Power Struggle and Government Oversizing: Unintended consequences of Checks and Balances in a One-party Regime[1]

Preliminary and please do not distribute

Nan Gao[2]
Philip Keefer[3]
Pinghan Liang[4]
Lixin Colin Xu[5]

Abstract

One of the central themes in political economy is how power struggle among ruling elites shapes policy outcomes. This paper argues that under weak legal systems, the need to preserve power balance within local leadership might cause inefficient targeted redistribution towards bureaucratic interest groups, consequently government oversizing, and use this to explain the rapid growing government size in China despite the repeated streamlining programmes initiated by the central government. We empirically examine the relationship between the power structure within provincial leadership and the size of senior cadres during 1992—2011. The results show that weaker secretaries are associated with the increasing senior cadres. However, the secretary's exogenous political status significantly mitigates this influence. Furthermore, we suggest that after 2002 the accelerated turnover probability among secretaries leads to the increasingly weaker secretaries as well as the expansion of senior positions, indicating a declining control of center over local elites. These results are robust against a variety of specifications and estimation strategies. To account for these, we develop a simple bargaining model to study the logrolling within the SC. We also rule out alternative explanation of our empirical results, and discuss the impact of information and career concerns of secretaries on government oversizing.

Key words: power, government size, authoritarian, China
JEL codes: H11, H70, D72, P26

1.Introduction

How power struggle among ruling elites shapes the policy outcomes is one of the central themes in political economy. There accumulates a large body of literature addressing this question in established democracies.[6] However, our knowledge about the policy outcomes of power structure in non-democracies remains scarce. In this paper, we propose a simple model and provide empirical evidence that the need to maintain power balance within a small circle of political elites in China leads to inefficient public spending that benefits bureaucratic interest groups, e.g., government oversizing.

An efficient government is usually considered as a cornerstone of continued economic growth. However, together with the past two decades of remarkable economic growth in China, the size of Chinese government continues to expand, in spite of the increasing marketization of the economy and the repeated downsizing campaigns initiated by the central government. As Figure 1 shows, the share of fiscal revenue/expenditure in the economy doubles from 1994 to 2010. In effect, government's fiscal resources attain a much higher growth rate than the GDP after 1994. In the meantime, government staffing demonstrates the similar pattern: as demonstrated by Figure 2, the number of bureaucrats in the party/government increases by four million in this millennium, accounting for a one-third increase in the share of government bureaucrats in the total population.

[Figure 1 here]

[Figure 2 here]

The rapid growing Chinese administrations in the past two decades are striking for two reasons. First, China starts to abandon the planned economy since 1978, and the market-oriented reform should have implied a declining role of government in the economy, as well as the number of officials. Second, China is usually considered as a unitary authoritarian state with a strong ruling party, and the central government is able to shape political outcomes in the localities (Landry, 2008). However, government oversizing persists in spite of the repeated downsizing campaigns pushed by the central authority (1993, 1998, 2003, and 2008), as well as the regulations on the number of established positions. This paper suggests that this paradox stems from the power struggle within local leadership.

It is widely observed that politicians in democracies deliberately expand government size to win re-elections or to build up winning coalition. These create redistribution targeted to certain groups of voters, e.g., logrolling (Buchanan and Tullock, 1962), pork barrel politics (Shepsle and Weingast, 1981). Excessive public administrations at the margin could serve as a tool of targeted redistribution (Alesina, et al., 2000; O'Dwyer, 2006; Enikolopov, 2014). We argue that under the Chinese decentralized authoritarian system (Landry, 2008; Xu, 2011), in the absence of election pressure, administration expansion serves as a rewarding device to appease the potential opposition within leadership. We attribute subnational government oversizing to several important

---

[6] See Persson and Tabellini (2000, 2006) for a throughout survey on this field.

components of the institutions in China: the weak legal system, the highly decentralized fiscal structure, and the "collective leadership principle". The first two factors grants amplified fiscal resources under the discretions of local leading cadres, and the last one provides them with the incentives to violate the discipline and regulations regarding government size imposed by the central authority. As Shirk (2014) observes, under the "collective leadership principle", the decision-making in Chinese leadership exemplifies "coalition logrolling" in terms of Snyder (1991). Leaders trade favor with each other to advance their personal/functional/factional interest, and preserve the power balance among bureaucratic interest groups. Therefore, checks and balances within a small group of elites under the oligarchical rule might be harmful to the society as a whole.

We develop a simple model connecting the subnational government oversizing with the power struggle in the local leadership. In our model, a Party secretary needs to win the voting on his proposal in the standing committee (SC henceforth), the highest *de facto* decision making body in each level consisting of the representatives of bureaucratic interest groups. He could negotiate with the potential opposition to avoid the possible blocking of his proposal. The corresponding bargaining surplus is assumed to be shared between them according to a simple Nash bargaining solution. The cooperation of the opposition leads to successful consensus-building and ensures the passage of proposal. However, if the negotiation fails, the proposal might be blocked, conditional on the secretary's strength (the share of loyal supporters within the SC) and power (the political status in the center). In general, a weak secretary appeases the opposition by increasing senior positions, which could be used for patronage within bureaucratic interest groups/factions. We make three predictions: 1) a secretary with more loyal supporters within the standing committee is associated with less senior cadres; 2) a more powerful secretary is associated with less senior cadres; 3) the political status of secretary could weaken the resistance from the opposition and substitute for the strength of secretary.

We use the annual observations of 31 provinces in China during 1992—2001 to empirically examine our theoretical predictions. In particular, we use the fraction of SC members who were appointed before the current secretary took office as the index of secretary's strength, in other words, the share of the opposition. The size of SC to a large extent is fixed over time, most SC members are local-based, and the turnovers of existing province SC members are made by the central authority. However, a secretary could nominate a new member to the center when there were vacancies. Hence, those SC members who were appointed after the sitting secretary are more likely to be loyal to the sitting secretary, while those entered before are more likely to be the opposition to the sitting secretary. Hence, this measure could proxy the extent of power struggle. On the other hand, we count the number of vice-provincial cadres in the province People's Congress (NPC) and Chinese People's Political Consultancy Conference (CPPCC), the two prestigious powerless bodies, as the measure of senior positions available for exchange among the bureaucratic interest groups.

Our first prediction receives strong support in the OLS regressions. The number of vice provincial cadres is significantly increasing in the share of opponents in the SC. Since the appointment of vice-provincial officials still need formal approval of the central authority, the estimated coefficient of power struggle on the size of vice provincial cadres indeed underestimates its influence on government size. To be more precisely, the estimation results indicate the dynamics of power struggle underlying administrations

expansion: to appease the potential opposition within the SC, an incoming secretary with no loyal supporters within the SC needs to appoint at least 6%-8% more senior cadres in the province in the next years. Furthermore, it is estimated that one standard deviation increase in the number of vice-provincial cadres is associated with a 13% increase in public sector employment, supporting the vertical administrations expansion pressure in Lu (2000). This result is robust to Negative Binomial estimation or alternative measures of secretary's strength. However, subsample analysis demonstrates that the strength of opponents affects government oversizing only in the decade of Hu Jintao's ruling (after 2003). Combined with the fact that secretaries are usually considered as the representatives of the central authority, it indicates a declining control of the center over local political elites. Together with the accelerated turnover among leading cadres during this period, e.g, the average tenure of secretaries reduce from 4.51 years before 2002 to 3.09 years after 2002, our results about power struggle dynamics could explain the persistent government expansion in Hu's reign. We also show that more vice-provincial cadres is associated with more corruption, larger share of state-owned-enterprise in the economy, more governmental intervention in the market, and less private investment, indicating an inefficiency of excessive senior positions.

Consistent with the third prediction, our estimation results also indicate that while the strong opposition tends to increase the size of vice-provincial cadres, the power of secretaries, measured as holding the center Politburo membership or having connections with the sitting General Secretary, significantly mitigates the pressure of the opposition on positions expansion. This suggests that this exogenous political status serves as a "stick" to overcome the resistance of opponents. However, in contrast with the second prediction, the political status of secretaries is insignificant in some empirical specifications, and is positively associated with the number of vice-provincial cadres in the rest of specifications. This indicates that aside from appeasing the opposition, there might exist a competing motivation underlying the expansion of senior cadres: a powerful secretary might increase senior cadres to reward his loyal supporters.[7]

Furthermore, we discuss alternative channels. Taking into account that a secretary having connections with the existing SC members might mitigate the power struggle, we examine whether a local-based secretary could weaken the relationship between the strength of opponents and the number of vice-provincial cadres. However, it is demonstrated that a local-based secretary faces similar resistance from the opposition as the outsider secretaries. Moreover, we rule out other possible tools could be used to appease the opposition by showing that higher political status is not related to increasing fiscal transfer from the center or stronger promotion prospects for the potential opposition. Hence, political status does not serve as "carrot". Finally, we show that increasing vice-provincial cadres are *positively* associated with the promotion likelihood of secretaries, indicating that by appeasing the local opposition and managing power struggle with government expansion, the secretaries are rewarded with better career.

Our paper contributes to the understanding about policy-making in authoritarian states. We are the first to provide an analytical model of the power struggle within the local leadership in China, the largest economy in the world, and empirically examine its policy outcomes. Previous literatures almost exclusively assume that a single official has

---

[7] However, we didn't find out any significant nonlinear relationship between the strength of secretaries and the number of senior cadres after adding the square term of secretaries' strength as one explanatory variable.

the decision-making right over a range of tasks, hence focus on the career concerns of individual cadres, and entirely ignore the interplay within the local leadership. We suggest that it is better to consider the local leadership as a collection of strategic agents, instead of a single person.[8] It is demonstrated that the need to preserve power balance among bureaucratic interest groups causes government oversizing, indicating an inefficient unintended consequences of checks and balances within a small group of political elites in a one-party regime. Broadly, we need to explicitly consider the nature of collective decision making when investigating economic and political policy outcomes in China.

