings on rent seeking and distortions.

4.3.1. The ability effect

The ability interpretation assumes that more competent individuals, being naturally more productive or exhibiting an increasing

Table 6
The power effect by pre-dean productivity.

Mean Dep. Var.	(1) Pre-dean productivity above median 2.652	(2) Pre-dean productivity below median 1.174
6+ years pre dean	−0.488	0.057
	(0.876)	(0.379)
5 years pre dean	−0.120	−0.051
	(0.957)	(0.316)
4 years pre dean	−0.278	−0.176
	(0.716)	(0.294)
3 years pre dean	−0.344	−0.203
	(0.707)	(0.274)
2 years pre dean	−0.182	−0.355
	(0.613)	(0.222)
year of promotion	0.745	−0.127
	(0.602)	(0.247)
1 year post dean	0.781	0.793**
	(0.535)	(0.369)
2 years post dean	0.161	1.617***
	(0.788)	(0.530)
3 years post dean	0.337	1.783**
	(0.834)	(0.743)
4 years post dean	0.887	3.212***
	(1.045)	(0.797)
5 years post dean	−1.327	3.452***
	(0.978)	(1.070)
6+ years post	−0.332	5.641***
	(0.974)	(1.470)
All controls	Yes	Yes
Observations	871	748
R-squared	0.474	0.602
Average Effect	0.799	0.758**
	(0.483)	(0.315)

Notes: This table shows that the power effect is less important for more productive scholars. The pre-dean productivity is measured by the publications within the five years before deanship. We include all the controls employed in column (4) of Table 2. Standard errors in parentheses are clustered at the individual level. *** significant at 1%, ** significant at 5%, * significant at 10%.

trend in productivity, are more likely to be selected for promotion to dean. This interpretation is not convincing for at least three reasons. First, our empirical strategy, by including individual fixed effects and individual-specific trends in productivity, controls for ability that does not change dramatically year by year. The absence of any significant changes in publications prior to becoming a dean (see columns (1)–(4) of Table 2) tends to refute the notion that such promotion is based on increasing productivity.

Second, after considering the pre-dean productivity, we find ability is unlikely to be a confounding factor for our baseline finding. We allow the effect of deanship to vary by pre-dean productivity ($\overline{y_{i(t-5,t-1)}}$), measured by the average yearly publications within the five years before becoming a dean. Specifically, we divide scholars into two groups: those whose pre-dean productivity are above median and those below median. We present the estimates for the two groups in Table 6. On average, the higher-productivity group publishes more than twice that of the lower-productivity group. However, deanship matters a lot for lower-productivity group but matters less for the higher-productivity group: the effect is over 60% higher for the former, and is smaller (around 30%) and insignificant for the latter. This finding further suggests that ability is unlikely to be a confounding factor for our baseline finding. If the power effect were driven by ability, we expect to see a larger effect on those with higher pre-dean productivity (and hence higher ability). In fact, if anything, we find that the effect of deanship decreases with pre-dean productivity.

Third, we also find that losing power is associated with a decrease in publications (see Table A2). If power were not associated with publications, then, after controlling for the lifecycle change of productivity by including age and age squared in the regression, we would expect to see that losing power does not matter. On top of these empirical patterns, deanship is associated with a large amount of administrative work, so if ability were the only channel, a dean could be expected to become less productive under the administrative burden.

4.3.2. The reputation effect

The reputation interpretation assumes that deans may be better known and thus more sought after as coauthors to increase publication probability. Our findings, however, fail to support this interpretation. For instance, if the reputation effect were the main channel, we would expect the power effect to be larger for those with higher pre-dean productivity, which is opposite in the data. Moreover, we also would expect the power effect to extend beyond the dean's school context. In fact, the effect is driven primarily by local collaboration. In addition, the finding on cognitive mobility shows that the increased publications actually deviate from the dean's earlier research area on which he has built his research reputation.

This is not to say that deans have no influence on journals under their control—this hypothesis partly explains our finding that

non top-tier journals are more subject to a dean's influence. This interpretation alone, however, cannot explain our finding on different types of collaboration.

