

Online Appendix: The Limits of Career Concerns in
Federalism:
Evidence from China

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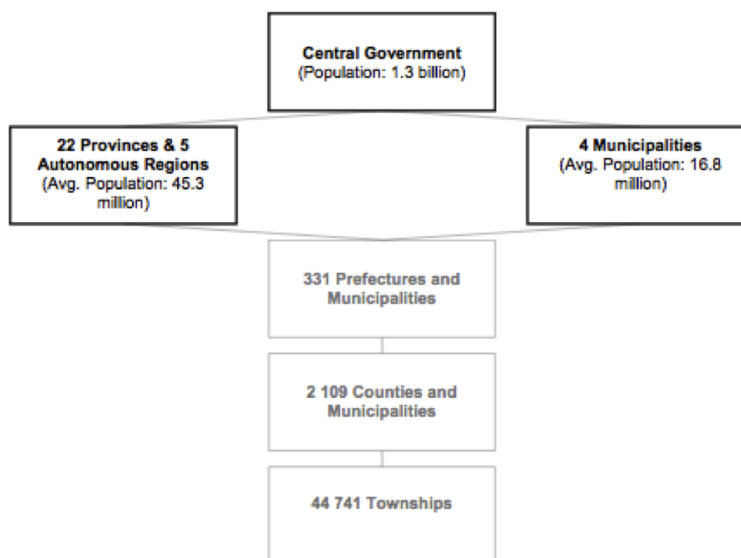
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A Supplemental figures and tables

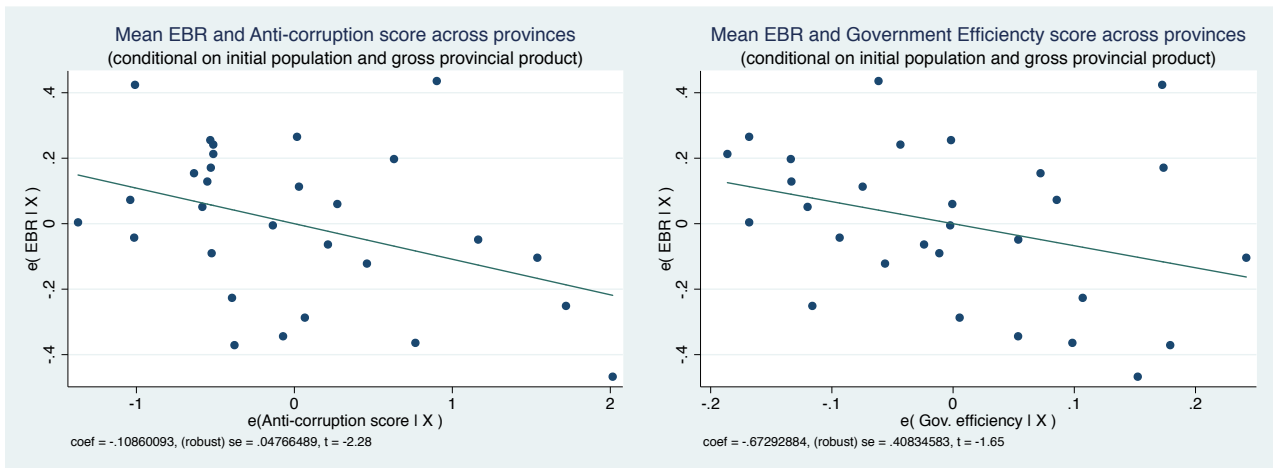
Figure A1: China's government structure



Note: The figure illustrates China's administrative structure in 2003. We focus on the central-provincial level, that is, the two top administrative levels, which are bold in the figure.

Source: Wong (2005).

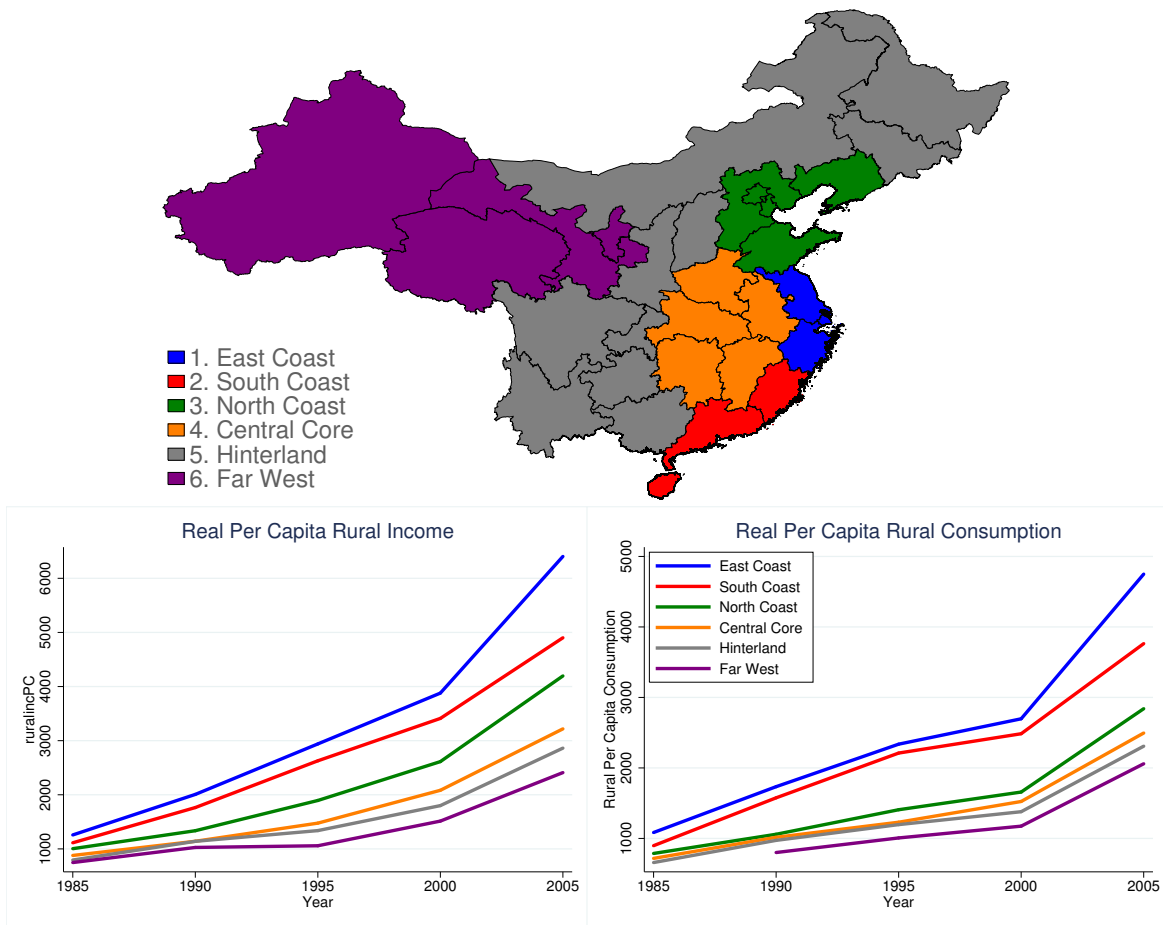
Figure A2: Extra-budgetary revenue and anti-corruption measures



Source: The province-level anti-corruption and efficiency of government scores are obtained from Cole et al. (2008) for the years 1998 - 2003.