This paper also makes contribution to the emerging literature investigating power structure within institutionally weak political settings (Rainer and Trebbi, 2014; Francois et al, 2014). We demonstrate that the power struggle among local political elites might considerably distorts the implementation of directives issued by the center. This challenges the traditional view of China as a powerful political centralized authoritarian state. Moreover, we suggest that the accelerated turnover among secretaries weakens central's authority over the local elites, indicating a side effect of cadres rotation system. This advances our understanding about the evolution of central-local relationship in China. In general, understanding the power structure and power balance within the ruling elites is crucial for understanding the policy outcomes.

Finally, we also make contribution to the understanding of bureaucrats behavior in general. There is a lot of theoretical and empirical works investigating the selection mechanism of officials, and providing arguments that appointed bureaucrats are less likely to pander to public opinion (Maskin and Tirole, 2004; Levin and Tadelis, 2010; Vlaicu and Whalley, 2013), and less incline to undertake inefficient targeted redistribution through patronage due to career concerns (Enikolopov, 2014). While these works highlight the choice of the form of government and favor appointment v.s. election to some extent, we nevertheless demonstrate that under weak legal system and *nomenclature* system, the behavior of appointed public officials could not be immunize from the inner factional conflicts, and their policy choice is constrained by the local power structure.

The rest of this paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the institutional background underlying this study, in particular, the composition of standing committee, the oversizing of government in China. Section 4 lays out the model, and delivers the theoretical predictions. Section 5 introduces the data we use, as well as the key variables we construct to measure secretaries' strength and power, and the size of senior positions. In Section 6 we present the empirical results, undertake the robustness check, discuss the alternative explanation about our results, and investigate other channels through which the power of secretaries affect local power struggle. Section 7 concludes.

---

[8] Gao et al. (2014) explicitly study the impact of standing committee composition on land prices. However, they are concerned with the career concerns of SC members, hence ignore the strategic interaction among SC members.

2. Related Literature

A vast previous literature has investigated the huge variations in political institutions among non-democratic states. Bueno de Mesquita et al. (2003) propose the famous selectorate theory, in which political systems ranging from full democracy to personal dictatorship differ only in the winning coalition size relative to the selectorate size. In terms of their theory, appeasing the opposition within the standing committee is crucial for a secretary to preserve his power, consequently a key to political survival. Acemoglu et al. (2008) investigate the intra-elite bargaining among a small circle of ruling elites. However, we still lack systematic research beyond case study.[9]

A large body of literature attributes the powerful local government as one of the fundamental reasons underlying the miracle of continued economic growth in China over the past three decades (Xu, 2011). The most influential view considers that by linking the turnover of the local officials to the economic performance of the jurisdiction, the central authority create the strong promotion incentives for the local government to deliver economic growth (Li and Zhou, 2005). Some recent studies point out that because of the multi-tasking problem, promotion tournament distorts officials' incentive and leads to negative consequences (Jia, 2013). Promotion and demotion are not the only device of personnel control, Persson and Zhuravskaya (2014) systematically investigate the consequences of rotation among local officials. The common features are that they assume the central authority as the ultimate source of power, and pay close attentions to the behavior and characteristics of individual officials as decision makers. Therefore, as the agents of the central government, local officials would undertake the directive from the center and further their own interest. The central-local relations are simplified to a principal-agent relationship. We think this view is oversimplified. By studying the checks and balances within the standing committee, this paper incorporates the bottom-up constraints on the power of local officials. We suggest that the failure to enforce the government downsizing campaigns and the regulations on established positions is not the result of incentives distortion, in which the local leader strategically ignores the tasks that lack the objective measure. Instead, these might reflect the conflict between the central authority and the local elites. Our model and empirical results suggest that even in China, the implementation of the directives of the central authority is constrained by the local political elites.

The decision-making power within a ruling party usually disperses across a hierarchy, so the internal organization of parties has important consequences on the political and economic outcomes. Persico et al. (2011) provide a theoretical analysis in which factions within parties play a key role in the allocation of public resources. Golden and Chang (2001) demonstrate that factional competition within the long-time ruling party leads to the prevalent corruption in the post-war Italy. In modern China, factions could be organized based on functional and regional interest (e.g., Shanghai Bang),

---

[9] Recently Rainer and Trebbi (2014) and Francois et al. (2014) provide a new dataset to investigate the sharing of power in African countries based on ethnic divisions.

common family background (e.g., princelings), or shared previous working experience (e.g., Youth League). The competition among factions prevails in the governance of China's political system (Huang, 2000). As Shirk (2014) notes, bureaucratic interest groups, a kind of factions, are separate vertical organizations often reaching down from the center to the subnational level, and each group advances policies that expands its budgets, staffing, and influence with little regards for Party or national interests. There are strong evidences that in China factions play an important role in resource allocation (Shih, 2004) and officials' turnover (Shih et al. 2012; Jia et al. 2014; Persson and Zhuravskaya, 2014). While most of them focus on the consequences of factional connections, our paper complements by explicitly modeling the logrolling across bureaucratic interest groups, and empirically illustrating another outcome of factional politics: government oversizing.

Our paper also contributes to the long list of works on the determinants of government size. Since Wagner (1883/1958), many researchers believe the expansion of government is a response to the demand of economic development. Another view considers government expansion as a device of redistributive politics, by which politicians distribute public resource in favor of specific groups (Alesina et al., 2000, 2001; Moesen and Van Cauwenberge, 2000). Besides, various scholars view government spending as a type of insurance against adverse outside shocks, and connect economic openness with government expansion (Alesina and Wacziarg, 1998; Rodrick, 1998; Ram 2009). Following the Leviathan theory of government, some research investigate the role of fiscal structure in government size, and suggest that by encouraging competition among local governments, fiscal decentralization might impose constraints the officials' inclination to expand the budgets and staffing (Brennan and Buchanan, 1980, 1985; Marlow 1988; Jin and Zou, 2002).

However, Gimpelson and Treisman (2002) suggest that federalism is not the panacea for the expansion of government. Under weak legal system, the local politicians might deliberately increase the employment levels beyond their fiscal capacity, in the hope of bailouts from the central government. Another line of literature on government size addresses growing public employment/overstaffing bureaucrats in countries with weak institutions. O'Dwyer (2006) and Grzymala-Busse (2007) illustrate the rapid increasing overstaffing in public sectors in East European countries during the transition, and suggest that under the election pressure and the need to form the ruling coalition in the legislature, the politicians would create more public employment. Our paper in effect combines the insights of these works. Similar as Gimpelson and Treisman (2002), the decentralized authoritarianism state plays a crucial role since the local leadership is granted with amplified discretionary authority over public resource and officials management. On the other hand, internal organization of CCP matters. Competition among bureaucratic interest groups under the collective leadership principle resembles the party competition in O'Dwyer (2006) and Grzymala-Busse (2007), hence logrolling arises as the response to the challenges of managing an oligarchical rule.

3. Institution Background

3.1 CCP standing committee

As the ruling party in a one-party regime, the Chinese Communist Party (CCP henceforth) monopolizes all political power and firmly controls the positions in legislatives, executives, courts, etc.. The governing organs of CCP at various levels- the central, provincial, prefecture, and county levels- are the standing committees. At the central government level, the position of the CCP General Secretary is more senior than that of the president of the state. Likewise, although the Chinese central government has a cabinet including all the major ministers, the real power center in Beijing is the standing committee of the CCP's Politburo, which currently consists of seven members. Similarly, the standing committee of the CCP at the subnational level serves as the source of all power in that region. The organization of standing committees resembles a cabinet in the western countries, but the members of it are bureaucrats appointed by the upper-level authorities. The head of the provincial CCP standing committee is the secretary. They are the highest official in those 31 provinces. The membership on the committee bestows additional power to the local leading cadres who possess it, compared to those without seats on the committee. For example, the party secretary of a prefectural-level city who is a member of the provincial CCP standing committee may have more real power than a vice provincial governor who is not in the standing committee. In this paper, we treat all SC members as the province leaders.

Although on surface these standing committees are set up to be in charge of party affairs at the local branches of the CCP and thus removed from the daily operations of the local governments, in reality they play a key role in influencing local policy making by selecting cadres and assigning crucial tasks. In particular, the "party manages the cadres" principle grants the standing committees with amplified authorities to exerts vertical control over personal management in all public organizations, including government, congress, public universities and schools, public hospitals, etc.. Moreover, by the "one-step management principle" (Huang, 1999) in personnel management introduced in 1980s, Chinese provincial leaders, including the SC members, are vetted and chosen by the CCP Central Organization Department, and cannot be removed by the provincial party secretary. All SC members are automatically with the rank of vice provincial level (equivalent to vice-minister in the center) or above, regardless of their original ranking. Similarly, under the oversight of the SC, the provincial CCP organization department takes the responsibility of the turnover of all officers at the prefecture and department level in the province.[10]

After being appointed, each SC member is assigned a portfolio representing a

---

[10] Before the reform of "one-step management principle", the "two-levels-downward principle" was applied in personnel management, in which the party committee has authority over leading offices at the two next lower levels of the territorial and functional hierarchies (Manion, 1985)

particular set of bureaucratic agencies. Currently a typical provincial CCP standing committee composes 13 members. All the members hold crucial offices in the province. These SC members also play a key role in the specific domain they are in charge of, e.g., economy, party organization, propaganda, and so on. Hence, they are representatives of various bureaucratic interest groups. Table A1 in the appendix presents the composition of standing committees across regions in 2013. The province standing committee also looms large in the direct process of regional policy making through the mechanism of "democratic centralism" or "collective leadership". Decision-making usually involve a process of consensus-building among SC members that represent functional, regional, and factional interests (McGregor, 2010; Shirk, 2014). This preserves a proper balance among the bureaucratic interest groups in the Party.