4.3.3. The resource effect

The third interpretation, which assumes that power affects resource allocation, is the most often considered by Chinese academic researchers. For instance, many criticize the Chinese university funding system for its power orientation (Shi and Rao, 2010; Cao et al., 2013; Yang, 2013). Within schools of economics, the dean, as the most powerful researcher, dominates resource allocation. Beyond the school, the dean, as the school's representative, is sometimes in charge of grants and funding from the university, government, or companies. Our findings are thus most consistent with this interpretation. In particular, because a dean's power is unlikely to be important for other universities, the dean's publication collaboration is driven mostly by local (within university) coauthorship. It is more difficult for alternative hypotheses to explain this finding.

To provide more direct evidence of this relation, we check whether power helps a dean obtain more government-awarded funding by determining whether deanship is correlated with the probability of receiving a major grant (see Table A3 in the *Appendix*). The dependent variable is a rare event, with a mean probability of only around 7.6 percentage points per year. Although the effect of power is only statistically significant at 5% level after including all the controls, it is still sizable relative to the mean: becoming a dean increases the award probability by about 6.3 percentage points, or around 86% of the mean. It is noteworthy that the major grants in Table A3 only include grants from the central government. Due to lack of data, we have no information of grants from local governments or industrial sectors, which are more easily affected by power. Therefore, the estimated effect in Table A3 can be seen as the bottom of the power effect on resource allocation.

This evidence, it should be noted, addresses only one of many types of resources potentially affected by power. It is possible that coauthoring with the dean matters for obtaining other types of resources. Based on case studies, scholars have argued that some deans use their influence to help their students win China's National Excellent Doctoral Dissertations award even when these students are not sufficiently qualified (Fan et al., 2013), an outcome also consistent with the resource allocation interpretation of power.

Therefore, even though we cannot quantify every aspect of resource allocation, these pieces of evidence together suggest that the power-publication link is consistent with the resource effect. This interpretation is also consistent with our earlier findings on the heterogeneous effects by university, journals and ability of scholars, because the publications increased by resource availability *per se* is likely to be less important for better-quality universities and journals, and for those who were already productive without the administrative power.

5. Concluding remarks

This paper investigates the link between power and research publications. By constructing a unique dataset that includes publication records and time of gaining power of deans in Chinese universities, we document a sizable impact of power on publications. As part of our analysis, we also provide evidence that the mechanism underlying this link is the greater tendency of local scholars who work with or for these deans to be influenced by their power and contribute to their publications through collaboration.

In addition to throwing new light on a little-documented phenomenon, these results have important policy implications in the face of scholarly evidence that new idea production matters for a country's long-term economic growth (Romer, 1986), university governance affects research output (Aghion et al., 2010), and resource misallocation negatively impacts economic development (Murphy et al., 1991; Hsieh and Klenow, 2009). Given academia's role as a key contributor to knowledge production, it is important to ensure that its resource allocation is efficient. Unfortunately, our findings suggest that at present, resource allocation in the context like Chinese academia is overly subject to the influence of power. According to our findings on journal and university quality, however, this influence on power can be constrained by appropriate institutions.

Finally, our results are based on a specific field in social sciences in China. To better understand how power affects scientific output and resource allocation in academia, we need additional studies using more comprehensive data from all disciplines. In particular, it would be useful to know whether administrative power plays a different role in social sciences and natural sciences and how the power-publication link matters for important long-run outcomes like innovation. This will be our future work.

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Appendix

Table A1
Results from Poisson and negative binomial regressions.

	(1) Poisson	(2) Poisson	(3) Negative binomial	(4) Negative binomial
6+ years pre dean	−0.178	−0.121	−0.161	−0.234
	(0.244)	(0.249)	(0.240)	(0.263)
5 years pre dean	−0.020	0.016	0.001	−0.037
	(0.224)	(0.242)	(0.221)	(0.228)
4 years pre dean	−0.006	−0.087	−0.004	−0.121
	(0.161)	(0.174)	(0.174)	(0.181)
3 years pre dean	−0.034	−0.095	0.000	−0.130
	(0.150)	(0.163)	(0.154)	(0.146)
2 years pre dean	−0.104	−0.095	−0.107	−0.105
	(0.121)	(0.133)	(0.125)	(0.136)
year of promotion	0.171	0.133	0.162	0.120
	(0.108)	(0.125)	(0.122)	(0.140)
1 year post dean	0.232**	0.247**	0.283**	0.267**
	(0.118)	(0.118)	(0.126)	(0.131)
2 years post dean	0.209	0.232	0.181	0.185
	(0.154)	(0.174)	(0.165)	(0.181)
3 years post dean	0.269*	0.341*	0.235	0.278
	(0.159)	(0.179)	(0.171)	(0.184)
4 years post dean	0.498***	0.622***	0.555***	0.629***
	(0.184)	(0.199)	(0.198)	(0.217)
5 years post dean	0.227	0.324	0.274	0.360
	(0.211)	(0.233)	(0.209)	(0.235)
6+ years post dean	0.523*	0.728***	0.808***	0.903***
	(0.270)	(0.257)	(0.274)	(0.263)
Year FE	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Sch./Uni. controls	No	Yes	No	Yes
Observations	1951	1619	1951	1619
Average Marginal Effect	0.507**	0.604***	0.526**	0.649***
	(0.218)	(0.205)	(0.223)	(0.231)