Note: Regression results are presented in Columns 1 and 3 of Table A2 in the online appendix. The dependent variable in all regressions is average (log of) extra-budgetary revenue for the years 1998-2003. For the two scores, we use averages for the years 1998 - 2003 (intra-province variation is small); other controls are taken for the year 1997.

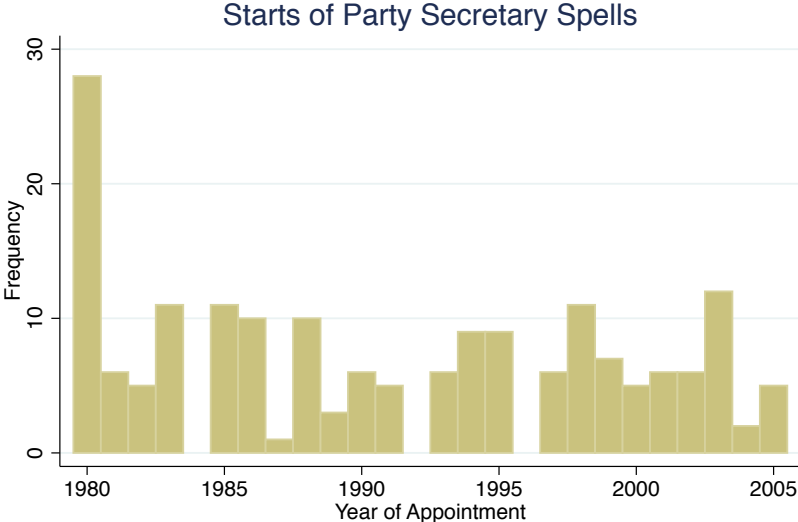
Figure A3: China's six economic regions (excluding Tibet) and their development paths



Note: The map depicts the six economic regions (the map does not show Tibet, since we exclude Tibet from our analysis). The left (right) panel displays real per capita rural income (real per capita rural household consumption) for each of the seven regions, which have followed different development paths over time. All values are in constant 2000 Yuan.

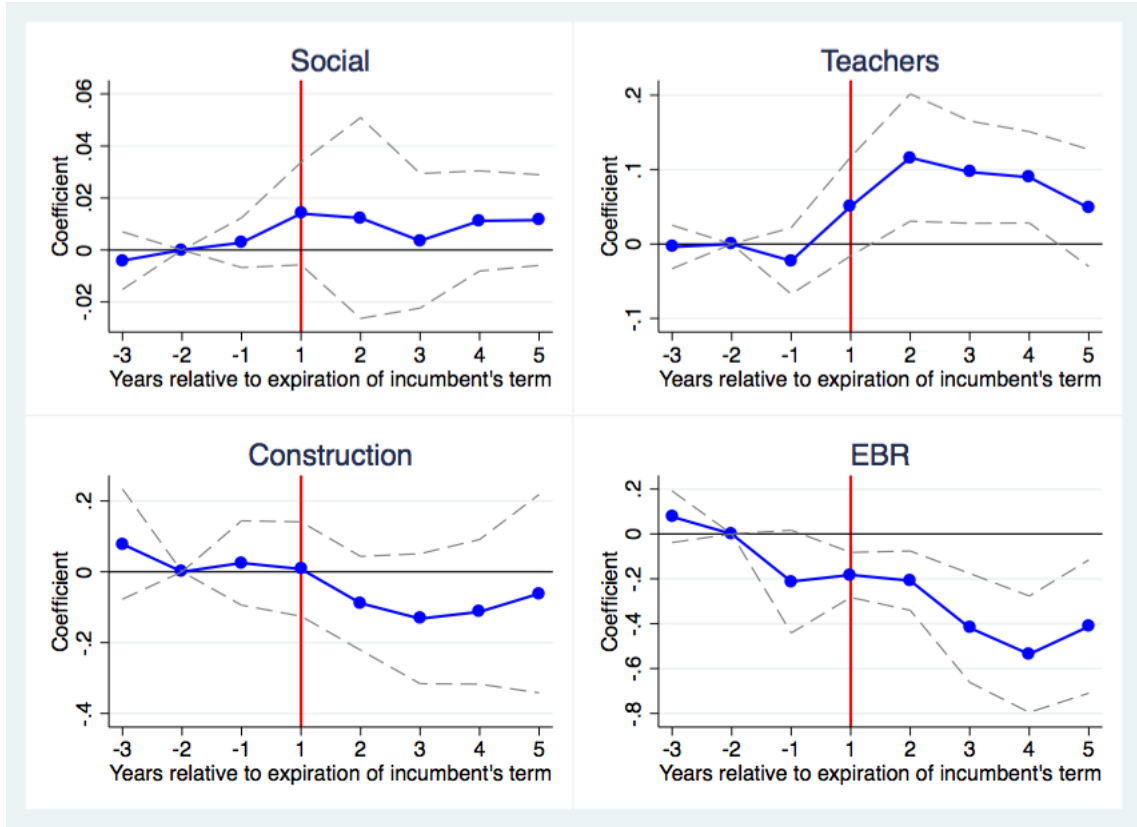
Source: The *NBS household survey*, published in 2006 China Yearbook of Rural Household Survey (in Chinese), and tabulated in Keidel (2009).

Figure A4: The distribution of terms over time



This figure plots the distribution of appointments of new party secretaries at a yearly frequency from 1980 to 2005. The sample includes the universe of secretaries, excluding Tibet.

Figure A5: Outcomes by year around the expiration of incumbent party secretary terms



Note: The x -axis represents a timeline relative to the year of expiration of the five-year term of the party secretary who is incumbent at the time of a general secretary switch. Negative values on the x -axis indicate the number of years before the expiration of the incumbent's term, and positive values represent the term-year of the subsequent five-year term. The solid vertical line indicates the first year after the expiration of the incumbent's five-year term. We regress of each of the four outcomes on $GsWork_{pt}$, indicator variables for each year on the timeline, and interactions between $GsWork_{pt}$ and each timeline dummy. The four panels present, for each outcome, the coefficients on the interaction terms, along with their confidence intervals, relative to the level two years before the expiration of the incumbent party secretary's term. These coefficients capture the change that occurs, in provinces where the general secretary worked, around the expiration of the incumbent's five-year term. All models include the set of controls displayed in Column 4 of Table 2, as well as province- and year FE and six economic region-specific time trends. Standard errors are clustered at the province level.