SC membership provides power and status to the office-holder. Since the SC is the *de facto* power center in a province, to maintain the cadres stability and avoid the embarrassment on the system, the central authority rarely demote the SC members or make large-scale re-shuffling of the standing committees. During 1992-2011, the period we are interested in, there were in total 1297 persons who have served in a province CCP standing committee (excluding Beijing and Shanghai, two most important municipalities), with the average tenure of 5 years (Figure 3), even longer than the that of a secretary (4.06 years). Most of them terminate the tenure because of the age limit (age 60) of mandatory retirement. During these two decades, large scale purge of SC members (Defined as over half of existing SC members were replaced in a single year) occurred in only 9 cases, taking about 1.5% of the total year-province observations (Table A2 in the appendix). A vivid anecdotal example illustrates the power and stability of SC membership. Lijun Wang, the former police chief in Chongqing, was reported to be very disappointed since he didn't gain the seat in the Chongqing CCP standing committee in 2011, though he still kept the vice-mayor office. [11] This might partly due to that the sitting Chongqing SC member who was in charge of public security issues didn't reach the mandatory retire age, so there was no vacancy for Wang. This disappointment later contributes to the famous Wang Lijun incident, which erupted into a major scandal in Chinese politics in 2012 and brought down himself and his superior, Bo Xilai, the former CCP secretary of Chongqing and member of the CCP Politburo.

[Figure 3 here]

While it becomes more frequently that the central authority appoint an outsider secretary who builds up career in other provinces or the central government, the vast majority of other SC members is still promoted in the local. Therefore, the composition of province SC might reflect the balance between the central government and the local elites. On the other hand, factional politics prevails in the SC (Huang, 2000). Yongkang Zhou, the former czar of public security in China, took the secretary position in Sichuan province during 2000—2002. However, he maintained his power network in Sichuan through three SC members he promoted during this spell, until being arrested in 2014[12].

It is, therefore, important to understand the role of CCP SC in affecting the politics and economy in Chinese regions. In this paper we treat SC members as the representatives of different bureaucratic interest groups, maintaining the power balance

---

[11] "It is suspected that Wang Lijun had a rift with Gu Kailai since he didn't get a seat in Chongqing standing committee", http://news.qq.com/a/20121217/001116.htm

[12] "The three cornerstones of Zhou Yongkang: Petroleum, Sichuan, and Police", http://china.caixin.com/2014-07-29/100710304_2.html

among them is crucial for the decision making and the function of political system. The detailed analysis of power struggle among subnational government leadership is important not only for China, but also for many other developing countries where subnational government enjoys substantial decision-making power, e.g., Vietnam, India, etc..

3.2 Government oversizing in China

From 1979 onwards, China enters the reform era. However, the absolute and relative size of public employment grew at a steeper rate. The number of government personnel in 1990 is three times of the number in 1960, taking 2.9 percent of the whole population (Ang, 2012). This is paradoxical since China moves from a socialist planned economy toward a free market economy. Since 1982, the central government has initiated downsizing campaigns for each five years. The number of Central-level ministries in 2012 is one fourth of that in 1981 (there were 100 ministries then). However, as observed by Lu (2000), "without transforming the functions of the state, the administrative reforms, although aimed at downsizing over-staffed governmental agencies and enhancing efficiency, have resulted only in more party/state expansion". As being evident from Figure 1 and 2, overall the total number of public personnel has continued to grows at a fast pace. The repeatedly downsizing attempts are a sign of the failure of the previous streamlining programme.

[Figure 4 here]

[Figure 5 here]

Even though officially the number of government positions in the central and local level is regulated by the Establishment Offices in the higher level, there are various ways to increase the real number of public bureaucrats in the local level, especially the number of senior cadres. The size of China's subnational public personnel is among the highest in the world. The local public employment as the share of population is as high as 2.5% in China, more than twice the global average of 1.1 percent, and on par with the OECD countries (Ang, 2012).

It is difficult to consider the expansion of government size as the responses to the increasing need for public goods due to economic growth (Wagner, 1883/1958). As Figure 4 indicates, there is huge regional variation in the size of local government personnel, ranging from over 3% of whole population to 0.7% across provinces. Most provinces with high ratio of government officials concentrate in the western, the less developed part of China, while the more developed coastal provinces in general have lower share of government staff in the population. The similar pattern appears in the share of government expenditure in economy, as Figure 5 suggests.

For decades, in contrast with the repeated attempts by the central government to cut the number of public personnel, as well as the strict quotas on the number of administrative positions, local public bureaucrats continue to grow. There are several ways that the local administrative circumvents the restrictions imposed by the central authority. For example, in China many government organs set up various subsidiary extrabureaucracies/service units that perform a range of delegated tasks, like the park

management office under the forestry bureau, professional school of construction under the construction bureau, talent market under the personnel bureau (Ang, 2009). These resemble the quasi-state entities set up in the transition countries in the East Europe (Grzymala-Busse, 2007). Alternatively, the government agencies could increase the number of "shadow heads", [13] including deputy chiefs of staff in province/city governments, deputy directors of departments, "supervisors" who have no actual positions, but are with the rank equivalent to the director or deputy director of a department, etc.. Furthermore, upgrading offices, formalizing temporary task force team, or creating new functional office corresponding to the offices in the higher level authorities are common practice to expand the state (Lu, 2000).

Excessive local public bureaucrats become a prominent issue in social science and popular discussion. It is reported that many provinces have more than 10 vice chiefs of staff (with the rank equivalent to the deputy-prefecture level). Tieling, a prefecture-level city in Liaoning province, has 20 vice chiefs of staff (with the rank equivalent to the deputy-county level), [14] far exceeding the formal quota on these positions. A recent report released by the central authority show that there are more than 40000 overstaffed leading officials with the rank equivalent to the deputy-county level and above on the payroll of subnational governments. The twelve prefecture-level regions in the Inner Mongol Autonomy in total accommodate about 100 senior shadow heads with the title of "supervisors", who are with the rank equivalent to the heads of these regions. According to a survey covering 250 prefecture-level cities in 24 provinces, on average a city has 7 vice mayors, and Ganzhou in Jiangxi province has as many as 12. [15] Ang (2012) estimates that the size of overstaffing in Fujian province in 2004 is equivalent to 42% of the formally established positions there.

Highly centralized personnel management system in effect is a complex nested hierarchy (Landry, 2008), which grants the superior the authority to appoint the officials in the immediate lower level. The local leading cadres have the incentive to increase the number of personnel in specific departments or region to show their administrative priority, to provide incentives for the officials to exert efforts, to establish vertical patron-client linkage, or to obtain personal benefits, e.g., bribes from the officials who want to be promoted. For example, a news story in an influential news media demonstrates that Zhongmu county in Henan province has more than 280 overstaffed cadres in the immediate subordinate level (with the rank equivalent to the township level) in 2014, and the police bureau of this county has more than 20 leading officials under various titles. [16]

Excessive bureaucrats entail substantial cost to the society as a whole. First, the fiscal burden of overstaffed officials could not be understated: the officials' salary, private secretaries and chauffeurs, benefits and administrative expenditure, including the reserved cars, the access to foreign travel, housing, medical expenditure, pension, etc., are closely related to the ranking. Even though there is no precise amount of expenditure

---

[13] Lu (2000) defines the shadow heads as those officials who do not function administratively but nonetheless are given ranks and titles.

[14] "Six provinces cut the number of overstaffed vice chiefs of staff this year, and Shandong fires four in a day", http://news.sina.com.cn/c/2014-09-28/025930925471.shtml .

[15] "About 60% of overstaffed cadres are waiting for solution", http://www.bjnews.com.cn/feature/2015/01/06/348769.html .

[16] "The scandal of 'voluntary quit" among Zhongmu cadres: Superior's intentions v.s. individual intentions", http://www.infzm.com/content/105562 .

of each individual senior official, a news report estimates that in 2004 even the annual expenditure on individual retired provincial-level cadres exceeded 5 million RMB (above 800 thousand USD).[17] Second, overstaffed leading officials increase the difficulty to reach consensus in government, consequently reducing the administrative efficiency. Third, the subsidiary extrabureaucracies/service units set up to accommodate those excessive officials also expand the regulatory domains of governments. These agencies set up various entry barriers in the markets, facilitate the predatory role of state, and extract enormous rents from the market. Forth, to maintain excessive bureaucrats, the weakly constrained subnational governments have the incentives to seek discretionary budget, including land revenue, collections of fines and other administrative revenue, and over-collection of tax. These undisciplined behavior provide room for corruptive conducts. Finally, the current cadres management system is less able to penalize officials who do not perform (Landry, 2008), it is almost impossible to fire or downgrade those overstaffed leading officials without serious criminal conviction. If they were removed from the current offices before the mandate retirement age (60), they have to be assigned to the positions with the rank same as the previous one or above. Hence, in general the number of excessive bureaucrats will accumulate and continue the rising trend.

4. Conceptual Framework

In this paper, we propose a simply theory to connect the power structure among local leadership with the subnational government expansion. Our logic about public personnel expansion follows like this: given his own political status and strength within the standing committee, a party secretary strategically expands public personnel, e.g., appoint more new senior cadres, to appease the potential opposition. As the representative of bureaucratic interest groups, the potential opposition within the SC uses these new positions to award their allied cadres and subordinates. The size of public personnel serves as the political price for the cooperation of the opposition, and is related to the party secretary's ability to overcome the resistance of opponents.

It is noteworthy that in a political opaque state like China, we have little knowledge about the detailed decision-making procedure adopted within standing committee, e.g., whether they employ the closed rule or open rule, whether a majority voting rule is adopted in any issue. However, it is commonly believed that decisions are made by some extent of consensus. Shirk (2014) provides an account of the decision-making procedure in the Politburo Standing Committee, the highest real power body in China. She suggests that the standing committee members make decisions by consensus, and engage in the process of "coalition logrolling" *a la* Snyder (1991). They reciprocally support one another's need in order to further their political or/and personal interest, and in the most of time the issue is left to the relevant agency instead of being deliberated collectively. If we believe that the standing committees in the province level organizes in the similar

---

[17] "After the old cadres retire", http://opinion.caixin.com/2015-03-09/100789426_1.html.

style as the that in the center, then since the SC members enjoy different power due to their experience, background, and responsibilities, etc., *ex ante* we could not assume any specific decision rule. Therefore, differ from the large literature following the Baron and Ferejohn (1989) legislative bargaining setting, we capture the bargaining process among SC members with a simple ultimatum game, and employ the Nash-bargaining solution concept.

