Online Appendix for
Making Bureaucracy Work: Patronage Networks, Performance Incentives, and Economic Development in China

A Details of the CPED Database

The Chinese Political Elite Database (CPED) is a comprehensive biographical database of Chinese political leaders from multiple levels. Currently it contains extensive and systematically coded information of career information for all *civilian* leaders who belong to one of the following categories: (1) all **city secretaries**, **mayors**, and **members of provincial standing committee** between 2000 and 2015, (2) all **provincial secretaries** and **governors** between 1995 and 2015, and (3) all other **full and alternate Central Committee members** between 1987 and 2012.

To construct the database, I first developed an exhaustive name list for officials who have served in each of those relevant positions. The name list for sub-national leaders was compiled from government websites, provincial and city yearbooks, and other authoritative internet sources. I then obtained the detailed CVs of these officials using the following sources:

- Baidu Encyclopedia (*baidu baike*) www.baike.com
- News of the Chinese Communist Party of China (*zhongguo gongchandang xinwenwang*) http://cpc.people.com.cn/GB/64162/index.html
- The Database on Local Party and Government Leaders *(difang dangzheng lingdao renwu shujuku)* http://district.ce.cn/zt/rwk/
- Central Organization Department and Party History Research Center of CCP Central Committee. 2004. *Zhongguo Gongchandang Lijie Zhongyang Weiyuan Dacidian, 1921-2003 (The Dictionary of Past and Present CCP Central Committee Members)*. Beijing: Party History Publisher.
- Provincial Yearbooks for relevant years and provinces.

A "raw" CV from these sources contains the basic demographic information of the official and the past appointments that he/she has served, in a fairly standard fashion. Figure A.1 is an example of an entry in Baidu Encyclopedia for Mr. Sun Yongchun, a formerly city secretary in Shandong but now a member of the provincial standing committee in Guizhou.

Figure A.1: Official Biography from Baidu Encyclopedia

孙永春 锁定

孙永春，男，汉族，1957年5月生，山东寿光人。1976年7月加入中国共产党，1976年12月参加工作。中央党校在职研究生学历，工商管理硕士学位。现任中共贵州省委常委、省委组织部部长、省委党校校长（兼）。

中文名	孙永春	职　业	中共贵州省委常委、组织部部长
国　籍	中华人民共和国	信　仰	共产主义
出生地	山东寿光	入党日期	1976年7月6日
出生日期	1957年6月12日	参加工作日期	1976年12月18日

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1 人物履历

1974.06——1976.12，山东省垦利县西宋乡大三合村团支部书记，党支部书记，公社团委副书记；

1976.12——1978.03，山东省垦利县委工作队组长；

1978.03——1978.10，山东省垦利县西宋公社团委书记；

1978.10——1980.06，共青团山东省垦利县委干事；

1980.06——1984.08，共青团山东省委干事，副科级干事；

1984.08——1987.09，共青团山东省委组织部副部长（其间：1984.10—1987.07在曲阜师范大学函授中文系大专班学习）；

贵州省委常委、组织部长孙永春

A team of research assistants (RAs) were hired to transcribe the raw CV to an Excel file. The primary task for the RAs was to decompose and reorganize the career entries in the CV in a way that was friendly to systematic, computer-based analysis. RAs were required to record, among other things, the time, place, main organization associated with job and the administrative ranks according to the coding manual. The team maintains a bank of standardized area, job and school codes, which was continuously updated as new areas and organizations arise during the data collection process. Along the process, I also merged de facto identical jobs and areas that for historical reasons have somewhat different nomenclature, based on consultation with experts.[32]

After compiling a full set of standardized CV in excel files, I imported them into a SQL database. The final output from the database, shown in Figure A.2, contains two separate tables on the official's time-invariant attributes and time-varying career information.

[32]For example some prefectures are later converted to cities, with the suffix of the name changed from *diqu* to *shi*. I use the same underlying code for the same territorial unit before and after the conversion.

Figure A.2: Standardized CV as Exported from the SQL database

Name ID	Name	Sex	Ethnicity	Date of Birth	Province	City	County	Highest Education	Join Party	Status	# of CC	Military
1	孙永春	男	汉族	6/12/1957	山东省	潍坊市	寿光市	硕士	7/1/1976	在职		否

Name ID	Name	Start	End	Province	City	County	Lv1 Unit ID	Lv1 Unit	Lv2 Unit	Lv3 Unit	Job Name	Rank	Key post	Education
1	孙永春	6/1/1974	12/1/1976	山东省	东营市	垦利县	9637	西宋乡	大三合村		团支部书记	小于副处	无	高中
1	孙永春	12/1/1976	3/1/1978	山东省	东营市	垦利县	1343	党委工作队			组长	小于副处	无	高中
1	孙永春	3/1/1978	10/1/1978	山东省	东营市	垦利县	9637	西宋乡			团委书记	小于副处	无	高中
1	孙永春	10/1/1978	6/1/1980	山东省	东营市	垦利县	1300	党委常委会/政治局			干事	小于副处	无	高中
1	孙永春	6/1/1980	8/1/1984	山东省			4600	共青团委			干事	小于副处	无	高中
1	孙永春	8/1/1984	9/1/1987	山东省			4602	组织部（共青团）			副部长	副处	无	高中
1	孙永春	10/1/1984	7/1/1987	山东省	济宁市	曲阜市	80243	曲阜师范大学	函授中文系	大专班	学员	副处	学校	专科
1	孙永春	9/1/1987	10/1/1989	山东省			4600	共青团委			常委/组织部部长	正处	无	专科
1	孙永春	9/1/1989	7/1/1992	中央			80001	中央党校	函授本科	经济管理专业	学员	正处	学校	本科
1	孙永春	10/1/1989	4/1/1991	山东省	滨州市	博兴县	1300	党委常委会/政治局			副书记	正处	无	本科
1	孙永春	4/1/1991	9/1/1992	山东省			4600	共青团委			常委/组织部部长	副厅	无	本科
1	孙永春	9/1/1992	12/1/1997	山东省			4600	共青团委			副书记	副厅	无	本科
1	孙永春	9/1/1995	12/1/1997	山东省			80248	山东省委党校	研究生班	经济管理专业	学员	副厅	学校	硕士
1	孙永春	12/1/1997	1/1/2001	山东省	德州市		1300	党委常委会/政治局			副书记	副厅	市委副书记（专职	硕士
1	孙永春	1/1/2001	3/1/2006	山东省	德州市		2600	政府/国务院（综合）			市长	正厅	市长	硕士
1	孙永春	3/1/2006	10/1/2006	山东省	烟台市		2600	政府/国务院（综合）			市长	正厅	市长	硕士
1	孙永春	10/1/2006	4/1/2011	山东省	烟台市		1300	党委常委会/政治局			书记	正厅	市委书记	硕士
1	孙永春	4/1/2011	7/1/2015	贵州省			1302	组织部（党委）			部长	副部	省组织部长	硕士
1	孙永春	4/1/2011	7/1/2015	贵州省			1300	党委常委会/政治局			常委	副部	省常委（其他）	硕士
1	孙永春	4/1/2011	7/1/2015	贵州省			81968	贵州省委党校			校长	副部	学校	硕士

B Validating the Promotion-Based Measure

In this section, I present results from several validation tests for the promotion-based measure of connection and compare this measure with the traditional, overlap-based approach. The validation tests is motivated by the following observation: *in hierarchical organizations, careers of actors connected through informal ties tend to exhibit stronger co-movements patterns*. If my measure indeed accurately capture the underlying long-term personal relationship, then we should expect to see a close association between the career outcomes of the patrons and their clients. When a senior leader is promoted to a higher-level post, junior officials who have strong personal ties to him/her are also more likely to move upward in the future. Conversely, when the careers of the senior patron takes a hit, it will also likely to negatively affect the career prospects of his/her followers. I examine both promotion and demotion outcomes.