Table A1: Summary statistics

Description	Obs	Mean	Std. Dev.	Min	Max
Backgrounds					
Local = worked both in high and low positions in prov.	755	0.38	0.49	0	1
Worked in center	755	0.48	0.50	0	1
Worked in center in high positions	755	0.20	0.40	0	1
Worked in other provinces	755	0.65	0.48	0	1
Worked in other prov. in high positions	755	0.47	0.50	0	1
Worked elsewhere in high positions	755	0.60	0.49	0	1
Did not work in this province	755	0.39	0.49	0	1
Did not work in this prov. in high positions	755	0.42	0.49	0	1
Politburo member	755	0.10	0.30	0	1
Native province	755	0.14	0.35	0	1
Has higher education	753	0.64	0.48	0	1
Outcomes					
Log of extra-budgetary revenue	647	3.06	0.85	0.29	4.94
Social expenditure share	697	0.25	0.042	0.13	0.38
Log of teachers in primary schools	705	12.0	0.72	10.1	13.1
Log of construction output	718	3.64	1.20	0.31	6.94
Controls					
Age	755	60.5	5.16	35	75
Tenure	755	3.29	2.19	1	12
Higher education	753	0.64	0.48	0	1
Native province	755	0.14	0.35	0	1
Retirement limit	755	0.11	0.31	0	1
Serves second term	755	0.16	0.36	0	1
Worked in the center	755	0.20	0.40	0	1
PS is Politburo member	755	0.10	0.30	0	1
Marginal retention rate (MRR)	755	0.91	0.20	0.085	1
Log population	749	10.3	0.81	8.23	11.5
Log urbanization	714	-1.40	0.53	-2.38	-0.20
1yr Lagged Log GPP	755	5.76	1.06	2.63	8.28
GPP growth of predecessor	750	0.091	0.033	-0.058	0.21
Average GPP growth over spell until t	755	0.088	0.033	-0.064	0.27
Other variables					
Urban-rural ratio of living exp. per cap	729	2.53	0.64	1.17	4.71
Urban-rural ratio of GRP per employee	716	4.61	1.91	1.55	16.8
Net fiscal transfer	268	3.38	0.68	1.31	4.70
Provincial anti-corruption score, 1998-2003	180	3.33	0.86	2.02	5.46
Provincial gov. efficiency score, 1998-2003	180	0.000056	0.24	-0.48	0.59

Table A2: Correlation between extra-budgetary revenue and anti-corruption measures

<i>Dependent variable:</i>	Mean log extra-budgetary revenue				
	(1)	(2)	(3)	(4)	(5)
Anti-corruption score, 1998-2003	-0.109** (0.0477)	-0.102** (0.0435)			-0.0909* (0.0520)
Gov. efficiency score, 1998-2003			-0.673 (0.408)	-0.581 (0.398)	-0.469 (0.395)
Log population	-0.0836 (0.0892)	-0.208 (0.137)	-0.341* (0.184)	-0.416** (0.193)	-0.396** (0.189)
1yr Lagged Log GPP	1.064*** (0.0801)	1.194*** (0.136)	1.283*** (0.150)	1.369*** (0.160)	1.353*** (0.169)
Eastern province dummy		-0.182 (0.139)		-0.168 (0.120)	-0.152 (0.129)
Number of observations	29	29	29	29	29
Adj. R-Squared	0.94	0.94	0.94	0.94	0.94

Source: The province-level anti-corruption and efficiency of government scores are obtained from Cole et al. (2008) for the years 1998 - 2003.

Note: The dependent variable in all regressions is average (log of) extra-budgetary revenue for the years 1998-2003. For the two scores, we use averages for the years 1998 - 2003 (intra-province variation is small); other controls are taken for the year 1997.

Table A3: Definitions and sources of outcome variables

Variable name	Outcome	Definition	Source
<i>EBR</i>	Extra-budgetary revenue	Log of extra-budgetary revenue consists of quasi-legal fees levied by the sub-national governments: public utilities surcharges, transportation and licence fees, and, to some extent, retained earnings of local state-owned enterprises (SOEs). The World Bank describes these funds as arising from “ad hoc fees and charges designed to tap deep pockets wherever they exist, and enterprises are prime targets.”	Difang caizheng tongji ziliao (Local Public Finance Data)
<i>Social</i>	Social expenditure share	Share of expenditure spent on culture, education, science and health.	Provincial yearbooks
<i>Teachers</i>	Teachers in primary schools	Log of the number of full-time primary school teachers (unit: 10000).	Provincial yearbooks
<i>Construction</i>	Construction output	Log of the output of construction enterprises (unit: 100m Yuan).	Provincial yearbooks

Table A4: Complier characteristics

	$Pr [x (pt) = 1]$	$Pr [x (pt) = 1 Complier]$	Relative likelihood that complier has characteristic
Higher education	0.64	0.54	0.87
Last term before retirement	0.19	0.04	0.22
Worked in the center	0.2	0.05	0.25
PS is Politburo member	0.1	0.02	0.22

Table A5: p -values for the main results with alternative assumptions about clusters

Panel A: OLS				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
Clusters by province	0.021	0.106	0.069	0.033
Wild cluster bootstrap	0.0501	0.1682	0.1241	0.0581
Panel B: IV				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
Clusters by province	0.020	0.002	0.015	0.011
Panel C: Reduced Form				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
Clusters by province	0.004	0.043	0.002	<0.0001
Wild cluster bootstrap	0.0260	0.1201	0.0200	0.0120

Note: p -values from models using alternative assumptions on the variance-covariance matrix. The first row of each panel presents p -values obtained when standard errors are adjusted for one-way clusters at the province level. The second row (of Panels A and C) presents p -values from models using one-way clustering with wild bootstrapped standard errors (Cameron et al., 2008). All controls are as in column (4) of Table 2, and include province- and year fixed effects, as well as six economic region-specific time trends.

Table A6: First stage and results controlling for province-specific time trends

Pre-trends	First Stage			
	(1) Dependent variable: PS is Local	(2) F-stat: two-way clustering	(3) F-stat: robust	(4) Adj. R-Squared
GS Worked \times Term Expires	0.229*** (0.0876)	5.39	9.37	0.54
Mean, dept. var	0.40			
Number of observations	709			
Panel A: OLS				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
PS is Local	0.00943** (0.00385)	0.0155 (0.0112)	-0.0723** (0.0325)	-0.0333* (0.0182)
Controls	All	All	All	All
Within R-squared	0.74	0.65	0.97	0.88
Panel B: IV				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
PS is Local	0.0714* (0.0384)	0.206 (0.163)	-0.260 (0.233)	-0.501 (0.331)
Controls	All	All	All	All
Panel C: Reduced form				
<i>Dependent variable:</i>	Social	Teachers	Construction	EBR
GS Worked \times Term Expires	0.0181*** (0.00272)	0.0482** (0.0232)	-0.0627* (0.0367)	-0.129*** (0.0425)
Controls	All	All	All	All
Within R-squared	0.74	0.65	0.97	0.88
Mean, dept. var	0.26	11.97	3.61	3.07
Number of observations	679	690	696	636

Note: Standard errors are adjusted for two-way non-nested clusters, with the first dimension of clusters being province and the second dimension of clusters being the general secretary's career background during each party congress spell. All controls are as in column (4) of Table 2, and include province- and year FE as well as province-specific time trends.