We assume that the standing committee consists of only two players: secretary and his—rarely her--opposition. Further, only the secretary could make a proposal and provide transfer.

The secretary first negotiates privately with the opposition to seek for consensus, and proposes a policy proposal valued V to him, and the offer to the opposition T. $T \geq 0$ is the non-budgetary incentive at the secretary's disposal, e.g., perks, personal political status, new administration appointments to award allied elites, which he is free to offer as he sees fit. Then the opposition decides whether to accept or reject this offer. If the opposition accepts this pair, then we say the consensus is built up among SC members. The policy proposal would be passed with certainty by members voting publicly on the SC meeting, the secretary gains V, and the opposition receive the payoff T. If the pair is rejected, e.g., consensus fails, the policy proposal has the probability $\omega(S, P) \in [0,1]$ to be passed by members voting publicly, and the complimentary probability to be disapproved. $S \in [0,1]$ stands for the party secretary's strength within the standing committee, e.g., the fraction of loyal supporters within the standing committee; and P refers to the secretary's individual specific power/political status, e.g., political importance held from sources outside of the standing committee, including the connections with the central leaderships, the background, etc.. The secretary gains V if the proposal is passed, and zero if it fails. The opposition gains zero regardless of the voting outcome. Hence, the expected payoff to the secretary if consensus is absent is $\omega(S, P)V$.

We assume that $\dfrac{\partial \omega}{\partial S} \geq 0$, $\dfrac{\partial \omega}{\partial P} \geq 0$, and $\dfrac{\partial^2 \omega}{\partial S \partial P} \leq 0$. In other words, though the increasing supporters within the SC raise the likelihood of passage, the secretary's political status also affects the outcomes if there is no consensus. Moreover, there exist substitutions between these two factors, e.g., the political status of secretary is the most effective in affecting the passage if he has few loyal supporters in the standing committee. This implies that the political status of secretary represent some kinds of coercive power that helps him to overcome the obstacle.

Straightforward backward induction would suggest the secretary would provide the infinitesimal offer T initially, and the opposition will accept it. However, there accumulates a large body of experimental works indicating the failure of this prediction in lab and field, instead, proposers make substantial offers(Guth, 1982; Binmore, 2007; Henrich et al., 2004). Moreover, the repeated interactions among SC members also prevent the secretary to make this extreme offer. To simplify our analysis, we abstract from the determinants of bargaining strength and assume that secretary proposes an offer as if he and the opposition form a coalition to divide the bargaining surplus. In other words, T would be the Nash bargaining solution for the surplus division problem.

If the consensus is attained, the payoff to the secretary is $V - T$. Therefore, as long as $V - T \geq \omega(S, P)V$, or $(1 - \omega(S, P))V \geq T$, the secretary would like to offer in exchange of the cooperation of the opposition. In other words, the disagreement payoff for the secretary is $\omega(S, P)V$. On the other hand, for the opposition any offer $T \in [0, (1 - \omega(S, P))V]$ is acceptable, which means his disagreement payoff is zero. With equal bargaining power, Nash bargaining solution predicts that the secretary and his opposition divide the pie $(1 - \omega(S, P))V$ equally, and the optimal offer would be: [18]

$$T^* = \frac{(1 - \omega(S, P))V}{2} \qquad (1)$$

Thus, it is straightforward to reach the following proposition regarding the comparative statics of the amount of transfer.

Proposition 1. The optimal transfer $\dfrac{\partial T^*}{\partial S} \leq 0$, $\dfrac{\partial T^*}{\partial P} \leq 0$, and $\dfrac{\partial^2 T^*}{\partial S \partial P} \geq 0$

In words, the optimal amount of transfer is decreasing with the strength of secretary within the standing committee, as well as the political status of the secretary.

However, the monetary or physical transfer among government members is forbidden in almost any country. Taking into account that the SC members are representative of interest groups/factions, we consider the size of senior cadres as the tool used to appease the opposition, then this simple model suggests that under weak institutions, to seek for the consensus for policy making, the secretary would expand the size of senior cadres.[19]

Based on proposition 1, this model delivers the following theoretical predictions about the relationship of party secretaries' strength and power and the size of senior positions.

Prediction 1: The size of senior cadres is decreasing in the share of secretary's loyal supporters within the standing committee.

Prediction 2: A powerful secretary is associated with a smaller size of senior cadres.

Prediction 3: A more powerful secretary would mitigate the impact of opposition on the size of senior cadres.

---

[18] As long as the offer to the opposition T is positively related to the size of bargaining surplus $(1 - \omega(S, P))V$, which would be a common feature if we use Rubinstein bargaining protocol, our theoretical predictions remain valid.

[19] It is also plausible that the secretary would expand the senior cadres to reward his loyal supporters or consolidate power base. However, we think several reasons might make the secretary less likely to undertake this action. First, excessive staffing more or less violates the regulations, hence as the head of CCP branch, a secretary might incur more cost to expand senior cadres than his opposition in the SC. Second, as we make it clear in the empirical studies, the senior cadres here refer to those positions with little real power and function, hence it is more likely a prize, instead of power base.

5. Data and Measurement Issues

5.1 Measuring party secretaries' strength

It is well acknowledged that factional relationship plays an important role in the political and economic decision making in China (Huang, 2000; Shih 2004; Shih et al, 2012). A variety of proxies are proposed to measure the factions. Almost all of them look at the leading cadres' background or common working experience, including education, princeling (being children of senior officials), birth place, etc., and assume these facilitate link formation among cadres. However, our focus lies in the strength of secretaries, hence identifying the detailed faction affiliation of each SC members is not the priority.

In this paper, we propose a new, easily implementable, measure of party secretaries' strength within the standing committee, based on the divergence of interest between the SC members and the secretary. To capture the SC members' interest divergence from the secretary, we compute the fraction of members who joined the standing committee before the sitting secretary took office.[20] Even though a SC member is officially appointed by the central authority, as the head of standing committee, the secretary has the most important voice in the nomination and appointment process of SC members. Hence, SC members promoted during their tenure are more likely to share the same preferences and/or have an incentive to return the favor. Hence, they are more likely to be the loyal supporters of the current party secretary. Similarly, SC members who have experienced the leadership of previous party secretaries are more likely to be the opposition to the current secretaries.

We define *Old interest* as the measure of the secretaries' strength within the standing committee. It is computed as the fraction of SC members (except the secretary) took office after the incumbent secretary. For example, suppose in 2001, there was a new secretary appointed in province A, and in 2002 two new persons were appointed as the SC members in province A. The standing committee has 11 members in 2002, including the party secretary himself, thus the ratio of Old interest in 2002 was (10-2)/10=0.8. In 2003 this secretary was replaced by an outsider, then the ratio of Old interest jumps back 1, since no SC members were appointed after the new secretary took office. A higher ratio indicates a weaker secretary relative to the existing SC members. As the first line in Table 1 shows, the mean of this ratio is 0.529, which implies that on average half of the standing committee members were appointed before the sitting secretary took place.

A possible challenge about this variable is the endogeneity problem. A strong secretary might be able to purge the standing committee and appoint the loyal supporters. Thus, the high fraction of old members does not necessarily reflect a weak secretary, but is the consequence of a weak secretary. We think it is not a key issue here. First, SC members are directly appointed by the central authority, and their turnover is beyond the

---

[20] Landier et al. (2012) use the similar method to compute the independence of board directors from the CEOs, and study the impact of internal governance within corporations.

control of the secretary. Hence, a secretary could not directly dismiss a SC member. Second, though a secretary might be able to lobby the center to remove SC members, in practice it is costly to take this action. Unless being convinced for criminal actions, which were very rare before 2012, SC members were replaced either because they reach the mandatory retirement age, or because the center rotates them to the positions with the equivalent rank outside this region. Therefore, we rarely observe large-scale purge of standing committee made by the central authority[21]. Third, we also regress this variable against the turnover of secretaries. As the regression results in Table A3 of the Appendix shows, none of secretaries' turnover, tenure, and age has significant influence on this variable.

In the robustness check, we also introduce two modified measures about the strength of party secretaries in the standing committee. Taking into account that those "old" SC members might not have the same influence and authority, we construct the indicator *weight tenure of old SC*, which is the weighted fraction of SC members appointed before the incumbent secretary, with the tenure as the weight. For example, suppose there is only one person appointed before the incumbent secretary in a 11 members standing committee, but he has served in the SC for 10 years, then the ratio of Old interest is 1/10=0.1, but the weight tenure of old SC is 1*10/10=1. Moreover, *Old interest_2* is computed as the fraction of SC members who were appointed in the years before and the same year the current secretary took office.

5.2 Measuring party secretaries' power

We construct two variables to measure the individual specific political status of secretaries, based on the presumption that in a political centralized state, the power of officials comes from the upper-level authorities. The first variable is a dummy indicating whether the party secretaries hold Politburo membership in the center. CCP central Politburo is the second highest decision-making body in the party/state, only lower than its standing committee. Currently it consists of 25 members, all of them are with the rank equivalent to the vice-premier or above, hold key positions in the state, party, and military force, and considered as the national leaders. The secretaries of selected important provinces were also elected into the Politburo in the 5-year term CCP national congress. Hence, Politburo membership grants the province secretaries with additional authorities over other SC members. From Table 1 we observe that a secretary simultaneously serves in the Politburo for 7.4% in the whole sample of 639 year-province pairs. Table A4 in the Appendix lists the names of twelve politicians who were secretaries and simultaneously had a seat in the Politburo, except those secretaries in Beijing and Shanghai who always held Politburo membership.