B.1 Promotion

I begin by evaluating whether this measure predicts the an official's promotion probability conditional on his/her patron moving to a more powerful position. To do so, I use the CPED to construct a sample of all city leaders in China between 2000 and 2015.[33] For each of the subject in the sample, I create a sequence of person-year observations that track changes in his/her political careers, starting in the year of 2000. The dependent variable here is a binary indicator for whether a city leader is promoted to a higher-level posts (usually at the deputy-provincial level) in the party or government in a given year.[34] I drop all the person-year observations after the occurrence of the first promotion. The following logistic regression is estimated:

[33]This includes all officials who have served in a city-level unit (prefecture, zhou, meng, or districts/counties under centrally controlled municipalities) between 2000 and 2015.

[34]I focus on only appointments to posts with active party/government duties, such as vice governors, members the provincial standing committee, and vice-ministerial positions in central ministries and party departments, and excludes ceremonial positions such as the vice-chairman of the provincial People's Congress or the Political Consultative Conference.

$$h_i^{\text{Promotion}}(t) = \text{logit}(\theta_1 \text{Patron to Politburo/PSC}_{it} + q(t) + q(\gamma) + \mathbf{X}_{it}\boldsymbol{\beta}),$$

where i indexes the subject. I include natural cubic splines for both calendar year, $q(\gamma)$, and the number of years since one has first served as city leaders, $q(t)$, to account for temporal dependence in the outcome(Beck, Katz, and Tucker 1998). The key independent variable, *Patron to Politburo/PSC*, is an indicator that takes the value of 1 if the subject has any political patron who is currently a sitting member of the Politburo and its Standing Committee (0 otherwise). I construct two versions of this independent variables. In addition to the promotion-based measure discussed in the main text, I also construct an overlap-based connection measure following the procedure used in Shih, Adolph, and Liu (2012) for a comparison.

Table A.1: Validation Test 1: Predicting Promotion

	DV: Client Promoted to Next Level (1=yes)			
	(1)	(2)	(3)	(4)
Patrons became Politburo members (promotion-based measure)	0.525**	0.355**		
	(0.110)	(0.113)		
Patrons became Politburo members (overlap-based measure)			0.341**	0.243*
			(0.112)	(0.111)
Ethnic minority		-0.198		-0.215
		(0.122)		(0.122)
Female		0.406**		0.406**
		(0.118)		(0.117)
College education		0.897**		0.905**
		(0.244)		(0.243)
Year, Tenure, and Age Cubic Spline	✓	✓	✓	✓
Pseudo R^2	0.05	0.11	0.05	0.11
AIC	5372.3	4993.4	5385.5	4998.3
BIC	5680.5	5340.1	5693.7	5345.1
Number of Individuals	2646	2502	2646	2502
Observations	30621	28464	30621	28464

Note: This table shows that my measure of patronage ties strongly predicts clients' promotion when the putative patrons are promoted to the Politburo. As a comparision, I also report results using overlap-based measure. The fit statistics suggest that the promotion-based measure offers a better fit than the overlap-based measure (higher pseudo R square and lower AIC and BIC.)

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

Table A.1 presents the results. The first two columns show that the promotion-based measure uncovers a strong correlation between the client's and patron's careers: An official's promotion odds increases by about 43% (exp(0.355)-1) after the putative patron moves into high-level decision-making bodies such as the Politburo. Columns 3 and 4 present results using the overlap-based measure. The estimates are still positive and statistically significant, but only half in size and with greater noise. When we examine the fit statistics, models using the promotion-based measure also performs better than those using the overlap-based measure.

B.2 Purge

Next, I use a similar design to look at negative career outcomes. I estimate a model similar to the promotion model:

$$\begin{aligned} h_i^{\text{Investigated}}(t) \;=\; & \text{logit}(\theta_1 \text{Patrons to PSC}_{it} + \theta_2 \text{Patrons to Politburo}_{it} \\ & + \nu \text{Patrons investigated}_{it} \\ & + q(t) + q(\gamma) + \mathbf{X}_{it}\boldsymbol{\beta}), \end{aligned}$$

The only two differences are: (1) I distinguish between connections with (regular) Politburo members versus Standing Committee members, as the latter usually has much greater influence on sensitive issues such as anticorruption investigation, and (2) I include a variable that indicates whether an official's patrons have been investigated for corruption. While having a sitting patron at the top may reduce the risk of investigation, having a patron who is himself a target of investigation may increase such risk. Table A.2 presents the regression results. Here, we see an even greater difference in performance between the two measures. The first two columns suggest that the promotion-based measure is again able to uncover a strong career association between patrons and clients in terms of the negative outcomes: When a patron moves to the Politburo Standing Committee, in particular, the odds of his/her client being investigated drops by about 66 to 76 percent;

when a patron becomes the anticorruption target, the odds of his/her client facing a subsequent investigation more than doubles ($\exp(0.926) - 1 \simeq 1.5$). By contrast, the overlap-based measure, while recover some association in the case of a fallen patron, fails to capture any meaningful effects in terms of protection. Most of the coefficients are small and not statistically significant, and some of them even have the wrong sign. Taken together, these results provide strong empirical support to the validity of the promotion-based measure and demonstrates its superiority over the conventional overlap-based measure in the context of this study.

Table A.2: Validation Test 2: Anticorruption Investigation

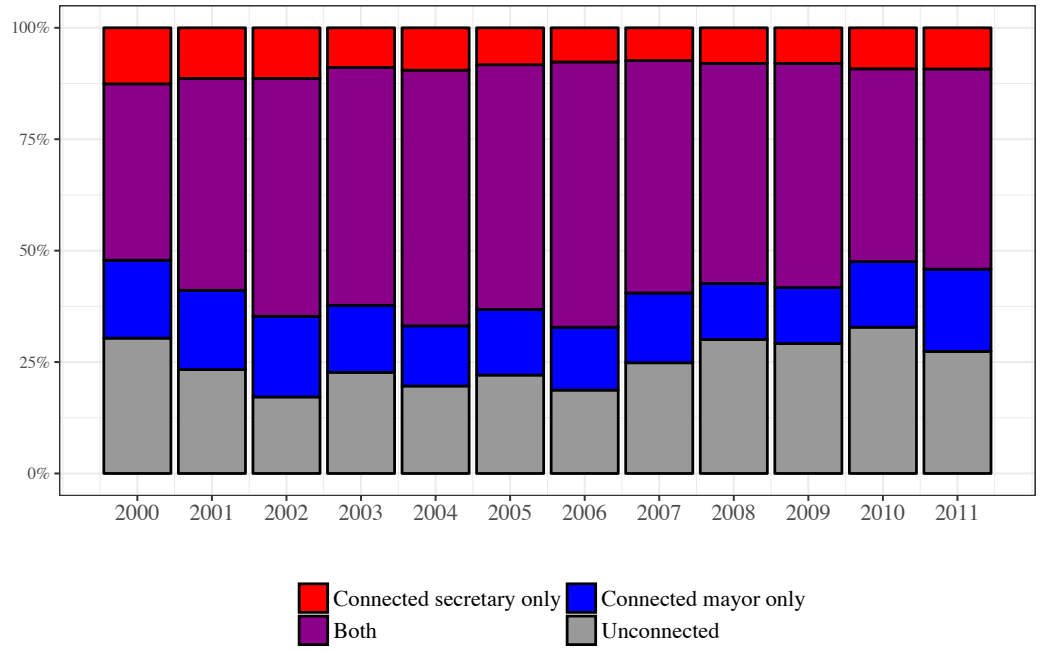
	DV: Client Investigated for Corruption (1=yes)			
	(1)	(2)	(3)	(4)
Patrons became Standing Committee members (promotion-based)	-0.506^{+}	-0.568*		
	(0.269)	(0.275)		
Patrons became Politburo members (promotion-based)	-0.077	-0.135		
	(0.200)	(0.203)		
Patrons became target of investigation (promotion-based)	0.926*	0.993*		
	(0.384)	(0.422)		
Patrons became Standing Committee members (overlap-based)			0.001	0.010
			(0.150)	(0.186)
Patrons became Politburo members (overlap-based)			0.094	0.288
			(0.150)	(0.183)
Patrons became target of investigation (overlap-based)			0.327	0.660*
			(0.236)	(0.326)
Ethnic minority		-0.560		-0.597^{+}
		(0.351)		(0.349)
Female		-1.298*		-1.300*
		(0.580)		(0.571)
College education		-0.234		-0.276
		(0.248)		(0.251)
Year, Tenure, and Age Cubic Spline	✓	✓	✓	✓
Pseudo R^2	0.09	0.11	0.05	0.11
AIC	2282.80	2083.21	2296.74	2088.44
BIC	2724.26	2570.34	2479.99	2575.56
Number of Individuals	2646	2502	2646	2502
Observations	30621	28464	30621	28464