Table A7: Interaction with tenure on the job

Panel A: OLS				
<i>Dependent variable</i>	Social	Teachers	Construction	EBR
Party Secretary is Local	0.00971** (0.00477)	0.0169* (0.00929)	-0.0783* (0.0410)	-0.0660** (0.0284)
PS is Local × (Tenure-mean)	-0.000594 (0.000600)	-0.000748 (0.00252)	-0.0179 (0.0163)	-0.00412 (0.0103)
Tenure	-0.000440 (0.000926)	0.0000346 (0.00315)	0.00487 (0.0116)	0.01000*** (0.00262)
<i>Controls</i>	All	All	All	All
Within R-squared	0.60	0.53	0.96	0.80
Panel B: IV				
<i>Dependent variable</i>	Social	Teachers	Construction	EBR
Party Secretary is Local	0.0456*** (0.0149)	0.146 (0.126)	-0.487*** (0.0524)	-0.581** (0.278)
PS is Local × (Tenure-mean)	0.0117 (0.00968)	0.0575 (0.103)	-0.163 (0.117)	-0.0664 (0.159)
Tenure	-0.00728 (0.00659)	-0.0335 (0.0616)	0.0860 (0.0774)	0.0474 (0.0961)
<i>Controls</i>	All	All	All	All
Number of observations	679	690	696	636

Note: Standard errors are adjusted for two-way non-nested clusters, with the first dimension of clusters being province and the second dimension of clusters being the general secretary's career background during each party congress spell. All models includes the set of controls displayed in Column 4 of Table 2, as well as province- and year FE and six economic region-specific time trends.

Table A8: Promotion mechanism, policy outcomes, and career backgrounds: interactions

<i>Dependent variable:</i>	Panel A: no controls for growth performance			
	0 = demoted; 1 = same-level position; 2 = promoted			
	(1)	(2)	(3)	(4)
PS is Local	-0.0201 (0.100)	-0.115 (0.124)	-0.0880* (0.0460)	-0.0918 (0.0597)
Social (Avg.)	0.464 (0.380)			
Social (Avg.) × Local	-0.0760 (0.392)			
Teachers Per Capita (Avg.)		0.0905 (0.0595)		
Teachers Per Capita (Avg.) × Local		0.0446 (0.0736)		
Construction (Avg.)			0.0622** (0.0301)	
Construction (Avg.) × Local			0.0129 (0.0140)	
EBR (Avg.)				0.0348 (0.0308)
EBR (Avg.) × Local				0.0206 (0.0212)
Observations	1313	1325	1332	1248
<i>Dependent variable:</i>	Panel B: Controls for growth performance			
	0 = demoted; 1 = same-level position; 2 = promoted			
	(1)	(2)	(3)	(4)
Average GPP Growth	0.726** (0.283)	0.860*** (0.270)	0.659** (0.274)	0.825** (0.383)
PS is Local	-0.0377 (0.104)	-0.151 (0.134)	-0.0901* (0.0464)	-0.0818 (0.0612)
Social (Avg.)	0.321 (0.403)			
Social (Avg.) × Local	-0.0214 (0.406)			
Teachers Per Capita (Avg.)		0.0934 (0.0650)		
Teachers Per Capita (Avg.) × Local		0.0646 (0.0787)		
Construction (Avg.)			0.0583* (0.0298)	
Construction (Avg.) × Local			0.0129 (0.0142)	
EBR (Avg.)				0.0484 (0.0322)
EBR (Avg.) × Local				0.0159 (0.0218)
Observations	1313	1325	1332	1248

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Marginal effects from Probit regressions with the dependent variable taking the value of 0, if the provincial leader was demoted in year $t + 1$ in province p ; 1, if he remained in the same-level position in year $t + 1$; and 2, if he was promoted. This table replicates Table 5, but adds, for each of the four policy outcomes, an interaction of the outcome variable and whether a leader is local. The independent variable definitions, as well as all controls, are as in Table 5. Standard errors are clustered at the province level.

Table A9: The impact of general secretary work experience on provincial governance

	OLS, sub-sample of PS - outsider			
	(1) Social	(2) Teachers	(3) Construction	(4) EBR
General secretary worked in province	-0.00305 (0.00596)	0.0478** (0.0210)	-0.0580 (0.0607)	0.0740 (0.0545)
Baseline controls	Yes	Yes	Yes	Yes
Number of observations	406	408	416	375

Note: Subsample of province-year observations with outsider party secretary. Standard errors are adjusted for two-way non-nested clusters, with the first dimension of clusters being province and the second dimension of clusters being the general secretary’s career background during each party congress spell. All controls are as in column (4) of Table 2, and include province- and year fixed effects, as well as six economic region-specific time trends.

B An illustrative model of elite influence

Our leading interpretation of the evidence on the alternative mechanisms is that locals’ behave differently from outsiders because they cater to local low-level elites. Catering to elites can only benefit the population if favors to elites, at least to some extent, spill over to, and hence also benefit, the general population. Here, we formalize this interpretation and show under what conditions elite influence can be beneficial or harmful for governance.

B.1 Setup

Provincial resource allocation There are two time periods. In the first period, provincial budgetary resources can be put to two types of productive use—government infrastructure investment and social spending—or diverted by the provincial leader for private use.

- (i) Government investments, such as construction or infrastructure, yield an immediate boost to provincial growth *and* contribute to future growth. We denote these investments by c , and refer to them as *construction*. Formally, we assume that a one yuan investment into c yields a contribution to first-period provincial growth given by $y_1^c = f_c(c) + \varepsilon$, and a contribution to second-period growth, $y_2^c = f_c(c)$, where $\varepsilon \sim N(0, \sigma^2)$ and where $f_c(\cdot)$ is strictly concave, satisfies the condition $f'_c(\cdot) \rightarrow \infty$ as

$c \rightarrow 0$, and has the property that $f'_c(c)/f'_c(1-c)$ is strictly convex.³² Here, ε reflects that growth coming from the short-term investment is uncertain in the first period.³³

- (ii) Social spending, such as expenditure on education and health care, does not yield any tangible growth benefits in the first period, but may be growth-promoting in the long run (by the second period). We denote these *social expenditures* by s . A one yuan investment into s yields a contribution to second-period growth, $y_2^s = f_s(s)$, where $f_s(\cdot)$ satisfies the same conditions. The key assumption here is that social expenditure yields no contribution to growth in the short run. It is not necessary for these expenditures to be growth promoting in the longer run, they could simply capture spending that yields other benefits to the population that does not translate into economic growth.
- (iii) Provincial resources that are diverted by the provincial leader, e , generate no growth and yield a private benefit $g(e)$ to the provincial leader (or to the person(s) the leader transfers these resources to).