While politburo membership enhances party secretaries' formal authority, it is likely that secretaries' political connections also raise their real authority. Jia et al. (2014), Persson and Zhuravskaya (2014) provide strong evidence that the political connections

---

[21] Table A2 presents the nine cases of large-scale purge of standing committee (defined as the ratio of old SC members changed 50% or more), out of more than 600 observations in total. 6 occurred in Jiang Zemin's reign, while 3 happened after 2002, under the leadership of Hu Jintao in the center.

between local leading cadres and the central leadership play an important role in the promotion and rotation decisions. Therefore, the second measure of secretaries' power is a dummy indicating whether the province party secretaries have previously worked under the sitting CCP General Secretaries, e.g., Jiang Zemin during 1992-2002, and Hu Jintao during 2003-2011, respectively. For instance, if a party secretary has worked under the leadership of Jiang Zemin only, then in 2002 his connections variable is 1, but in 2003 it becomes zero, since Jiang retired and Hu took over the position of General Secretary.[22]

Certainly, these two political status variables are not exogenous. The Politburo membership is strongly correlated with the role of the region in the administrative priorities of the central authority, as well as the promotion prospects of the secretaries in the party hierarchy. Moreover, the General Secretaries are more likely to promote the connected elites to important provinces. However, as long as the power indicators are not directly related to the strength of secretaries within the standing committee, this endogeneity problem could be addressed by including a series of control variable regarding the fundamentals of provinces, as well as the secretary fixed effects.

5.3 Measuring the size of senior cadres

There are various methods to measure the size of government, e.g., fiscal revenue, fiscal expenditure, the size of public employment, etc.. However, these traditional measures might not be the proper dependent variables from the perspective of our model. The expansion of public bureaucrats is frequently used as a device to preserve power balance in the political competition in countries with weak institutions, including Eastern European transition countries (O'Dwyer, 2006; Grzymala-Busse, 2007) and China (Lu, 2000). Weak institutions relax the disciplines and constraints on the public administrations, and make the creation of new public positions flexible.

Under the factional politics in China (Huang, 2000; Shih, 2004), the key to politicians' success is the ability to reward the subordinates and allied elites in exchange of their loyalty. Due to the legal limits on monetary transfer among public officials, make appointment for the loyalists is a more feasible rewarding strategy. As the top officials in charge of different domains, SC members are interested in the senior positions to reward their allies and supporters.

In this paper, we take the sum of deputy directors of the province people's congress and deputy chairmen of the province Chinese People's Political Consultancy Conference (CPPCC) to proxy the size of senior cadres for targeted redistribution. There are several advantages to use this measure of vice-provincial positions. First, these two positions are prestigious, because both are with the rank equivalent to the vice-governors. Second, these positions are of little political importance in the power hierarchy. Even though the people's congress is the legislature organ and the *de jure* highest power body, in most cases it just rubber-stamps the decisions made by the party. Furthermore, CPPCC is a

---

[22] We have also employ the common working experience under any Politburo standing committee members as the indicator of secretaries' connections, as constructed in Jia et al. (2014). However, this connections variable is not significant in any specifications. We think a possible reason is that faction competition also prevails within the Politburo standing committee (Shirk, 2014), hence connections with a single Politburo SC member might not be a strong indicator of secretaries' political status.

pure consulting body established even before the founding of the People's Republic of China in 1949. Hence, increasing the number of these leading cadres is very likely to be expanding the pie for sharing among factions, instead of consolidating power. Third, these positions are attractive for senior cadres. The mandatory retirement age limit for the officials taking these positions is 65, while other vice-provincial level officials have to retire on 60. By holding these positions, public officials extend their influence over local issues for at least another 5 years. Last but not least important, it is more flexible to expand these cadres, and the local leadership has more control over it. The number of cadres in other more powerful vice-provincial positions, including the SC membership and vice governorship, is under the close oversight of the center authority. However, there number of vice-provincial cadres in these two organs by law is under the discretion of these organs themselves. As observed from Table 1, there is a large variance of the sum of appointees in these two positions across provinces and across years. The number ranges from 11 to 29, with the mean of 19. Moreover, since these cadres are less powerful, the local leadership has more control over the appointment process, and the center to a large extent simply nod assent on the nominate list of local party. Actually, the vast majority of appointees in these two positions have exclusively local career, which might reflect the influence of local leadership on these appointment.

5.4 Data

We manually collect detailed information on the *standing committee members* in all Chinese provinces for each year between 1992 and 2011. Our main data source is the name list of the standing committee members for each of the provinces, autonomous regions, and provincial level cities at the end of each year, which is provided by a subscription-required website: *Military and Politics Online* (*Jun Zheng Zai Xian* in Chinese). In particular, we measure the connections between a party secretary and the incumbent General Secretary by whether they used to work in the same branch of the party or of the government at the same time.

We count the number of deputy directors of province congress and the number of deputy chairmen in CPPCC in this period from the official website (http://www.npc.gov.cn/) and provincial statistical annual each year. All other economy-wide data up to year 2011, including fiscal structure, average income, industrial structure, population size, are obtained from the *Chinese Statistical Annual* published by the National Bureau of Statistics of China. The data on the extent of marketization is taken from the *Chinese Marketization Index* assembled by Fan et al.(2011)

[Table 1 here]

Table 1 reports the definitions and summary statistics for the key variables used in the following analysis. Figure 6 plots the time series of the average fraction of old SC members and the average number of vice provincial cadres across 28 provinces.[23] In most times and most provinces these two series track each other closely, indicating a close relationship between these two variables. From Table 1 it is observed that the average fraction of old interest is 0.529, the average age of SC members is 54, five years

---

[23] There is no data on the number of vice provincial positions in Tibet Autonomous Region.

shorter than that of the secretaries.

[Figure 6 here]

In most of our analysis we preclude the observations in Beijing and Shanghai, two most important municipalities in the political hierarchy. The secretaries of these two municipalities always held Politburo membership during this period, and the turnover of local leadership were under the close oversight of the central authority. Shanghai is also the power-base of the ex-General Secretary Jiang Zemin, who keeps strong influence over the personnel control for the past one-quarter century.

6. Empirical Results

We will present our empirical results in several steps. First, we will show our baseline estimates regarding the relationship between the strength of secretary and the size of vice-provincial cadres. Second, we discuss the role of secretaries' power in mitigating the resistance of opponents. Third, we present various robustness checks. Finally, we discuss several alternative channels through which the secretary's political status or background might affect the power balance, and connect our results to the observed raising trend in government size.

6.1 Baseline Estimates

In this subsection we investigate how the size of senior cadres is correlated with the strength of the potential opposition in the standing committee. Based on the prediction 1, we specify the following linear model:

$$\log(vice\_provincial)_{it} = \alpha + \beta * old\_\text{int}\,erst_{it-1} + \gamma * X_{it-1}$$
$$+ prov_i + time_t + Sec + \varepsilon_{it} \quad (2)$$

The dependent variable, $\log(vice\_provincial)_{it}$, is the logarithm of the number of vice provincial cadres (sum of deputy directors in the people's congress and deputy chairmen in the CPPCC) in province i in the end of year t. The main independent variable of interest is $old\_\text{int}\,erst_{it-1}$, the fraction of the SC members who took office before the sitting secretary in the end of the year $t-1$.[24] X_{it-1} is a vector of political and economic characteristics of province i in the end of year $t-1$, e.g., GDP per capita, industrial structure, population size, government expenditure, the average age of SC members, etc.. Controlling for province fixed effects ($prov_i$) ensures that the coefficients

---

[24] Technically, this variable is strongly correlated with the secretary's tenure, since by definition the fraction of existing SC members is weakly decreasing with the tenure of secretaries. However, our baseline results remain after controlling for the secretary's tenure effect.

of interest β do not reflect any specific unobserved provincial characteristics, e.g., political culture, history, ethnic groups composition, etc.. We also control for time fixed effects with two variables: $election_t$ is a dummy variable indicating whether NPC and CPPCC meetings were held in that year, in which many personnel decisions are made. $term_t$ captures the possible time trend in the unit of five-year, the term of government. We are aware that these two variables are highly correlated, hence we would use only one of them in any regression. Finally, we control for the secretary fixed effects by adding Sec. Standard errors are clustered at the province level given that the ratio of *Old interest* and the error term are likely to be serially correlated within each province.

Table 2 presents our baseline OLS estimates about the relationship between secretary's strength and the size of senior cadres. In Column (1) we only control for the lagged GDP per capita and the economic structure, as well as the provincial fixed effect. It is shown that a weaker secretary measured by *L.old interest* is positively and significantly associated with more vice-provincial cadres. On the other hand, GDP per capita is negatively associated with the size of vice-provincial cadres, and the coefficient is significant at the 1% statistical level. Besides, the coefficient on the ratio of Manufacturing output is also negative and significant at the 1%. The R-square is 0.35, indicating that the variation in the strength of opponents could explain a considerable part of the variation in the number of senior cadres. In column (2) we add the regressor on the population size in the province, as well as whether a NPC meeting was held in that year. Column (3) controls for the ratio of government expenditure over the provincial GDP. Compared with column (3), column (4) is added with the secretary dummy to control for the personal characteristics of the sitting party secretaries. Column (5) adds a dummy variable indicating whether a government downsizing campaign was initiated in the previous year (*L.Gov.Reform*). It is interesting to see a downsizing reform works at least temporarily: initiating downsizing campaign in the center this year is associated with 4% less vice-provincial cadres in the legislature and CPPCC next year at the province level.