Note: This table shows that my measure of patronage ties strongly predicts clients' career outcomes when the putative patrons are promoted to the Politburo or became targets of anticorruption themselves. As a comparision, I also report results using overlap-based measure. The fit statistics suggest that the promotion-based measure offers a better fit than the overlap-based measure (higher pseudo R square and lower AIC and BIC.)
$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C Additional Information and Robustness Checks

C.1 Over-Time Distribution of the Key Connection Variable

Figure A.3: Over-time Distribution of the Connection Indicator



C.2 Modifying Coding Strategies for Connection

I conduct robustness checks on the connection measure by modifying the measurement strategy in several ways. First, one may be concerned that focusing on connections with the provincial secretary is too restrictive as other senior provincial leaders, especially the governor, may also matter for city leaders' performance incentives. To check this possibility, I expand this measure in two ways. First, I construct a new indicator, *Connected to Prov Sec or Governor*, which takes the value of 1 if either leader is connected to either of the two most powerful provincial leader by the promotion criteria. Second, I expand the indicator for provincial secretary's connection by including promotions that took place when the provincial secretary was serving *as the governor of the same province.* Effectively, this measures allows a governor-turn provincial secretary to have some pre-existing ties with city leaders as soon as he becomes the provincial secretary. The first two columns

of Table A.3 report the results from these alternative measures. Column 1 suggests that including connections with the incumbent governor reduces the point estimate by a bit, but does not substantively alter the results. Column 2 further suggests that taking into account preexisting connections established when the provincial secretary was serving as the governor introduces more noise (e.g., smaller point estimate and larger standard error), but also does not change the substantive findings.

Second, one may also be concerned that not all those who experienced significant promotions under the incumbent provincial secretary should be considered as his/her clients. It is often the case, for example, that the former provincial secretary would make a number of special promotions of his/her followers immediately prior to leaving office—a practice commonly known as *tuji tiba* (突击提拔). To the extent that some of these promotions may not be formally approved until the new provincial secretary takes office, failing to account for these cases may lead us to mistakenly code individuals as clients of the incumbent leader if they are actually followers of the predecessor. To address this possibility, I rerun a regression with two dummy variables indicating individuals who were promoted within the first six months of a provincial secretary's term and those who were promoted after the first six month. The rationale here is that there might be a period of time for the newly appointed provincial leader to process promotions left behind by his predecessor before he could appoint people who are actually loyal to him. If our theory is correct, the effect of "true" clients who were appointed later should be much larger than the "leftovers" who were appointed immediately after the leadership turnover. The result, reported in Column 3 of Table A.3, confirms this conjecture: the coefficient becomes much larger when I exclude individuals whose appointment time is too close to the predecessors' term. In the meantime, those are promoted immediately following the departure of the former leader on average does not appear to deliver significantly better performance than to the unconnected.

Table A.3: Estimated Effect of Connection by Timing of Promotion

	GDP growth at $t+2$ (last year=100)		
	(1)	(2)	(3)
Connected to prov sec or governor	0.385**		
	(0.147)		
Connected to prov sec (include promotions under governor)		0.347*	
		(0.137)	
Connected to prov sec (promoted after first 6 months)			0.361**
			(0.135)
Connected to prov sec (promoted within first 6 months)			0.137
			(0.120)
City and province-year FE	✓	✓	✓
Economic and leadership controls	✓	✓	✓
Adjusted R^2	0.51	0.51	0.51
Number of Cities	326	326	326
Observations	3693	3693	3693

Note: This table presents results using alternative measures for patronage ties. The first model uses a measure that includes connection to either the provincial secretary or the governor. The second model uses a measure that includes connection to the provincial secretary established when the secretary was serving as the governor of the same province. The third model includes two indicators for promotions that occured within and outside the first 6 months of the provincial secretary's term. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.3 Alternative Strategies to Account for Autocorrelation

Another concern with the estimation results presented in the text is that growth statistics tend to be auto-correlated within each panel. When the intra-city correlation is positive, failing to take into account the autocorrelated structure may result in smaller standard errors and false rejection of the null (no effect). To address this, I cluster the standard error at the city level for all regression results reported in the main text. This section reports results from two alternative estimation strategies that I employ to address the auto-correlation problem. The first strategy that I use is to simply de-trend the dependent variable by subtracting the previous year's growth from the current year's. Using the autocorrelation test proposed by Wooldridge (2002), I fail to reject the null that de-trended variable exhibits no strong autocorrelation at conventional levels of statistical significance.

The second estimation strategy I use is to directly include lagged dependent variables in the regression. One problem with using this approach in fixed-effects models is that the estimates may

be inconsistent when the number of time is small relative to the number of individuals (Nickell 1981). To circumvent this problem, I adopt the Arellano-Bond Generalized Methods of Moments (GMM) estimator, which uses the first-difference to remove the fixed effects and employs deeper lags of the dependent variable as instruments for the differenced lag terms. This method has been shown to yield not only consistent but also asymptotically efficient estimates (Arellano and Bond 1991).

I re-estimate the baseline regressions (the first three columns of Table 1) using these two methods and report the results in Table A.4. The estimated coefficient on political connection remains positive and statistically significant, and the magnitudes of these estimates are also comparable to those reported in the main text. The consistency of the quantity of interests across alternative estimation strategies further lend us confidence in the robustness of the main finding.

Table A.4: Estimation based on Detrended Growth and GMM

	DV: Detrend GDP Growth at $t+2$			DV: GDP Growth at $t+2$		
	(1) OLS	(2) OLS	(3) OLS	(4) GMM	(5) GMM	(6) GMM
Connected to prov sec	0.434	0.567*	0.397*	0.422	0.601*	0.354**
	(0.233)	(0.255)	(0.158)	(0.237)	(0.249)	(0.133)
City and province-year FE	✓	✓	✓	✓	✓	✓
Economic controls		✓	✓		✓	✓
Leadership controls			✓			✓
Adjusted R^2	0.31	0.31	0.37			
Number of Cities	326	326	326			
Observations	3906	3891	3693	3827	3799	3506

Note: This table presents the effects of patronage ties with provincial secretaries on economic growth. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.4 Estimation on Sub-Samples

I also conduct the estimation on several sub-samples and present the results in Table A.5. The first Column reports the results from using only observations from prefecture-level cities (i.e., excluding higher ranking deputy-provincial level cities) and the second column reports the results from a sample that excludes ethnic autonomous cities (*zhou* 州 or *meng* 盟, which might be different

from regular cities due to a higher concentration of ethnic minority population. The results are substantively unchanged, suggesting that our results are unlikely to be driven by irregularities that can only be found in a subset of special localities. In the last two columns, I further break the sample into the more developed Eastern (coastal) regions and the non-Eastern regions. The results suggest that the estimated coefficients are positive in both regions with comparable magnitudes, but the precision is somewhat higher higher for the non-eastern region.