Social benefits from spending on construction or social expenditure are much higher than the private benefits from diversion. Formally, $f_c(\cdot) = k_c g(\cdot)$ and $f_s(\cdot) = k_s g(\cdot)$, where k_c and k_s are constants satisfying $k_c, k_s \gg 1$.³⁴

Normalizing total resources to one, the resource constraint is $1 = c + s + e$. Any rent extraction ($e > 0$) indirectly harms society as it amounts to a reduction of the resources that are put to productive use.

Uninfluenced party secretary (outsider) The party secretary is appointed for one period and lives (pursues a career) for two periods. In the first period, he decides how to allocate provincial budget resources between c , s , and e .

At the end of the first period, the party secretary is evaluated by the central government, and he is either demoted or promoted. We assume, for simplicity, that the discounted value

³²These assumptions on $f_c(c)$ are satisfied by standard concave functions such as $f_c(c) = \ln c$, and $f_c(c) = \sqrt{c}$, but are more general.

³³As we discuss in the proofs below, for technical reasons, we assume that ε is not too low. This is arguably consistent with the reality facing Chinese provincial leaders.

³⁴This is reasonable as it is commonly believed that public goods such as education and health care were under-provided in China during the analyzed time period (Luo et al., 2010; Whiting, 1996).

of being promoted is P .³⁵ The central government uses a performance-based promotion rule whereby the party secretary is promoted if provincial growth during his tenure (Period 1) exceeds some growth target, \bar{y} . The focus of the central government on economic growth was not only stated explicitly, but also established empirically in Li and Zhou (2005), and Chen et al. (2005), who show that the probability of promotion or demotion of a provincial leader is significantly affected by the average provincial growth during the secretary's tenure.

Because the center wants to re-evaluate party secretaries every five years, the growth target must be set in relation to the observable output by this time. Thus, in model terms, the growth target is set so as to maximize provincial growth-promoting investment in the first period, c .

Even if the government were to desire a mix of construction and social spending (c and s), it is not possible for the center to simultaneously engage in performance-based promotion *and* encourage investment in s , as any proceeds from s are realized after the decision to demote or promote the party secretary is taken. Thus, if the central government wants to use career concerns to weaken the party secretary's incentives to engage in rent extraction, it is necessary to reward the party secretary for short-term growth-enhancing policies, at the expense of policies that translate into growth in the longer run.³⁶

A party secretary who is uninfluenced by the provincial elite (henceforth an *outsider*) trades off career concerns and the desire to extract rents for himself, e_1 . He chooses c , s , and e so as to maximize his expected utility, given by

$$U^{Outsider} = \Pr(y_1 > \bar{y})P + g(e_1) = \Pr(f_c(c) + \varepsilon > \bar{y})P + g(e_1).$$

General population We assume that the general population wants to implement the socially optimal allocation, that is, allocate the resources so as to maximize growth over the two time periods. In Period 1, the total discounted expected benefit from a one yuan investment into c is given by $y_1^c + \delta y_2^c = (1 + \delta) f_c(c)$, and the corresponding benefit from s is given by $\delta y_2^s = \delta f_s(s)$, where δ is the discount factor, which we normalize to one. Because the

³⁵Here, promotion is defined broadly as non-demotion; that is, it encompasses reappointment, rotation to another province or to the central government, and promotion to the Politburo.

³⁶Note that a consistent use of a promotion mechanism that rewards growth in the short run, for example, over 5-year terms of Party Secretary appointments, theoretically translates into growth in the longer run.

party secretary's rent extraction yields no growth, the general population wants to eliminate it completely. The general population, thus, maximizes the expected utility

$$U^{Population} = y_1^c + y_2^c + y_2^s = 2f_c(c) + f_s(s).$$

Alternatively, we can assume that the general population has direct preferences over c and s while s is not necessarily growth-promoting. All the main results of the model will go through with this alternative assumption.

Provincial elites We aim at analyzing how the party secretary's optimal budget allocation and rent extraction change when he is affiliated with the provincial elites. We model the preferences of the provincial elites as

$$U^{Elite} = g(e_2) + \theta U^{Population},$$

where e_2 are transfers from the party secretary, and $\theta \in \{0, 1\}$. This formulation captures two important aspects of the provincial elites. First, elites value any transfers, e_2 , which they may receive from the party secretary. If an influenced party secretary transfers resources to the elite, these must be diverted from the provincial budget resources. Second, we allow for a varying degree of similarity between the provincial elites and the general population. The parameter θ reflects the similarity between provincial elite and the general population: If $\theta = 0$, the provincial elite cares solely about rents and has nothing in common with the general population. If $\theta = 1$, the provincial elite values any private transfers that it may receive, but is otherwise similar to the general population. We analyze the effect of elite influence in these two extreme cases separately.

The latter case, $\theta = 1$, is not to be taken literally – it is highly unlikely that the elite will have preferences that are perfectly aligned with the general population. We analyze this extreme case only because it is the simplest way to capture the benefits of elite influence. In reality, we would expect θ to lie strictly within the interval $\theta \in (0, 1)$. Below we also discuss this case.

Elite influence We model the preferences of a local party secretary, who is influenced by local elites, as

$$U^{Local} = U^{Outsider} + \rho U^{Elite},$$

where $\rho > 0$. The local party secretary must balance his own career concerns (which he shares with outsiders) with an inclination to cater to the interests of the provincial elites. When $\rho = 1$, he weighs the two objectives equally, while his career concerns dominate whenever $\rho < 1$. For simplicity, we will let $\rho = 1$.

The local party secretary allocates the provincial resources between the two productive uses, c and s , rent diversion for himself, e_1 , and diversion of rents that he transfers to the provincial elite, e_2 . We compare the optimal choices of a local party secretary with those of an outsider party secretary.

B.2 Elite influence: Subversion vs. Substitute for democracy

First, we analyze an outsider's optimal allocation of provincial budget resources. Then, we show how this allocation changes if an outsider party secretary is replaced by a local party secretary. All proofs are in the Section B.3.

As the outsider is evaluated solely based on growth during Period 1, he sets social spending to zero. Instead, he divides provincial resources between construction and rent diversion. His optimal resource allocation (c^O, s^O, e^O) satisfies $1 = c^O + e^O$, where $e^O = e_1^O$. In contrast, the general population's optimal resource allocation (c^*, s^*, e^*) is a mix of construction and social expenditure, $1 = c^* + s^*$.