In column (6) we further control for the average age of SC members, as well as the age of party secretary, which proxy for the career concerns of subnational leaders. The coefficients on both variables are insignificantly different from zero. Column (7) controls the possible time trend by replacing the election dummy with the term dummy. The main results remain and the magnitude of coefficient of *L.old interest* increases. In column (8) we include the observations of Beijing and Shanghai, the coefficient of *L.old interest* keeps positive and significant at 1% level. Finally, we control for the impact of turnover among the central leadership, e.g., Jiang Zemin's reign v.s. Hu Jintao's reign. In column (9) we add a control variable indicating the era of Hu Jintao's ruling, e.g., years after 2003, as well as the interaction term between this time dummy and *L.old interest*. We think this might capture the changing pattern of central-local relationship. It is interesting that the coefficient on the time dummy indicating observations after 2003 is positive and significant at 5% statistical level, though the interaction term is insignificant. Hu is usually considered as a weak top leader under the shadow of Jiang Zemin's influence. This might further weaken the control of the central over local political elites, and contribute to expansion of senior cadres at the subnational level.

[Table 2 here]

In general, our prediction 1 receives support from the estimation results. The coefficient of *L.old interest* is positive and significant in all specifications. To understand

the magnitude of this coefficient, consider a new secretary replacing a long-serving secretary, without any other change in the composition of standing committees. Thus, the ratio of existing SC member suddenly jumps from zero to one. This implies that the next year the number of vice-provincial cadres in the legislature and CPPCC would increase 6%-8%. Given that the appointment of these vice-provincial cadres still needs the formal approval from the center, while the appointment of senior cadres at the prefecture/department level is entirely under the control of provincial leadership, it is very likely that our results on the expansion of vice-provincial cadres understate the influence of power struggle on the expansion of senior cadres. Therefore, this estimated coefficient should be taken as the lower bound of the true influences. In other words, to appease those potential opposition in the standing committee, an incoming secretary needs to appoint at least 6%-8% more senior cadres in the province in the second year.

Table 3 reports the consequence of senior cadre expansion on public employment. We use the logarithm of the number of fiscal employee at province level as the dependent variable in column (1)—(3), and the logarithm of the ratio of fiscal employee over the total population as the dependent variable in column (4)—(5). The main independent variable of interest is the lagged logarithm of the number of vice provincial cadres. Variables regarding the economy and fiscal resources, as well as the province fixed effects, are controlled. The coefficient of *L.log(vice provincial)* is statistically significant in 4 out of 5 specifications, with the significance level ranging from 1% to 10%. This confirms the view of the top-down vertical government expansion process (Lu, 2000). If we look at the magnitude, we could calculate that one standard deviation increase in vice-provincial cadres is associated with a 13% increase in public sector employment. Therefore, the expansion of senior cadres has sizable influence on government oversizing.

[Table 3 here]

Though it is very difficult to establish the causal relationship between senior cadres expansion and the inefficient social outcomes in China, it is still worthy to consider the correlations between them. As Table 4 shows, the size of senior cadres is negatively correlated with the level of corruption, positively correlated with the size of SOE, and negatively correlated with the amount of private investment. Although we should take caution in interpreting these correlations, the signs of these correlations are consistent with common wisdom: overstaffing in government increases the likelihood of corruption, and leads to more governmental intervention on the economy. These provide a clue to think about the loss of social welfare from government oversizing.

[Table 4 here]

6.2 The power of secretaries

In this subsection we will examine the theoretical predictions 2 and 3, regarding the role of political status of secretaries in overcoming the resistance of the opposition. Specifically, we will estimate the following linear equation:

$$\log(vice\_provincial)_{it} = \alpha + \beta_1 * Old\_\mathrm{int}\,erst_{it-1} + \beta_2 * power_{it} +$$
$$\beta_3 * old\_\mathrm{int}\,erst_{it-1} * power_{it} + \gamma * X_{it-1} + prov_i + time_t + Sec + \varepsilon_{it} \tag{3}$$

The only difference between equation (2) and (3) is that we include an indicator about the power status of secretary, $power_{it}$, as well as the interaction term between it and the fraction of potential opponents in the standing committee. It is noteworthy that here the power comes from outside sources, e.g., faction affiliation, higher status in the party hierarchy, etc.. If prediction 2 holds, e.g., the secretary could use his own power to influence the collective decision-making in the standing committee, then we should expect a negative estimated β_2. If prediction 3 holds, e.g., power and the strength of secretary substitutes with each other, then we should expect a negative estimated β_3.

[Table 5 here]

Table 5 reports the estimation results, with the Politburo membership and the connections with the General Secretary as the indicators of secretaries' political status, respectively. Panel A presents the results with the Politburo membership. During 1992—2011, except the secretaries in Beijing and Shanghai, 12 politicians have served in the Politburo while took the office of province secretaries. However, because of the missing observations in other variables, in total we only have 24 year-province observations that the secretary of province i in year t also held the Politburo membership. The province fixed effects, the election dummy, and other appropriate control variables are included in all regressions. Column (1) restricts the regression to the small subsample of Politburo membership. The coefficient of *L.old interest* in effect is significantly negative, in sharp contrast with the baseline estimation results. Column (2) only contains the observations that the secretary did not hold a seat in the Politburo. It is shown that when the secretaries do not enjoy the superior rank above the colleagues, consistent with the previous results, the fraction of potential opponents is positively associated with the number of vice-provincial cadres. Column (3) only uses the dummy indicating whether the secretary is a member of Politburo as the main independent variable, and it turns out that this coefficient is insignificantly different from zero. However, when we estimate the full specification in equation (3) in column (4), we could observe that all the three estimated coefficients β_1, β_2, and β_3 are significant. Larger fraction of opposition is associated with more vice provincial cadres. The coefficient of Politburo membership is also positive, in contrast with the prediction 2. However, the coefficient of the interaction term is negative and significant at the 1% level. This provides evidence for the substitutions between the strength and power of secretaries. Since the holding of Politburo membership is not a random outcome, we also control for the secretary fixed effects in column (5)—(8). The main results in column (1)—(4) almost all remain, except that the estimated β_2 becomes insignificant in Column (8). Panel B presents the results in the similar procedure, except that we now proxy the power of secretaries with their connections with the sitting General Secretary. We could see there are 68 year-province pairs in which the secretary also has connections with the top leader (Jiang Zemin or Hu Jintao). The estimated β_2 in column (4), (7), and (8) are significantly positive, which is in contrast with the prediction 2. And the coefficients of interaction term in both (4) and (8) are negative and significantly at the 5% level. The negative estimated β_3 in column (4) and (8), Panel A and B, provide unambiguous evidence supporting the prediction 3 that power is more effective in enhancing the secretary's capacity to overcome the strong

opposition.

However, we also need to explain the seemingly puzzling estimated β_2 in Panel B. One explanation might suggest that since the collective leadership principle also prevails within the Politburo standing committee, connections with the General Secretary alone might not suffice to overcome the resistance of the opposition. But we favor another explanation with caution: aside from the need to preserve power balance, there also exists a competing motivation underlying the expansion of senior cadres: a powerful secretary would like to increase senior cadres to reward his loyal supporters. After all, both explanations indicate that power struggle, either in the center or in the subnational level or both, plays an important role in the expansion of senior cadres, consequently the oversizing of Chinese government.

6.3 Robustness check

Our first set of robustness check highlights the alternative definition of secretaries' strength within the standing committee. We consider the experience of existing SC members and construct a variable *weight tenure of old SC*, which is the weighted fraction of SC members appointed before the sitting party secretary, with the tenure years as the weight. The higher value of this variable reflects a stronger opposition relative to the secretary. Moreover, we introduce a broader definition of old SC members, which also includes those were appointed in the same year as the sitting party secretary took office as the potential opposition. Moreover, even though we do not know the exact voting rule in the standing committees, we conjecture that a majority rule might be employed in most decision-making procedure. If it is the case, then it is expected that whether the supporters of the secretary exceed the half of SC committee might significantly affect the policy outcome. Hence we construct a dummy indicating whether the ratio of Old_interest is higher than 50%. Table 6 reports this set of robustness check results. Column (1)—(3) report the regression results when we use the weighted tenure of old SC members as the main explanatory variable. Again, the strong opposition measured in the experiences in the SC significantly increases the number of vice provincial cadres. Column (4)—(6) report the regression results with the broader defined old SC members as the main explanatory variable. The coefficient of this variable is positive and statistically significant at the 5% level after controlling for the secretary fixed effects. Column (7)—(9) present the results with the dummy indicating whether the old SC members occupy more than half of the seats, and it turns out that the number of vice provincial cadres significantly increases if the old SC members take the majority. Therefore, our prediction 1 regarding the relationship between the strength of secretaries within the standing committee and the number of senior cadres is supported.

[Table 6 here]

The second set of robustness check is concerned with employing alternative estimation strategies. Because the number of senior cadres is a count data, we consider applying the Negative Binomial regression to address the possible bias raising from the nature of count data. Table 7 presents the estimation results with the Negative Binomial regression. Other variables such as GDP per capita, government expenditure over GDP

ratio, primary and secondary industry output ratio, population and secretary dummy are all controlled. Column (1) reports the estimation based on equation (2), again prediction 1 receives support from the significantly positive coefficient of *L.old interest*. In column (2) and (3) we estimate equation (3), with the Politburo membership and the Connections with the General Secretary as the measure of secretaries' power, respectively. Again, the coefficients of the strength of secretaries and the interaction term between power and strength support our prediction 1 and 3. However, we again observe a positive relationship between the power of secretaries and the number of vice provincial cadres. This might suggest that a powerful secretary also uses increasing senior positions to reward the supporters in his camp.

It would be interesting to compare the effects of Politburo membership and Connections. Look at the estimated β_2 and β_3 in column (2) and (3), the marginal effect of Politburo membership on the number of vice-provincial cadres would be 0.0349-0.1404**L.Old_interest*, and the marginal effect of Connections would be 0.0390-0.0231**L.Old_interest*. Given that the average *L.Old_interest* is about 0.5 in Table 1, on average the net effect of Politburo membership would be negative, while the net effect of connections is positive. How to explain this difference? We think this might be due to different career concerns between these two kinds of secretaries. The Politburo members are already the national leaders whose next step in the career is a position in the center. Hence, as a part of implementing the directives of center, enforcing the regulations and controlling the size of senior cadres would be of higher priority. And the power base in the province headed is not a key for his future. On the other hand, those connected secretaries still need to establish performance record in the local level to win the opportunity to be promoted (Jia, et al., 2014). His future thus is more uncertain than those Politburo members. Expanding senior cadres either to award loyalists or to establish local power base benefits the connected secretaries more. The similar logic could be used to explain the similar difference in Table 5.