Table A.5: Effects of Connections on Economic Performance by Sub-Sample

	GDP growth at $t+2$ (last year=100)			
	(1) Prefecture-level only	(2) Exclude *zhou* and *meng*	(3) East	(4) Non-East
Connected to prov sec	0.341**	0.412**	0.426	0.388*
	(0.130)	(0.132)	(0.216)	(0.153)
City and province-year FE	✓	✓	✓	✓
Economic and leadership controls	✓	✓	✓	✓
Adjusted R^2	0.52	0.56	0.68	0.48
Number of Cities	311	293	84	242
Observations	3513	3350	979	2714

Note: This table presents the effects of patronage ties to provincial secretaries on economic growth, separately estimated for different sub-samples. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.5 Alternative Specification for Tenure Length

Table A.6: Alternative Specification to Control for Tenure Length

	Growth at $t+2$ (last year=100)		
	(1)	(2)	(3)
Connected to prov sec	0.324*	0.272*	0.272*
	(0.127)	(0.130)	(0.130)
City secretary's tenure (reference = 1 year)			
2 years	-0.023		
	(0.111)		
3 years	-0.417*		
	(0.162)		
≥ 4 years	-0.689**		
	(0.221)		
Mayor's tenure (reference = 1 year)			
2 years	-0.121		
	(0.113)		
3 years	-0.322*		
	(0.162)		
≥ 4 years	-0.553*		
	(0.242)		
City secretary's tenure		-0.264**	-0.228
		(0.090)	(0.136)
Mayor's tenure		-0.187	-0.133
		(0.101)	(0.112)
City secretary: tenure^2		0.008	-0.008
		(0.011)	(0.051)
Mayor: tenure^2		0.003	-0.023
		(0.014)	(0.043)
City secretary: tenure^3			0.002
			(0.005)
Mayor: tenure^3			0.002
			(0.004)
Year and city FE	✓	✓	✓
Province X Year FE	✓	✓	✓
Economic and leader controls	✓	✓	✓
Adjusted R^2	0.52	0.52	0.52
Observations	3693	3693	3693

Note: This table reports estimation results using more fine-grained tenure specifications. Model 1 uses a discrete specifiction censored at 4 years, and Models 2 and 3 use continuous specifications with higher order terms (quadratic and cubic). Standard errors are clustered at city level.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.6 Testing Strategic Appointments

In this section, I conduct two additional tests to investigate whether strategic appointment is a main driver of the observed performance difference between clients and non-clients. The first test examines determinants of a city's connection status. To do so, I run regressions using the the connection indicator (at $t + 1$) as the dependent variable and a series of socioeconomic variables (at t) as the independent variables. Column 1 of Table A.7 shows that the connection status does not appear to be significantly correlated with a city's prior growth rates (for all three sectors), fiscal condition, or demographic trends.

The second test I conduct is to separately estimate the effects of connections established through different channels. Broadly speaking, there are two strategies by which the provincial secretary can appoint their clients to targeted positions: The first way is to wait until the official currently in that position has reached mandatory retirement age or served a full-term and then nominate a candidate of his own. This approach is the least politically controversial but the choices of appointment location are limited by the availability of openings. Alternatively, the provincial secretary may try to initiate personnel turnovers outside these regular time frames so that he could take control over those cities before the tenures of the current leadership expire. The problem of endogenous appointment is likely greater for the latter type appointment, as provincial secretaries who care deeply about certain localities may, in addition to sending trusted followers, implement a number of unobservable policies that could affect the local socioeconomic conditions. If there is a significant difference in performance premium between the two types of appointments, then it may raise greater concerns about endogeneity issues. To see whether this is the case, I create two connection indicators to capture whether the connection is established through a regular or irregular turnover. A regular turnover is defined as an appointment following the predecessor's retirement (age $\geqslant$ 57) or a full-term tenure (tenure $\geqslant$ 5 years), and an irregular turnover is defined otherwise. The estimated effects, presented in Table A.8, suggest that both types of connections have large and statistically significant effect on a city's economic performance. In particular, we find that the estimated effects for connections established regular turnovers are almost identification to those for

irregular turnovers. This result suggests that strategic appointment cannot be a main determinant of the performance premium that we observe.

Table A.7: Prior Growth Trends do not Affect City's Connection

	DV: Cities Becoming Connected at $t+1$
	(1)
Growth in agriculture GDP (3-year moving avg)	-0.005
	(0.007)
Growth in industrial GDP (3-year moving avg)	-0.001
	(0.005)
Growth in service-sector GDP (3-year moving avg)	0.007
	(0.009)
Growth in fiscal expenditure (3-year moving avg)	0.106
	(0.213)
Growth in local population (3-year moving avg)	0.151
	(0.342)
Log GDP	-0.075
	(0.134)
Log population	-0.066
	(0.197)
Fiscal expenditure as % of GDP	-0.185
	(0.194)
Average nighttime brightness	-0.039
	(0.098)
City and year fixed-effects	✓
R square	0.353
Observations	1389

Note: Robust standard errors are reported in parentheses. The number of observations is much smaller due to the removal of observations where connections have been established for more than one year. I do not perform clustering here because doing so typically results in larger standard errors, which can prevent us from detecting imbalances that actually exist.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Table A.8: Effect of Connection by City Leaders' Turnover Types

	GDP growth at $t+2$ (last year=100)
	(1)
Connected to prov sec (through regular turnover)	0.375*
	(0.161)
Connected to prov sec (through irregular turnover)	0.387**
	(0.129)
City and province-year FE	✓
Economic and leadership controls	✓
Adjusted R^2	0.51
Number of Cities	326
Observations	3693

Note: This table reports the effect of patronage ties on economic growth results, estimated separately for connections established through regular and irregular turnovers. A regular turnover is defined as an appointment following the predecessor's retirement (age $\geqslant$ 57) or a full-term tenure (tenure $\geqslant$ 5 years), and an irregular turnover is defined otherwise. Robust standard errors are reported in parentheses. Standard errors are clustered at city level.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.7 Testing Different Lag/Lead Structures

Table A.9: Using Different Lag/Lead Structures

	GDP growth at $t+2$					
	(1)	(2)	(3)	(4)	(5)	(6)
Connected to prov sec at $t-2$	-0.082					
	(0.134)					
Connected to prov sec at $t-1$		0.283*				
		(0.132)				
Connected to prov sec at t (original)			0.382**			
			(0.133)			
Connected to prov sec at $t+1$				0.168		
				(0.126)		
Connected to prov sec at $t+2$					0.005	
					(0.122)	
Connected to prov sec at $t+3$						-0.072
						(0.131)
City and province-year FE	✓	✓	✓	✓	✓	✓
Economic and leadership controls	✓	✓	✓	✓	✓	✓
Adjusted R^2	0.60	0.60	0.60	0.60	0.60	0.60
Number of Cities	326	326	326	326	326	326
Observations	3459	3693	3693	3693	3693	3692

Note: This table reports the effect of patronage ties using different lag/lead structures. Standard errors are clustered at city level.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.8 Testing Distributive Favoritism at $t + 2$