Proposition 1. *From the general population's perspective, the outsider under-invests in social expenditure ($s^* > s^O$) and engages in wasteful rent extraction ($e^* < e^O$). The outsider's rent extraction, e^O , is decreasing in P and increasing in σ^2 .*

In words, the outsider under-invests in social expenditure because he balances two objectives: staying in office and extracting rents. Career concerns induce him to make short-term investments in construction. The outsider party secretary may allocate more or less to construction than the general population would optimally choose; that is, $c^O \geq c^*$. However, as the outsider spends any remaining yuan on rent extraction rather than on social expenditure,

the general population is better off the higher is c^O . The outsider will appropriate less resources when the value of promotion (P) is high. A lower unpredictability of the first-period growth (σ^2) strengthens the outsider's incentive to invest in this good, and hence reduces rent extraction.³⁷

This theoretical result for outsiders behavior under the promotion mechanism that rewarded (short-term) growth over the party secretary term is consistent with the fact that it is commonly believed that public goods such as education and health care in China were under-provided during the time period characterized by strong emphasis on short-term economic performance in promotion decisions (Whiting, 1996; Luo et al., 2010).

Now, we ask how the optimal resource allocation changes if an outsider party secretary is replaced by a local party secretary.

Proposition 2 (Subversion). *When the provincial elite has nothing in common with the general population, $\theta = 0$, elite influence leads to subversion: Replacing an outsider with a local party secretary (i) increases rent extraction ($e^{\theta=0} > e^O$), (ii) reduces construction ($c^{\theta=0} < c^O$), and (iii) does not increase social expenditure ($s^{\theta=0} = s^O$). As a result, economic growth decreases, both in the short and the long run.*

Intuitively, if the provincial elite has nothing in common with the general population, elite influence only strengthens the party secretary's incentives to divert provincial resources away from productive uses. While an outsider only has an incentive to divert resources for *his own* private use, a local party secretary also channels resources to the provincial elite, which further crowds out investment in construction, and, consequently, reduces growth.

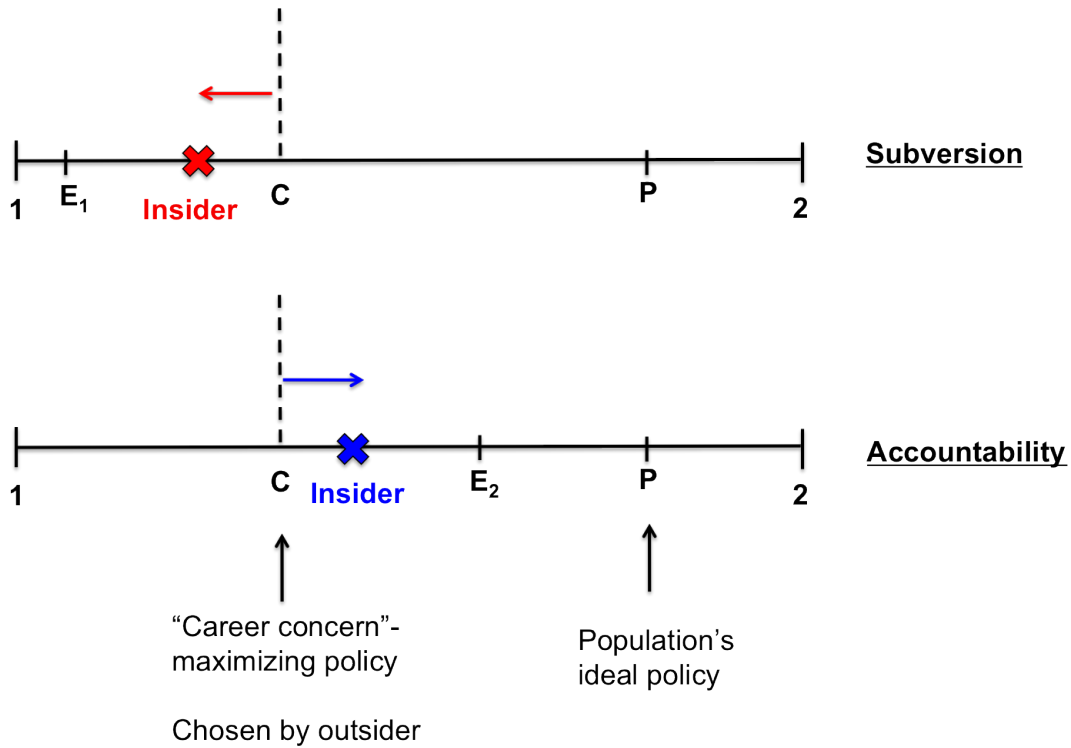
Proposition 3 (Substitute for democracy). *When the provincial elite is similar to the general population and social spending is desirable by the population (k_s high), elite influence represents a substitute for democracy: Replacing an outsider with a local party secretary (i) reduces rent extraction ($e^{\theta=1} < e^O$) and (ii) increases social expenditure ($s^{\theta=1} > s^O$), whereas (iii) construction may increase or decrease ($c^{\theta=1} \leq c^O$). The effect on economic growth is ambiguous in the short run. In the long run, the effect on growth is positive under the assumption that social spending is productive in the long run, otherwise, it is also ambiguous.*

³⁷As growth is uncertain, the party secretary will not be promoted with certainty at his optimal resource allocation.

Here we consider the extreme case when $\theta = 1$. In this case, the provincial elite is similar to the general population (except that it desires side transfers from the party secretary). Then, replacing an outsider with a local party secretary has very different consequences than from the subversion case discussed above. In particular, in this case, in contrast to an outsider, a local party secretary allocates some funds to social expenditure, although such investments confer no career benefit to him. Because the benefits that the local party secretary provides to the provincial elite spill over to the general population, elite influence can represent a *substitute for local democracy* in this case. Replacing an outsider with a local party secretary decreases rent extraction and increases investments in education and health care, both of which represent a shift of provincial policies closer to the general population's optimal resource allocation. The effect of elite influence on growth in the short-run is ambiguous because it depends on the level of investment in construction. In the long run, growth increases if social spending is growth-promoting because elite influence reduces the under-investment in education and healthcare. If social spending does not yield growth in the long run, growth implications of elite influence are ambiguous in the long run as well. Most importantly, the general population is better off under local party secretary when $\theta = 1$.

Allowing θ to be continuous So far we have considered the two extreme cases of $\theta = 0$ (no alignment between the elite and the population) and $\theta = 1$ (perfect alignment). This analysis in fact informs us of what would happen in the (more likely) case when θ is continuous: as θ would rise from 0 to 1, the elite would gradually become more representative of the population. Hence, elite capture would gradually become more beneficial, by moving the implemented policy closer and closer to the bliss point of the population. Importantly, already for a small θ , some benefits begin to spill over to the population; hence, elite capture can constitute a substitute for accountability even if the elite is not fully aligned with the masses. We illustrate this logic in Figure B6 below.