[Table 7 here]

The final set of robustness check addresses the different era of central leadership, as suggested by column (9) in Table 2 in the baseline estimation. Again, Other control variables such as GDP per capita, government expenditure over GDP ratio, primary and secondary industry output ratio, population and secretary dummy are controlled. Table 8 reports the estimation results using the subsample of observations during 1992-2002, the period that Jiang Zemin served as the General Secretary. The coefficient of *L.old interest* is not significant in any column, neither is the coefficient of political status. The interaction term between strength and Politburo membership is negative and slightly significant at the 10% level in column (2), which is consistent with prediction 3. But this interaction term becomes insignificant when we use the Connections with the General Secretary as the indicator of secretaries' power in column (3). The similar estimation on the subsample of 2003-2011, e.g., the era of Hu Jintao, is presented in Table 9. The main message conveyed from comparing these two tables is that the strength of secretaries significantly increases senior cadres in Hu's reign. It might suggest a decline in the center's control over the local political issues. Local elites become more active in the power struggle and request more public resources from the central authority.

[Table 8 here]
[Table 9 here]

It is observed that the center accelerate turnover among local officials to combat corruption (Landry, 2008; Persson and Zhuravskaya, 2014). We have calculated the tenure of secretaries in these two periods. The results indicate that the average tenure of province secretaries reduces from 4.51 years before 2002 to 3.09 years after 2002. A shorter tenure usually implies a weak secretary, since it is more likely that he would face a standing committee consisting of a large share of previous members, and he has less time waiting for the turnover of SC members. Consequently, on average a secretary is more inclined to use senior positions to appease the opposition, and senior cadres accumulate in the province level across years, until the mandatory retirement age. Therefore, according to our theoretical and empirical results, the exogenous increasing frequency of turnover among secretaries might be an important reason underlying the continuously expansion of government size in Hu's reign.

6.4 Discussions

Local-based The main argument of our research is that the power struggle within the standing committee plays a key role in government oversizing. To measure the strength of secretaries in the standing committee, we use the share of existing members who enter before the sitting secretary took office as the indicator. An implicit assumption is that the secretary has no influence on the selection of SC members before he took office. This assumption sometimes is too strong. While many secretaries were appointed from the outsiders, some were promoted from the local branch of CCP, e.g., vice secretaries, governors. These local-based secretaries might affect the appointment of existing SC members even before they took office.

To examine the impact of latent influence of secretaries on the selection of SC members, we specify the following linear equation which explicitly considers the local-base of secretaries:

$$\log(vice\_provincial)_{it} = \alpha + \beta_1 * Old\_\mathrm{int}\,erst_{it-1} + \beta_2 * local_{it} +$$
$$\beta_3 * old\_\mathrm{int}\,erst_{it-1} * local_{it} + \gamma * X_{it-1} + prov_i + time_t + Sec + \varepsilon_{it} \quad (4)$$

The difference between the equation (3) and (4) is that we replace the variable $power_{it}$ with $local_{it}$ here. $local_{it}$ is a dummy variable indicating whether the secretary in province i in year t is local-based, measured by whether he has served 5 years or more in this province immediately before being promoted, respectively. It is expected that a local-based secretary could mitigate the resistance of the potential opposition, since he has already influenced the appointment of them. Then we should expect a negative estimated β_3 in equation (4).

Table 10 reports the regression results with local promoted as the measure of local-based. There are 258 observations that the secretary was promoted within this province. The estimated β_3 is insignificantly different from zero in the full specification (column (3) and (6)). This result is robust if we use the Negative Binomial regression (column (4) and (5) in Table 7), or we only look at the subsample before 2003 (column (4) and (5) in Table 8), or the subsample after 2003 (column (4) and (5) in Table 9). Indeed,

the positive coefficient of *L.old interest* in column (1) and (4) suggests that the existing SC members are even more influential in senior cadres expansion when the secretaries are promoted locally.

[Table 10 here]

Information argument There might be other explanation of our empirical results. For instance, it might be the information dispersed among the SC members, instead of their power relative to the secretary, leads to the senior cadres expansion. More specifically, for better governance of the province, a secretary needs to obtain information from various channels to learn the true state, and the standing committee might serve as a forum for information aggregation. However, the SC members convey information strategically, and those who enter the SC before the current secretary are less likely to share the same goal/policy preference as the secretary. The secretary uses increasing senior positions to extract valuable information from different-minded SC members. In other words, while our theory implies that senior cadres expansion is the outcome of power struggle, this information argument suggests that government oversizing serves as information rents. Hence, it is the price of information, instead of the reward for cooperation. This story also predicts that higher ratio of Old SC members leads to more senior cadres.

To test the competitive explanation about our main empirical results, we continue to use equation (4) to consider the information advantage of different-minded SC members. However, now $local_{it}$ is a dummy variable indicating whether the secretary in province i in year t was born in this province. If information explanation holds, then a local-based secretary would have more reliable information about the province, and mitigate the information rent of different-minded SC members. Then we should expect a negative estimated β_3 in equation (4).

Table 11 reports the estimation results with local born as the proxy of local-based in the manner similar as Table 5. In column (1) we regress equation (1) on the subsample of local born secretaries, which has only 74 observations. The coefficient of *L.old interest* is insignificantly different from zero. The estimated coefficient turns out to be significantly positive in column (2), for the subsample excluding local born secretaries. However, despite with the prediction of the information argument, the interaction term is insignificant in column (3), the estimation of the full specification of equation (4). The similar results maintain in column (4)—(6), after controlling for the secretary fixed effects. In total, our estimation results suggest that local-based secretaries have little influence on the increasing senior cadres, hence the information argument is rejected.

[Table 11 here]

The use of power Another possible challenge is concerned with our presumption that senior positions serve as a rewarding device, either to the supporters or the opposition. As the head of a province, could the secretary uses other devices to maintain power balance? Why should he insist on the distribution of senior positions? Especially for those powerful secretaries, could they use their formal or informal political status in the center to obtain other devices to appease the opposition? To address this issue, we need to consider the other possible channels through which the power of secretaries

might affect the behavior of opponents. We consider two possible rewarding tools: the beneficial allocation of fiscal resource from the center, and promotion prospects. Since both devices are formally provided by the center, we would expect a powerful secretary has more capacities to use these to appease the opposition.

[Table 12]

Table 12 reports the impact of old SC members on the amount of fiscal transfer received from the central government. Actually, we replace the dependent variable in equation (3) with the logarithm of central government fiscal transfer received by province i in year t. In all regressions it is shown that a higher fraction of old SC members are significantly associate with fewer fiscal transfer from the center, regardless whether we control for the secretary fixed effects. Moreover, the indicators of secretaries' political status, as well as the interaction term between power and strength of secretaries, are insignificantly different from zero. Hence, we find no evidence that a powerful secretary could get more favorable fiscal resource allocation from the center.

[Figure 7]

To address the possibility that a powerful secretary may provide the SC members with stronger prospects for being promoted to the subsequent level, we look at the fraction of SC members who exit before age 55. Basically, we do not have enough observations of the full career of SC members, and it is also difficult to precisely identify the change of status of each SC member in a party hierarchy, provided that many of them still kept seats in the standing committee after losing the key office held. Therefore, taking into account that the normal exit of SC members is mandatory retirement on age 60, we identify those SC members who exit before age 55 as being promoted. They exit either because of promotion, or because of rotation to other provinces or organizations under center's oversight. In either way it implies that this official is still active in promotion tournament, since there is at least one term (5 years) left for him to be promoted before the mandatory retirement. Figure 7 depicts the age distribution of exit SC members. The left panel highlights whether a Politburo member secretary could provide stronger promotion prospects for the SC members, and the right panel investigates whether a secretary connected with the General Secretary could help the advancement of SC members in the party hierarchy. We could not find any significant difference in distribution caused by the political status of secretaries. Table 13 reports the regression results, with the ratio of SC members who exit before age 55 as the dependent variable. It is shown that neither the Politburo membership nor the Connections with the General Secretary is statistically significant. Again, there is no evidence that a powerful secretary benefits the SC members in the advancement in the party hierarchy. In conclusion, it seems that the power of secretaries serves as a stick to discipline the behavior of colleagues, instead of a carrot to buy their cooperation.

[Table 13]

The private cost of expansion Finally, we would like to investigate the cost of senior cadres expansion incurs on secretaries. An implicit assumption underlying our theory is that the secretary undertakes most political cost from expansion, if there is any. Otherwise the opposition would not accept this reward. If downsizing campaigns were among the administrative priorities of the central government, then the size of government would enter the criterion to evaluate the performance of secretaries,

consequently affects the career of secretaries. On the other hand, a powerful or local-based secretary might be able to more effectively expand the size of senior cadres, in the sense that he has lower political cost from expansion. If it is the case, then we should expect that 1) the size of senior cadres negatively affects the promotion probability of secretaries; 2) the political status of secretaries mitigate this negative influence; 3) local-based secretaries also mitigate the negative impact of government oversizing on their promotion.