Table A.10: Effects of Connection on Receipt of Government-Controlled Resources at $t + 2$

	Tangible Resource ($t + 2$)		Policy Support ($t + 2$)	
	(1) log loan	(2) log land quota	(3) national SEZ	(4) provincial SEZ
Connected to prov sec	0.005	0.070	0.000	-0.002
	(0.014)	(0.048)	(0.022)	(0.004)
City and province-year FE	✓	✓	✓	✓
City economic controls	✓	✓	✓	✓
City leader controls	✓	✓	✓	✓
Adjusted R^2	0.98	0.83	0.50	-0.01
Observations	2782	2767	2071	2071

Note: This table demonstrates that patronage ties do not significantly affect the distribution of several key government-controlled resources at $t + 2$, including land, bank loans, and the approval for special economic zones. The main specification is based on column 3 of Table 1. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.9 Addressing Unbalanced Sample Attrition

C.9.1 Evaluating the Association between Performance and Sample Attrition

As discussed in the text, unbalanced attrition may be a confounder to the result if high performers are more likely to leave the city panel after a certain period of time (e.g., due to higher promotion rates). One way to address the issue of differential attrition is to look at how economic performance is empirically correlated with sample exit rates. Theoretically, it is worth noting that the presence of performance-based selection does not always lead to unbalanced attrition because it could also imply that those who perform poorly will be forced to leave their leadership positions more quickly than others. A priori, therefore, it is not entirely clear whether the attrition rate will necessarily be higher for the high-performing individuals. To evaluate this issue empirically, I run regressions using the total tenures of city leaders as the dependent variable and their average economic performance during their tenures as the independent variable. If the attrition rate is indeed higher for those who perform better, then we should observe a strong negative association between the two variables (i.e., better performance leads to shorter tenure). Table A.11 reports the results for both

city secretaries and mayors, using both contemporaneous and lagged performance measures. We can see that the association between tenure length and average performance is rather weak across all specifications. This gives us some confidence that performance-based selection, even if it does exist, does not create strong biases in the sample.

Table A.11: Empirical Association between Performance and Tenure Length

	City Secretary's Tenure		Mayor's Tenure	
	(1)	(2)	(3)	(4)
Average GDP growth	0.006		-0.004	
	(0.015)		(0.014)	
Average GDP growth (lagged 1 year)		-0.009		0.003
		(0.015)		(0.014)
Year FE	✓	✓	✓	✓
Adjusted R^2	0.02	0.02	0.03	0.02
Observations	1509	1479	1612	1579

Note: This table reports the association between city leaders' total tenure length and their average economic performance during the tenure. The results suggest that the correlation between the two, suggesting that high-performing individuals do not leave the panel significantly faster than low-performing ones. Standard errors are clustered at leader level.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.9.2 Including Additional Covariates to Account for Background Heterogeneity

I also check whether the result is driven by differences in officials' capabilities or personal backgrounds. To do so, I run several regressions with an expanded set of controls on key personal and career attributes that might affect city leaders' performance in economic management, including whether they had served in provincial or central governments (*Higher-level Exp*), managerial positions in state-owned enterprises (*SOE Career*), or senior positions in finance/development-related government agencies (*Finance/development Career*),[35] and the share of time they had worked in the locality where they currently serve (*% of Local Career*). Table A.12 shows that the inclusion of these controls does not significantly change the main coefficient of interest.

[35]This variable is coded as 1 if the city secretary or mayor had served in a department-level position (*zhengchuji* 正处级) or above in the following government agencies prior to his/her appointment to city leadership: finance, development and reform commission, and taxation.

Table A.12: Accounting for Background Heterogeneity with Additional Controls on Past Careers

	GDP growth at $t+2$ (last year=100)				
	(1)	(2)	(3)	(4)	(5)
Connected to prov sec	0.385**	0.362**	0.375**	0.378**	0.352**
	(0.127)	(0.125)	(0.126)	(0.126)	(0.126)
City sec: higher-level exp	-0.076				-0.101
	(0.118)				(0.122)
City mayor: higher-level exp	-0.013				-0.024
	(0.119)				(0.126)
City sec: SOE career		0.309*			0.305*
		(0.142)			(0.143)
Mayor: SOE career		-0.129			-0.120
		(0.143)			(0.143)
City sec: finance/development career			0.218		0.239
			(0.176)		(0.173)
Mayor: finance/development career			-0.106		-0.079
			(0.176)		(0.180)
City sec: % of local career				-0.002	-0.003
				(0.004)	(0.005)
Mayor: % of local career				-0.003	-0.003
				(0.004)	(0.004)
City and province-year FE	✓	✓	✓	✓	✓
City economic controls	✓	✓	✓	✓	✓
City leader controls	✓	✓	✓	✓	✓
Adjusted R^2	0.51	0.51	0.51	0.51	0.51
Number of Cities	326	326	326	326	326
Observations	3693	3693	3693	3693	3693

Note: This table presents the results of including additional control variables to account for heterogeneity in the backgrounds of clients and non-clients. The main specification is based on column 3 of Table 1. Robust standard errors clustered at city level are reported in parentheses.

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

C.9.3 Estimate Performance Premium by Mode of Departure of Former Provincial Secretaries

Another way to tease out the confounding effect of meritocratic selection is to examine cases where the unconnected leader lose their patrons due to largely exogenous reasons. In the case of China, some provincial leaders left their posts due to mandatory retirement (reaching the age of 65 or above). To the extent that mandatory retirement is a clear rule that applies mechanically when a provincial leader reaches the age limit, the concern for selection effect is likely to be smaller for

this mode of exit. I thus separately estimate the effect of connection for province spells where the former provincial leaders left due to mandatory retirement (reaching the age of 65) and those where the former leader left before the retirement age. The results are presented in Table A.13. We can see that significant performance premium exists for both types of spells, and the coefficient estimate is actually larger when the departure of the former provincial secretary is caused by mandatory retirement.

Table A.13: Performance Premium by Outcomes of Former Provincial Secretary (i.e., the Patron of the Unconnected)

	Growth at $t+2$ (last year=100)
	(1)
Connected to prov sec (last prov sec left due to regular retirement)	0.714*
	(0.359)
Connected to prov sec (last prov sec left before retirement age)	0.334*
	(0.135)
City and province-year FE	✓
City economic controls	✓
City leader controls	✓
Adjusted R^2	0.51
Number of Cities	326
Observations	3693

Note: This table reports separate estimates of performance premium when the former provincial secretary (i.e., the patron of the unconnected leaders) left the province due to (1) regular retirement (reaching the age of 65 or above) and (2) other means (lateral transfer, demotion, promotion, or retirement before 65). The results suggest that the estimated performance premium is positive and statistically significant for two types of departures. Standard errors are clustered at city level.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

C.9.4 Estimating Performance by Promotion Time

Finally, a fourth strategy to address the potential selection bias is to compare the performance of connected and unconnected leaders who are appointed to city leadership positions within a relatively short period of time. Since an official usually has to spend several years in a position before he/she can be eligible for promotion/transfer again (Kou and Tsai 2014), the selection issue is less severe if we limit the comparison to officials who are promoted just before and after a new provincial secretary comes into power. To do so, I create four binary indicators for whether a city has (1) ***unconnected*** leaders promoted *1 to 2 years* ***before*** the incumbent provincial secretary's arrival, (2)

unconnected leaders promoted *less than one year* ***before*** the incumbent provincial secretary's arrival (3) ***connected*** leaders promoted *less than one year* ***after*** the incumbent provincial secretary's arrival, and (4) ***connected*** leaders promoted *more than one year* ***after*** the incumbent provincial secretary's arrival. In particular, group 2 and group 3 should be most comparable in terms of their underlying competence as their promotion time is very close to each other. As a result, if we find any significant difference in performance between these two groups, it is likely to be due to the difference in connection statuses rather than any other personal qualities. From Table A.14, we can see that while the estimated effects for both types of connected leaders are positive and statistically significant at 90% or above, the estimates for the recently appointed unconnected leaders are small and statistically insignificant. In particular, the difference between groups 2 and 3 is quite sizable—about 0.71 and statistically significant at 95%—suggesting that connected leaders perform better even relative to the unconnected ones who were promoted only a few months ahead of them. These findings provide further evidence that the observed performance premium is unlikely to be driven solely by competence-based selection.