Figure B6: Elite influence as subversion or accountability



Note: The continuum $[1, 2]$ depicts a policy space where each point represents an allocation of fiscal resources between needs 1 and 2. C denotes the policy choice that maximizes the politician's future career prospects. C is chosen by a politician who is solely career concerned (in our empirical context, an outsider). In a democratic setting with full accountability, C can be expected to lie close to, or coincide with, some aggregation of the population's preferences. In a non-democratic context, however, C is determined through the central promotion mechanism, and hence C need not coincide with the population's bliss point. The figure illustrates such a case, with $P \neq C$ denoting the population's preferences. Further, E_1 and E_2 represent two examples of elite preferences. The upper panel illustrates how a captured politician's policy choice is affected by catering to Elite 1: because the policy shift towards the elite represents a shift away from C and further away from P , elite influence is harmful, and subversion arises. The lower panel, however, illustrates how a captured politician's policy choice is affected by catering to Elite 2: because the policy shift towards the elite represents a shift away from C but towards P , elite influence is beneficial, and constitutes a substitute for accountability. This arises so long as Elite 2's bliss point lies between C and P , and does not require Elite 2 being aligned with P . Note that, in a democratic setting, any deviation from C is harmful, and hence elite capture always constitutes subversion.

B.3 Proofs

Proposition 1

Outsider party secretary The outsider party secretary maximizes his expected utility:

$$\max_{c,s,e} \{\Pr(y_1 > \bar{y}) P + g(e_1)\}, \quad (4)$$

subject to the resource constraint $1 = c + s + e_1$. Because he is evaluated solely based on growth during Period 1, y_1 , the outsider invests nothing in the long-term productive good, i.e., $s^O = 0$.

We substitute $y_1 = f_c(c) + \varepsilon$ and $1 = c + e_1$ into the maximand and rewrite the problem as

$$\max_c \{[1 - \Phi(\bar{y} - f_c(c))] P + g(1 - c)\}, \quad (5)$$

where Φ denotes the cumulative density of the Normal distribution. The first-order condition is

$$\phi(\bar{y} - f_c(c)) P = \frac{g'(1 - c)}{f'_c(c)}, \quad (6)$$

where ϕ denotes the density of the Normal distribution. Because $f'_c(c) = k_c g'(c)$, the right-hand side of (6) is strictly convex in c , and increases from zero to infinity as c increases from zero to one. The left-hand side is a finite number; in fact, it is at most equal to $P/\sqrt{2\pi\sigma^2}$. Hence, (6) has at least one solution. Moreover, when σ^2 is large (as we assume), the right-hand side only intersects the bell-shaped left-hand side once; that is, (6) has a unique solution. Equilibrium investment into c is the highest (and, thus, extraction e is the smallest) when the right-hand side intersects the bell-shaped curve on the left-hand side at its highest point.

Note that variation in \bar{y} corresponds to shifting the bell-shaped curve horizontally. Thus, the CCP can maximize short-term investment c by optimally choosing \bar{y} , in which case the equilibrium level of short-term investment, c^O , satisfies $\bar{y} = f_c(c^O)$. Thus, (6) can be written

$$\frac{P}{\sqrt{2\pi\sigma^2}} = \frac{g'(1 - c)}{k_c g'(c)}, \quad (7)$$

and the outsider's optimal choice $c^O \in (0, 1)$ is the unique solution to this equation. The outsider's optimal allocation is $(c^O, s^O, e^O : 1 = c^O + e_1^O)$. The fact that the right-hand side of (7) is increasing in c immediately yields that c^O is increasing in P and decreasing in σ^2 .

General population The general population's problem is

$$\max_{c,s} \{2f_c(c) + f_s(s)\}, \quad (8)$$

subject to $1 = c + s$. The first-order condition is

$$2f'_c(c) = f'_s(1 - c). \quad (9)$$

Dividing both sides of (9) by $f'_c(c)$ and applying an argument analogous to the one above yields that a unique interior solution c^* exists. The general population's optimal allocation is $(c^*, s^* : 1 = c^* + s^*)$.

Proposition 2

The captured party secretary solves

$$\max_{c,s,e_1,e_2} \{U^{Outsider} + U^{Elite}\} \quad (10)$$

subject to the constraint $1 = c + s + e_1 + e_2$. When $\theta = 0$, we can re-write the maximand as

$$\max_{c,s,e_1,e_2} \{\Pr(f_c(c) + \varepsilon > \bar{y})P + g(e_1) + g(e_2)\}. \quad (11)$$

Claim iii of Proposition 2: As s does not enter the captured party secretary's expected utility, we have that $s^{Subversion} = 0$.

Thus, the resource constraint is $1 = c + e_1 + e_2$. We substitute this constraint into the maximand and obtain the following problem of the captured party secretary:

$$\max_{c,e_2} \{[(1 - \Phi(\bar{y} - f_c(c)))P + g(1 - c - e_2)] + g(e_2)\} \quad (12)$$

The first-order condition w.r.t. c is

$$phi(\bar{y} - f_c(c)) P = \frac{g'(1 - c - e_2)}{k_c g'(c)} \quad (13)$$

and w.r.t. e_2 , is

$$g'(e_2) = g'(1 - c - e_2) \quad (14)$$

Because $g'(c) \rightarrow \infty$ as $c \rightarrow 0$, it follows from (14) that $e_2^{\theta=0} > 0$; moreover, by the resource constraint, $e_1^{\theta=0} = e_2^{\theta=0} > 0$. Applying an argument analogous to the one above yields that a unique interior solution exists to (13), and that the CCP can maximize short-term investment (and thus make appropriation $e_1^{\theta=0} + e_2^{\theta=0}$ as small as possible), by optimally choosing \bar{y} such that the equilibrium level of short-term investment, $c^{\theta=0}$, satisfies $\bar{y} = f_c(c^{\theta=0})$. Thus, (13) can be written

$$\frac{P}{\sqrt{2\pi\sigma^2}} = \frac{g'(1 - c^{\theta=0} - e_2^{\theta=0})}{k_c g'(c^{\theta=0})}. \quad (15)$$

Claim ii of Proposition 2: To show that the subverted party secretary allocates less resources to c than an outsider party secretary (i.e., to show that $c^{\theta=0} < c^O$), we compare with the outsider party secretary's optimal choice of c , which by (6) satisfies

$$\frac{P}{\sqrt{2\pi\sigma^2}} = \frac{g'(1 - c^O)}{k_c g'(c^O)}. \quad (16)$$

For any $e_2 > 0$ and for any c , we have that $1 - c - e_2 < 1 - c$. Thus, as $g(\cdot)$ is concave, we have that $g'(1 - c - e_2) > g'(1 - c)$. Hence, $\frac{g'(1-c-e_2)}{k_c g'(c)} > \frac{g'(1-c)}{k_c g'(c)}$. Because $e_2^{\theta=0} > 0$, it hence follows that $c^{\theta=0} < c^O$.