Notes: This table shows that the findings are similar when using nonlinear models. Individual controls include gender, age, age squared and oversea degree. School and university controls include school faculty size and university research budget in 2000 and their interactions with year fixed effects. To be cautious about estimating nonlinear models, we do not include individual fixed effects in these estimations. Standard errors in parentheses are clustered at the individual level.

*** significant at 1%,.

** significant at 5%,.

* significant at 10%.

Table A2
Year-by-year effects of losing power on publications.

	Number of publications of an individual (1)	(2)	(3)	(4)
6+ years pre	−1.878	−2.174	−0.454	3.621
	(4.087)	(4.527)	(1.327)	(2.970)
5 years pre	−2.300	−2.629	−0.990	1.588
	(3.225)	(3.615)	(1.338)	(1.614)
4 years pre	−0.766	−0.897	0.381	2.801
	(2.046)	(2.312)	(0.999)	(1.613)
3 years pre	−1.117	−1.186	−0.439	0.095
	(1.749)	(1.960)	(1.027)	(1.518)
2 years pre	−1.082	−1.046	−0.724	−0.763
	(1.008)	(1.021)	(0.791)	(0.980)
year of stepping down	−1.980**	−2.146**	−2.380**	−3.806***
	(0.830)	(0.953)	(0.833)	(0.945)
1 year post	−3.137**	−3.551**	−3.927***	−6.725***
	(1.175)	(1.337)	(0.765)	(0.798)
2 years post	−2.482	−3.264	−3.571***	−6.560***
	(1.900)	(2.153)	(0.952)	(1.500)

(*continued on next page*)

Table A2 (*continued*)

	Number of publications of an individual			
	(1)	(2)	(3)	(4)
3 years post	−4.089**	−5.456**	−6.071***	−10.100***
	(1.659)	(2.397)	(1.552)	(1.696)
4 years post	−4.410*	−5.736*	−7.600***	−12.617***
	(2.311)	(3.172)	(1.846)	(2.497)
5 years post	−5.762**	−8.289**	−8.113***	−14.128***
	(2.319)	(3.516)	(1.919)	(1.821)
6+ years post	−6.354**	−9.478**	−8.392**	−15.233***
	(2.338)	(3.422)	(3.285)	(3.264)
Year FE	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Individual FE	No	No	Yes	Yes
Sch./Uni. controls	No	No	No	Yes
Observations	134	134	134	134
R-squared	0.128	0.266	0.759	0.837
Average Effect	−2.024	−2.069	−1.635**	−1.568**
	(1.648)	(1.548)	(0.570)	(0.719)

Notes: This table shows that losing power decreases publications. Individual controls include gender, age, age squared and oversea degree. School and university controls include school faculty size and university research budget in 2000 and their interactions with year fixed effects. Standard errors in parentheses are clustered at the individual level.

*** significant at 1%,.

** significant at 5%,.

* significant at 10%.

Table A3
The impact on grant allocation.

Mean Dep. Var.	Receiving a major grant			
	(1)	(2)	(3)	(4)
	0.076			
head	0.059**	0.040	0.044	0.063**
	(0.025)	(0.026)	(0.027)	(0.030)
Year FE	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Individual FE	No	No	Yes	Yes
Sch./Uni. controls	No	No	No	Yes
Observations	1951	1951	1951	1619
R-squared	0.061	0.072	0.143	0.182

Notes: This table shows that becoming a dean helps a scholar obtain more major grants awarded by the central government. Individual controls include gender, age, age squared and oversea degree. School and university controls include school faculty size and university research budget in 2000 and their interactions with year fixed effects. Standard errors in parentheses are clustered at the individual level. *** significant at 1%, ** significant at 5%, * significant at 10%.

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