Table A.14: Placebo Test Using Recent Promotions by Former Provincial Secretaries

	Growth at $t+2$ (last year=100)
	(1)
Promoted 1 to 2 yrs ***before*** current prov sec's arrival (Group 1)	0.161
	(0.190)
Promoted $\leqslant$ 1 yr ***before*** current prov sec's arrival (Group 2)	-0.255
	(0.166)
Promoted $\leqslant$1 yr ***after*** current prov sec's arrival (Group 3)	0.455^{+}
	(0.251)
Promoted >1 yrs ***after*** current prov sec's arrival (Group 4)	0.365**
	(0.125)
Group 3 − Group 2	0.71*
City and province-year FE	✓
City economic controls	✓
City leader controls	✓
Adjusted R^2	0.51
Number of Cities	326
Observations	3693

Note: This table reports results from a regression that includes indicators for four types of city leaders: (1) **unconnected** leaders promoted 1 to 2 years **before** the incumbent provincial secretary's arrival, (2) **unconnected** leaders promoted less than 1 year **before** the incumbent provincial secretary's arrival, (3) **connected** leaders promoted less than 1 year **after** the incumbent provincial secretary's arrival, and (4) **connected** leaders promoted more than 1 year **after** the incumbent provincial secretary's arrival. The results suggest that there exists a substantial difference in performance even when we compare connected and unconnected leaders whose promotion dates were relatively close (Groups 2 and 3). Standard errors are clustered at city level.
$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$ (two-tailed test)

D Qualitative Examples on Development and Risk-Taking in China

A key assumption in my argument is that promoting local development is a risky undertaking that requires local officials to frequently work around formal bureaucratic rules. To demonstrate this point, I discuss several important policy areas in which discretion and improvisation are often needed.

Investment attraction To attract private and foreign investments, local officials often have to offer investors various forms of informal benefits and services, which are not always legal. The national policy, for example, formally prohibits local governments from using land sale discounts or tax rebates to attract firms, but in reality many local governments will try to provide such benefits informally in order to make their bids to business investment more competitive.[36] Such informal benefits can come in a variety of forms, such as government-backed loans, industrial subsidies, or awards from some ad hoc prize competitions.[37] To the extent that these practices are not officially allowed, local officials may be accused of wasting fiscal resources, or, even worse, engaging in corrupt dealings with investors. When an official is being considered for promotion, such accusations alone are usually enough to destroy his/her chance of advancement if there is not strong backing from the above.

Land acquisition Land is another critical input in China's economic development. Under the current land management system, local governments at city and county levels effectively monopolize the supply of urban land in the primary market. Lands have to be first taken from the existing occupants and prepared by the government before they can be leased out to business users. The land-taking processes are usually replete with conflicts and contentions, in part because of the highly lucrative prospect of land value appreciation from urbanization. Negotiations with existing

[36] Personal interview, JS1602.
[37] Personal interviews, JS1602, SX1603, ZJ1501.

occupants often take an extended period of time before everyone can agree on the compensation. The central authority has formally prohibited the use of coercion or violence in the process. In reality, of course, a locality that can acquire land more quickly and at a cheaper cost will be more attractive to investors; this compelled some localities to speed up the process through less formal means, such as promising extra-legal benefits to a small number of most stubborn households (*dingzi hu*) or even turning a blind eye to coercive or even violent demolishing practices (*qiangchai*).[38] These informal measures, however, may exacerbate the conflicts between the government and the occupants, leading to greater social instability.

Administrative approval Promoting growth also often requires local leaders to expedite or even circumvent lengthy administrative approval processes. Owing to a long history of bureaucratization and extended periods of central planning, the Chinese bureaucracy contains an excessive number of formal rules and regulations that tend to suffocate, rather than facilitate, new business initiatives. According to the World Bank's 2015 *Ease of Doing Business Survey*, for example, China ranked 84 out of 189 countries surveyed in terms of a country's administrative and regulatory environment for start a new business, and it received the lowest ranking on two subcategories—(1) getting approval for a new business (127th) and (2) getting construction permits (177th)—both involving interactions with the bureaucracy. In another prominent example, an entrepreneur-turned People's Congress deputy in Hainan reported that it took him over 9 months to go through all the necessary approvals for a medium-sized investment project, during which hundreds of stamps had to be obtained from over 30 different government departments.[39] To stimulate growth, local leaders often have to cut these excessive bureaucratic red tapes and sometimes tacitly allow the business to start operation before all the relevant certificates are ready. However, by not going through the proper procedures, local leaders will bear the risk of being held political responsible for problems such as business fraud, safety accidents, or environmental and public health fallout.

[38] Personal interviews, GX1503, JS1606, SX1603, ZJ1501, ZJ1502.
[39] http://epaper.bjnews.com.cn/html/2014-02/16/content_495076.htm

E Details on Extension Analyses

The preceding section has shown that political connection to the provincial secretary induces a measurable improvement in economic performance among city leaders. In this section, I conduct additional tests on several corollaries that follow directly from the theoretical argument, and provide evidence on the incentive-enhancing role of connection.

E.1 Performance Premium and Prospects of Future Cooperation

The theoretical discussion suggests that shared expectation of long-term exchanges is the key to sustain cooperation between patrons and clients. This implies that performance premium is likely to depend on the prospect that the reciprocal exchange will continue on in the future. To test this implication, I focus on age, which is a crucial determinant of career prospects for Chinese officials. The maximum promotion-eligible age is around 57 for city leaders and 65 for provincial secretaries (Kou and Tsai 2014). I thus break the connection indicator into several subgroups based on the age profiles of the clients and the patrons.[40] The expectation is that if either the client or the patron reaches the age ceiling, the performance premium will decline as the expected gains from future exchange become much more limited.

[40] When there are two clients in a city, the age of the younger one is used.

Table A.15: How Performance Premium Varies with Patrons' and Clients' Career Prospects

	GDP growth at $t+2$	
	(1)	(2)
Client age $\leqslant 50$	0.574**	
	(0.223)	
Client age $\in (50, 55]$	0.486**	
	(0.209)	
Client age = 56	0.455	
	(0.379)	
Client age = 57	0.011	
	(0.456)	
Client age $\geqslant 58$	-0.368	
	(0.374)	
Patron age $\leqslant 57$		0.168
		(0.193)
Patron age $\in (57, 62]$		0.370**
		(0.180)
Patron age = 63		1.180***
		(0.443)
Patron age = 64		0.852**
		(0.338)
Patron age $\geqslant 65$		0.802**
		(0.392)
City and province-year FE	✓	✓
City economic controls	✓	✓
City leader controls	✓	✓
Adjusted R^2	0.48	0.51
Number of Cities	326	326
Observations	3875	3693

Note: This table illustrates how the performance premium associated with patronage ties varies with both clients' and patrons' age as well as patrons' own political affiliations. The main specification is based on column 3 of Table 1. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Table A.15 reports results from the age analyses. Column 1 show that the performance premium declines dramatically as clients become ineligible for promotion. Performance premium drops by about 0.44 percentage points from 0.455 to 0.011 as a connected official moves from just barely below to barely above the age ceiling (i.e., age 56 group vs. age 57 group), and even turns weakly negative when the official is above 58, As for the patron, reaching the age ceiling also

imposes a toll on clients' performance, but the magnitude is somewhat smaller (-0.05 if we compare patron at age 64 with those at age 65). One explanation could be that some senior provincial secretaries may possess certain political capital (e.g., personal networks, special knowledge, etc.) that will remain valuable to their clients even after the patrons have formally left office.