Claim i of Proposition 2: We now show that a captured party secretary appropriates more resources for private use than an outsider ($e_1^{\theta=0} + e_2^{\theta=0} > e^O$): Because $c^{\theta=0} < c^O$ and $s^{\theta=0} = s^O$, the captured party secretary puts less resources to productive use than the outsider party secretary. All resources which are not put to productive use are extracted; that is, $1 - c^{\theta=0} = e_1^{\theta=0} + e_2^{\theta=0}$ and $1 - c^O = e^O$. Hence, $c^{\theta=0} < c^O$ implies that $e_1^{\theta=0} + e_2^{\theta=0} > e^O$.

Proposition 3

The captured party secretary solves

$$\max_{c,s,e_1,e_2} \{U^{Outsider} + U^{Elite}\} \quad (17)$$

subject to the constraint $1 = c + s + e_1 + e_2$. We can re-write the maximand as

$$\max_{c,s,e_1,e_2} \{\Pr(f_c(c) + \varepsilon > \bar{y}) P + g(e_1) + g(e_2) + 2f_c(c) + f_s(s)\}. \quad (18)$$

We substitute the resource constraint into the maximand and obtain the following problem of the captured party secretary:

$$\max_{c,s,e_2} \{[(1 - \Phi(\bar{y} - f_c(c))) P + g(1 - c - s - e_2)] + g(e_2) + 2f_c(c) + f_s(s)\} \quad (19)$$

The first-order condition w.r.t c is given by

$$\phi(\bar{y} - f_c(c)) P f'_c(c) - g'(1 - c - s - e_2) + 2f'_c(c) = 0, \quad (20)$$

w.r.t. s is given by

$$f'_s(s) = g'(1 - c - s - e_2), \quad (21)$$

and w.r.t e_2 is given by

$$g'(e_2) = g'(1 - c - s - e_2). \quad (22)$$

We re-write (20) as

$$\phi(\bar{y} - f_c(c)) P + 2 = \frac{g'(1 - c - s - e_2)}{k_c g'(c)} \quad (23)$$

Applying an argument analogous to the one above yields that a unique interior solution exists to (23), and that the CCP can maximize short-term investment by optimally choosing \bar{y} such that the equilibrium level of short-term investment, $c^{\theta=1}$, satisfies $\bar{y} = f_c(c^{\theta=1})$. Thus, (23) can be written

$$\frac{P}{\sqrt{2\pi\sigma^2}} + 2 = \frac{g'(1 - c^{\theta=1} - s^{\theta=1} - e_2^{\theta=1})}{k_c g'(c^{\theta=1})}. \quad (24)$$

Conditions (21) to (24) yield that the captured party secretary's optimal allocation satisfies

$$g'(e_1^{\theta=1}) = f'_c(c^{\theta=1}) \left(2 + \frac{P}{\sqrt{2\pi\sigma^2}}\right) = f'_s(s^{\theta=1}) = g'(e_2^{\theta=1}), \quad (25)$$

where $e_1^{\theta=1} = 1 - c^{\theta=1} - s^{\theta=1} - e_2^{\theta=1} = e_2^{\theta=1}$.

Claim ii of Proposition 3: $s^{\theta=1} > 0$: this follows from the Inada condition $f'_s(s) \rightarrow \infty$ as $s \rightarrow 0$. Because $s^O = 0$, we thus have that $s^{\theta=1} > s^O$.

Claim i of Proposition 3: $e^{\theta=1} < e^O$. By (6), the outsider's optimal allocation satisfies

$$g'(e^O) = \frac{P}{\sqrt{2\pi\sigma^2}} f'_c(c^O). \quad (26)$$

We first compare this to the allocation $(\hat{e}_1, \hat{c}, \hat{e}_2)$ satisfying the following condition:

$$g'(\hat{e}_1) = f'_c(\hat{c}) \frac{P}{\sqrt{2\pi\sigma^2}} = g'(\hat{e}_2). \quad (27)$$

We clearly have that $\hat{e}_1 + \hat{e}_2 > e^O$. We now compare this allocation to another allocation, $(\hat{\hat{e}}_1, \hat{\hat{c}}, \hat{\hat{e}}_2)$, which satisfies the following condition:

$$g'(\hat{\hat{e}}_1) = f'_c(\hat{\hat{c}}) \left(2 + \frac{P}{\sqrt{2\pi\sigma^2}}\right) = g'(\hat{\hat{e}}_2). \quad (28)$$

Because $\hat{\hat{c}} > \hat{c}$, we cannot determine whether $\hat{\hat{e}}_1 + \hat{\hat{e}}_2 > e^O$ or $\hat{\hat{e}}_1 + \hat{\hat{e}}_2 < e^O$. We now compare the allocation satisfying (28) with the optimal allocation of the captured party secretary in (25). Using $f'_c(\cdot) = k_c g'(\cdot)$ and $f'_s(\cdot) = k_s g'(\cdot)$, we can re-write (25) as

$$g'(e_1^{\theta=1}) = k_c g'(c^{\theta=1}) \left(2 + \frac{P}{\sqrt{2\pi\sigma^2}}\right) = k_s g'(s^{\theta=1}) = g'(e_2^{\theta=1}) \quad (29)$$

Clearly, $\hat{\hat{e}}_1 > e_1^{\theta=1}$, and $\hat{\hat{e}}_2 > e_2^{\theta=1}$. Hence, if $\hat{\hat{e}}_1 + \hat{\hat{e}}_2 < e^O$, we must have that $e_1^{\theta=1} + e_2^{\theta=1} < e^O$, regardless of the value of k_s . If, instead, $\hat{\hat{e}}_1 + \hat{\hat{e}}_2 > e^O$, we cannot determine, in general, whether $e_1^{\theta=1} + e_2^{\theta=1} < e^O$ or $e_1^{\theta=1} + e_2^{\theta=1} > e^O$. However, the facts that $\frac{\partial e_1^{\theta=1}}{\partial k_s} < 0$ and $\frac{\partial e_2^{\theta=1}}{\partial k_s} < 0$ imply that, if k_s is large enough, then $e_1^{\theta=1} + e_2^{\theta=1} < e^O$.

Claim iii of Proposition 3: We have established that $e_1^{\theta=1} + e_2^{\theta=1} < e^O$ if k_s is large enough. Thus, $c^{\theta=1} + s^{\theta=1} > c^O$. However, this may be consistent with either $c^{\theta=1} > c^O$, or

with $c^{\theta=1} < c^O$.

Finally, because short-term investment may decrease/increase (which decreases/increases y_1^c and y_2^c), economic growth could decrease or increase in the first period. In the second period, growth increases because long-term investment increases (which increases y_2^s). If short-term investment is lower than under an outsider party secretary, any reallocation from short-term investment to long-term investment made by the captured party secretary will lead to more long-term growth than the allocation under the outsider party secretary (otherwise, the captured party secretary would not make this reallocation). Hence, growth unambiguously increases in the long run.