E.2 Performance Premium and Patrons' Preferences

Another important corollary following from the theory is that the economic effect of patronage networks will depend critically on whether the patrons have an encompassing interest in promoting growth. While it is difficult to directly measure a provincial secretary's preferences, I use two proxies. First, I measure their relationships with the national leadership. I construct an indicator, *Connected to the General Secretary*, to denote whether a provincial secretary has both worked with and been promoted under the current general secretary. The encompassing interest, if ever present, is likely to be the strongest for the national leaders, who tend to reap most of the political credit from good performance and have much to lose if the regime collapses. By extension, I expect that provincial leaders who are connected to the national leaders will be more likely to internalize their patron's preferences, which will in turn lead to higher performance premium from their own clients.

Second, I also measure the opposite incentive by focusing on corruption. It is plausible that for some provincial secretaries, the priority is to enrich themselves through corrupt dealings rather than promoting growth. I construct a second variable *Corrupt Provincial Secretary* to indicate whether the provincial secretary was latter investigated for corruption. I expect clients' performance premium to be small or even negative when they are associated with patrons who engage heavily in corruption.

I include interactions between these two variables and the main connection indicator in the baseline regression. Column 1 of Table A.16 shows that the performance premium increases substantially when the patrons are connected to the general secretaries: Clients of connected patrons appear to outperform those of unconnected ones by a margin of about 0.48 percentage points. Fur-

thermore, column 2 suggests that there is also a sizable drop in clients' performance premium when the provincial patrons are themselves corrupt (-0.35). The coefficient, however, is not precisely estimated—partly due to the relatively small number of provincial-level investigations. Overall, these patterns suggest that preferences of the patron are indeed a key determinant of the economic impact of patronage ties.

One concern with the results reported in column 2 of Table A.16 is that anticorruption may be politically motivated and therefore does not necessarily reflect patrons' corruption. To address this, I also include in the regression an interaction between connection and reported graft *amount* (as reported in court verdicts). The assumption here is that although the investigation decision may be politically motivated, the relative ordering of graft should largely reflect the relative level of corruption among investigated politicians. The results, displayed in Column 3, suggest that the coefficient for the interaction is negative, although somewhat noisy. This sign is again consistent with the expectation that clients' performance premium is smaller for more corrupt patrons.

Table A.16: Performance Premium and Patron Preferences

	GDP growth at $t+2$		
	(1)	(2)	(3)
Connected to prov sec	0.156	0.419**	0.422**
	(0.163)	(0.132)	(0.132)
Connected to prov sec × Prov sec connected to gen sec	0.481*		
	(0.214)		
Connected to prov sec × Corrupt prov sec		-0.352	0.650
		(0.347)	(0.979)
Connected to prov sec × Corrupt prov sec (amount, in million yuan)			-0.561
			(0.555)
City and province-year FE	✓	✓	✓
City economic controls	✓	✓	✓
City leader controls	✓	✓	✓
Adjusted R^2	0.51	0.51	0.51
Number of Cities	326	326	326
Observations	3693	3693	3675

Note:This table illustrates how the performance premium associated with patronage ties varies with proxies for patrons' development interest. The main specification is based on column 3 of Table 1. The main effects of patrons' attributes are absorbed in province-year fixed effects. Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

E.3 Evidence on General Effort Level: Revenue Collection and Policy-Making Activities

In addition to the results on GWR topics reported in the main text, I collect data on two additional indicators to illustrate on the substantive difference in effort levels between connected and unconnected local leaders. The first one, *Growth in Fiscal Revenue,* is intended to capture local government's *fiscal effort*. As noted by Guo (2007) and Lü and Landry (2014), revenue collection is typically an effort-intensive task in the Chinese context, and has been used as a means by local clients to demonstrate their loyalty to their patrons. The second variable is a count variable for the total number of policies and laws a city issues in a year,[41] which can be seen as a proxy for a local administration's *policy and legislative effort*.

Results reported in Table A.17 indicate that connections also have positive and significant impacts on both effort measures. The first column shows that connected cities see about 1.8 percentage points increase in fiscal revenue growth, which is even larger than the premium for GDP growth. Column 2 further shows that connections lead to a significant increase in city leaders' policy and legislative efforts.[42] For a city with a medium level of policy activity, the estimated effect amounts to about 15 additional policies issued per year, representing a 14% increase from the sample average (105).

[41] This broadly includes administrative orders, regulations issued by local governments and their agencies, as well as laws passed by local people's congress. The data are drawn from a comprehensive database on Chinese laws and regulations maintained by Peking University. The database can be accessed at www.pkulaw.cn.

[42] The estimation is based on the negative binomial model.

Table A.17: Effects of Connections on Fiscal and Legislative Efforts

	Fiscal Effort	Legislative Effort
	(1)	(2)
	%Δ Revenue-GDP ($t+2$)	# of laws & directives issued ($t+1$)
Connected to prov sec	1.817*	0.130*
	(0.784)	(0.052)
City and province-year FE	✓	✓
City economic controls	✓	✓
City leader controls	✓	✓
Adjusted R^2	0.40	
Number of Cities	326	321
Observations	3690	3199

Note: This table shows how patronage ties make local governments more active in collecting revenue and issuing policies and directives. The main specification is based on column 3 of Table 1. Column 2 uses the negative binomial count model. Robust standard errors clustered at city level are reported in parentheses.

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

F Themes and Topics from Government Work Report

I estimate a 20-topic Latent Dirichlet Allocation (LDA) model (Blei, Ng, and Jordan 2003) on the entire corpus of local government work reports between 2000-2013 to construct measures of local leaders' policy priorities. The detailed estimation procedures and output are described in Jiang, Meng, and Zhang (2016). Below I report the estimated topics (with five most correlated words) for the five themes analyzed in the text.

Development Theme

- Topic 1: 基础设施 infrastructure, 总体规划 overall planning, 万平方米 10,000 squared meters, 城镇化 urbanization, 小城镇 small towns
- Topic 3: 基础设施 infrastructure, 高速公路 highways, 重点项目 focal projects, 前期工作 preliminary work, 重大项目 major projects
- Topic 10: 招商引资 investment attraction, 亿美元值 100 million usd, 对外开放 opening up, 利用外资 FDI utilization,进出口 import and export
- Topic 13: 高新技术 advanced technology, 增加值 value-added, 工业园区 industrial parks, 开发区 development zones,新兴产业 new industries
- Topic 14: 生产总值 domestic product , 固定资产 fixed assets, 纯收入 net income, 可支配 disposable, 消费品 consumer goods
- Topic 15: 服务业 service sector, 旅游业 tourism sector, 大力发展 forcefully promote, 第三产业 tertiary sector, 房地产 real estate

Welfare Theme

- Topic 8: 社会保障 social security, 养老保险 old-age insurance, 医疗保险 medical insurance, 劳动力 labor force, 城乡居民 urban and rural residents

Culture Theme

- Topic 2: 文化产业 cultural industry, 广播电视 TV and broadcast, 计划生育 family planning, 残疾人 the disabled, 文化遗产 cultural heritage
- Topic 4: 高新技术 advanced technology , 技术创新 technological innovation, 知识产权 intellectual property, 创新能力 innovation capacity, 信息化 informatization
- Topic 6: 义务教育 compulsory education, 医疗卫生 medicine and health, 中小学 junior and senior high schools, 公共卫生 public health, 计划生育 birth planning
- Topic 17: 精神文明 spiritual civilization, 社会主义 socialism, 深入开展 in-depth implementation, 创建活动 create activities, 民主法制 democracy and rule of law

Administration Theme

- Topic 0: 公务员 civil servants, 经济社会 socioeconomic, 公共服务 public service, 政府职能 government responsibility, 责任制 responsibility system
- Topic 12: 依法行政 administration by law , 人大代表 NPC deputies, 常委会 standing committee, 民主监督 democratic supervision, 政协委员 CPPCC deputies

G Particularistic Reward for Performance from the Patron

The analysis in the main text has shown that patronage ties with bureaucratic superiors motivate lower-level officials to exert greater effort on promoting development. To complete the picture of this informal performance contract, this section provides further evidence on the behaviors of the political superiors. If the performance incentives are generated by the formal institutions, we should expect to find a universal linkage between performance and political rewards. By contrast, in a world where performance incentives come from particularistic exchange, different types of performance may be rewarded differently depending on when and to whom it was delivered. More specifically, I expect officials to receive greater reward from the part of performance delivered under their own patrons (than under superiors who are not their patrons).

To test this hypothesis, I construct a person-year sample for all the prefecture-level city secretaries and mayors that have ever appeared in our city panel. For each official, I create a sequence of observations starting in the year of his or her first appearance in the city panel and continuing on to 2011 unless one of the following condition is met: (1) the official experiences a promotion, defined as movement from a prefecture-level post to a vice-provincial level (or above) post in the party or the government[43] or (2) the official retires, dies, or receives a disciplinary sanction.

The key independent variables are the *Cumulative Relative Performance* (CRP), which is the average of relative growth that an official has achieved in the capacity of a city secretary or a mayor in his past career. Effectively, it measures on average how much a city official has outperformed the provincial average up to the current point. For a sequence of relative performance statistics $y_1, y_2 \cdots y_t$ where t indexes year, the CRP at time T is simply $\frac{\sum_{t \leqslant T} y_t}{T}$. In the empirical analyses, I add an extra complication to the formula above by distinguishing between two types of CRPs: *the CRP for the patron* and *the CRP for the non-patron*. The former is the cumulative performance delivered under a provincial secretary who had promoted the official, and the latter is the performance under

[43]The common destination posts includes vice-governor, vice provincial secretary, secretary or mayor in vice-provincial level cities, members of the provincial standing committee, and vice-ministerial level posts in the central government. We exclude semi-retirement promotions such as those to the People's Congress and People's Consultative Conference.

a non-patron provincial secretary.[44] In the person year sample, the CRPs are updated throughout the official's city leadership terms (since s/he delivers new performance every year). Once the official leaves city leadership posts, the values stay constant for the rest of his/her observations.

This measure has several advantages over other approaches, such as those based on either contemporaneous or term-based average performance. First, in making promotions, the superior is likely to take into account the candidate's entire career record up to that point rather than just focusing on the present. If a client has delivered outstanding performance in one year but abysmal results in another, both are likely to be taken into account. Second, to the extent that growth statistics in regional units allows comparison among officials with otherwise heteregenous backgrounds, it is a useful and informative signal that is likely to follow with the official throughout his career. Even officials are not immediately promoted after completing their terms as city leaders, their performance in cities, which reveal information about their ability and loyalty, is still likely to remembered for some period of time and affect later promotion decisions.[45]

I estimate the following hazard model:

$$\begin{aligned} h_{ig}^{\text{outcome}}(t) &= h_{0g}(t)\exp\Big(\beta_1 \text{CRP under Patron}_{ig} \\ &\quad +\beta_2 \text{CRP under non-Patron}_{ig} \\ &\quad +\mathbf{X}\boldsymbol{\beta}\Big) \end{aligned} \tag{3}$$

where i and g index the individual and the risk strata, respectively. In all models, we stratify on two variables: 1) whether the subject was a city secretary or a mayor and 2) the province in which the subject works, both at the beginning of all his/her observations to account for the heterogeneity in the underlying hazard.[46]

[44] A value of 0 is assigned to these CRP if we cannot identify any segment of performance between 2000 and 2011 that satisfy the conditions.

[45] As evidence on how economic performance can have an impact beyond one's immediate term, many of our prefecture-level informants can frequently recall and comment on the performance of their subordinates in counties even they have been transferred to other specialist agencies.

[46] City secretaries, who are more senior than mayors, are naturally more likely to be promoted. Similarly, some

I estimate the effect of CRPs separately for two key outcomes of interests: promotion and disciplinary sanction. Table A.18 presents the results on the differential effects of performance. Column 1 presents the baseline result with controls on the size of the economy, population and fiscal transfer in the assigned city. We find that cumulative performance delivered under the patron is strongly correlated with one's promotion. One standard deviation increase from the provincial average, for example, raises the odds of promotion by about 21%.[47] By contrast, performance under a non-patron appears to have little effect on growth. The second model includes additional controls on the demographic and career attributes of the official and the results remain virtually the same. Columns 3 and 4 report the results from using disciplinary sanction as the dependent variable. The results are remarkably similar to that of the promotion analyses: Only better performance under a patron is strongly associated with political rewards (in this case, lower risk of investigation).

provinces have more vice-provincial posts relative to the number of city posts, making the odds of promotion higher for city leaders in those provinces.

[47] This is obtained by: $\exp(0.19) - 1$.

Table A.18: Particularistic Reward to Performance: Evidence from Promotion and Purge

	Promotion		Disciplinary Sanctions	
	(1)	(2)	(3)	(4)
CRP under patron	0.190*	0.223**	-0.358*	-0.365*
	(0.080)	(0.081)	(0.172)	(0.174)
CRP under non-patron	0.069	0.078	0.238	0.228
	(0.089)	(0.093)	(0.212)	(0.197)
Average relative city GDP	0.390**	0.373**	0.133	0.164
	(0.096)	(0.097)	(0.269)	(0.267)
Average relative city population	-0.027	-0.022	0.202	0.186
	(0.092)	(0.093)	(0.245)	(0.240)
Average relative fiscal transfer	0.099	0.149	-0.352	-0.346
	(0.110)	(0.113)	(0.265)	(0.260)
Age	1.607**	1.616**	1.562	1.666
	(0.280)	(0.294)	(0.941)	(0.939)
Age^2	-0.017**	-0.017**	-0.013	-0.014
	(0.003)	(0.003)	(0.008)	(0.008)
Patron currently a PSC/PB member		0.659**		0.498
		(0.182)		(0.449)
Year first promoted to bureau-level		-0.068**		0.003
		(0.019)		(0.055)
Ethnic minority		0.298		0.476
		(0.216)		(0.715)
Female		1.284**		-1.086
		(0.232)		(1.030)
Full-time college		0.250*		-0.095
		(0.118)		(0.301)
Year dummies	✓	✓	✓	✓
Proportional hazard test (p-value)	0.314	0.423	0.409	0.334
Number of promotions	356	356	54	54
Number of individuals	1542	1542	1542	1542
Observations	9161	9161	10858	10858

Note: The table presents coefficients from Cox proportional hazard models. The results suggest that performance delivered under the patron has greater influence over clients' career outcomes than that delivered under non-patron.

Robust standard errors clustered at individual are reported in parentheses.

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

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