[Table 14 here]

We investigate the impact of senior cadres size on the promotion of secretaries in Table 14. The dependent variable is a dummy indicating whether the secretary of province i in year t was promoted to a higher position, defined as whether he holds a seat in the Politburo, or becomes the vice chairman in the NPC or CPPCC in the center in the end of that year.[25] Column (1) and (2) are the baseline estimation. The main independent variable of interest is the lagged logarithm of the number of vice-provincial cadres. To our surprise, more vice province cadres is significantly associated with higher probability of promotion, regardless of whether we control for the secretary fixed effects. Column (3) and (4) incorporates the local born secretaries by regressing in the subsample of secretaries born outside or in the province, respectively. Column (5) and (6) incorporates the Connections with the sitting General Secretary and run regressions on subsamples. Column (7) and (8) use all observations and employ the interaction term between the local-born dummy and *L.old_interest*, and that between the connections and *L.old_interest*, respectively. The secretary fixed effects are controlled in column (2)—(8). The estimated coefficient of *L.log(vice provincial)* is significant and positive in columns (3) and (5), as well as (7) and (8). Hence, we conclude there is no obvious political cost of increasing the number of senior cadres incurred on the secretaries' promotion. Actually, we even detect that expansion raise the probability of secretaries entering "national leaders". This beneficial effect of oversizing on career is the most salient for those outsiders secretaries, or those who do not have connections with the sitting General Secretaries. These might suggest that the center values secretaries' effort in appeasing the potential opposition and preserving power balance. Furthermore, subsample regressions reported in Table 15 are concerned with whether the influence of senior cadres oversizing varies across time. It turns out that the coefficient of senior cadres size on secretaries' promotion is insignificant in Jiang's reign, but significantly positive in Hu's reign. Consistent with Shirk (2014), this result suggests that preserving power balance within the leadership becomes the priority of administration. Hence, the cost of government oversizing becomes tolerable for the central authority. It also might indicate a changing incentive for the secretaries or declining central authority after 2003.

[Table 15 here]

Therefore, we conclude that there is no evidence that the government oversizing negatively affects the career of secretaries. This might indicate another reason underlying the repeated failed downsizing campaigns in the subnational level: the local leadership lacks the necessary incentives to implement and continue this campaign.

---

[25] In other words, we define those secretaries who entered the group of "national leaders" as being promoted. This definition is similar as Li and Zhou (2005)

7. Conclusion

Motivated by the sharp contrast between the rapid growing government budgets and staffing in China and the repeated downsizing campaigns initiated by the central government, this paper argues that the power struggle within local leadership is responsible for the observed time trend and cross-province variation in government size. We explicitly model the bargaining process within the standing committee, the decision making body at each level, and demonstrate that the need to preserve power balance among bureaucratic interest groups/factions leads to the expansion of senior cadres, which is used by the secretaries as a rewarding device to appease the opposition. We construct the relevant variables and empirically examine our theoretical predictions. The empirical results illustrate that the strong potential opponents within the standing committee lead to more senior cadres, but the exogenous political status of secretaries mitigates this influence. In particular, the political price of appeasing the opposition became the most salient in Hu Jintao's era, indicating the central authority' declining control over the local political elites. These results are robust against various specifications. We also show that the increase of senior cadres leads to vertical expansion of government size, indicating inefficiency to the society as a whole. Hence, we conclude that under weak institutions, the checks and balances within a small circle of political elites might be harmful to the society.

Our results shed lights on the evolution of China's central-local relationship. However, even though we confirm the decline role of the central authority over the local elites, we do not recommend any policy aiming at re-centralize power alone. The investigation of the reasons underlying the weaker central authority in the first decade of the 21th century is beyond the scope of this paper. But, we don't think this should be entirely due to the personal characteristics of the top leaders in China. It is the factional politics which prevail in both the local level and the central level that weakens the control over local elites, and the prerequisite for the negative influence of factional politics is the weak constraints on executive power. Therefore, if there is any policy implication from this paper, it should be to further de-regulate the market and to impose stricter institutional constraints on the behavior of government.

It is worthy to note, as we stress before, that our estimation results tend to be a lower bound of the real influence of power struggle. It is because that we count the number of vice provincial cadres as the proxy of senior cadres size, but their appointment still needs the formal approval of the central authority. In the future work we would attempt to assemble a more accurate measure of the size of senior cadres.

In spite of the previous works that treat the local official as an individual agent incentivized by the center, our paper highlights the strategic interaction among appointed public officials. We stress that decisions are made by a group of bureaucrats collectively. Hence, aside of the career concerns of individual officials, the power struggle among officials plays an increasingly important role in policy outcomes. We think this direction of investigation should be pursued in the future.

As some of our estimation results illustrate, senior cadres expansion not only serves

as the political price to appease the opposition, but also might be used by the secretary as the award to his loyal supporters. Hence, there might exist the optimal balance among different factions that minimize the social welfare loss. We await for more research on this interesting topic.

References:

Acemoglu, Daron., Georgy Egorov and Constantin Sonin (2008) "Coalition Formation in Non-Democracies", *Review of Economic Studies* 75, 987-1009.

Alesina, Alberto., and Romain Wacziarg (1998) "Openness, Country Size and Government", *Journal of Public Economics* 69, 305-321.

Alesian, Alberto., Reza Baqir., and William Easterly (2000) "Redistributive Public Employment", *Journal of Urban Economics* 48, 219-241.

Alesina, Alberto., Stephan Danninger., and Massimo Rostagno (2001) "Redistribution through Public Employment: The Case of Italy", *IMF Staff Papers* 48, 447-473.

Ang, Yuen Yuen (2009) *State, Market, and Bureau-Contracting in Reform China*, PhD dissertation, Stanford University.

------- (2012) "Counting Cadres: A Comparative View of the Size of China's Public Employment", *China Quarterly* 211, 676-696.

Baron, David P., and John A, Ferejohn (1989) "Bargaining in Legislatures", *American Political Science Review* 83, 181-206.

Binmore, Ken (2007) *Does Game Theory Work? The Bargaining Challenge*, Cambridge, MA: MIT Press.

Brennan, Geoffrey, and James Buchanan (1985) "Searching for Leviathan: An empirical study." *American Economic Review* 75, 748-757.

Brennan, Geoffrey, and James M. Buchanan (1980) *The power to tax: Analytic foundations of a fiscal constitution,* Cambridge: Cambridge University Press.

Buchanan, James M., and Gordon Tullock (1962) *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, Ann Arbor, Michigan: University of Michigan Press.

Bueno de Mesquita, Bruce., Alastair Smith, Randolph Siverson, James D. Morrow (2003) *The Logic of Political Survival*, Cambridge, MA: MIT Press.

Enikolopov, Ruben (2014) "Politicians, Bureaucrats and Targeted Redistribution", *Journal of Public Economics* 120, 74-83.

Fan, Gang., Wang, Xiaolu., and Zhu, Hengpeng. (2011) *The Report on China Marketization Index- The Relative Process of Regional Marketization 2011*, Beijing: Economic Science Press.

Francois, Patrick., Ilia, Rainer, and Francesco Trebbi (2014) "How Is Power Shared in Africa", forthcoming in *Econometrica*.

Gao Nan.; Cherry Xiaoning Long and Lixin Colin Xu (2014) "Career Incentives of Standing Committee Members and Housing Market Boom in China", Working Paper, World Bank.

Gimpelson, Vladimir and Daniel Treisman (2002) "Fiscal Games and Public Employment: A Theory with Evidence from Russia", *World Politics* 54, 145-183.

Golden, Miriam A and Eric C.C. Chang (2001) "Competitive Corruption: Factional Conflict and Political Malfeasance in Postwar Italian Christian Democracy", *World Politics* 53, 588-622.

Grzymala-Busse, Anna (2007) *Rebuilding Leviathan: Party Competition and State Exploitation in Post-Communist Democracies*, Cambridge: Cambridge University Press.

Guth, Werner., Rolf Schmittberger., and Bernd Schwarze (1982) "An Experimental

Analysis of Ultimatum Bargaining", *Journal of Economic Behavior and Organization* 3, 367-388.

Henrich, Joseph., Robert Boyd., Samuel Bowles., Colin Camerer., Ernst Fehr., and Herbert Gintis (2004) *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*, Oxford: Oxford University Press.

Huang, Jing (2000) *Factionalism in Chinese Communist Politics*, Cambridge: Cambridge University Press.

Huang, Yasheng (1999) *Inflation and Investment Controls in China: The Political Economy of Central-Local Relations during the Reform Era*, Cambridge: Cambridge University Press.

Jia, Ruixue (2013) "Pollution for Promotion", Working Paper, UCSD.

Jia, Rruixue., Masa Kudamatsu., and David Seim (2014) "Complementary Roles of Connections and Performance in Political Selection in China", forthcoming in the *Journal of European Economic Association*.

Jin, Jing, and Heng-fu Zou (2002) "How does fiscal decentralization affect aggregate, national, and subnational government size?" *Journal of Urban Economics* 52, 270-293.

Landier, Augustin., Julien Sauvagnat., David Sraer., and David Thesmar (2012) "Bottom-up Corporate Governance", *Review of Finance* 17: 161-201.

Landry, Pierre F (2008) *Decentralized Authoritarianism in China: The Communist Party's Control of Local Elites in the Post-Mao Era*, Cambridge: Cambridge University Press.

Levin, Jonathan., and Steven Tadelis (2010) "Contracting for Government Services: Theory and Evidence from U.S. Cities", *Journal of Industrial Economics* 58, 507-541.

Li, Hongbin, and Li-an Zhou (2005) "Political Turnover and Economic Performance: The Incentive Role of Personnel Control in China," *Journal of Public Economics* 89, 1743-1762.

Lu Xiaobo (2000) *Cadres and Corruption: The Organizational Involution of the Chinese Communist Party*, Stanford, CA: Stanford University Press.

Manion, Melanie (1985) "The Cadre Management System, Post-Mao: The Appointment, Promotion, Transfer and Removal of Party and State Leaders", *China Quarterly* 102, 203-233.

Marlow, Michael L.(1988) "Fiscal decentralization and government size." *Public Choice* 56, 259-269.

Maskin, Eric., and Jean Tirole (2004) "The Politician and the Judge: Accountability in Government", *American Economic Review* 94, 1034-1054.

Mcgregor, Richard (2000) *The Party: The Secret World of China's Communist Rulers*, Harper Collins.

Moesen, Wim., and Philippe Van Cauwenberge (2000) "The status of the budget constraint, federalism and the relative size of government: A bureaucracy approach." *Public Choice* 104, 207-224.

O'Dwyer, Conor (2006) *Runaway State-Building: Patronage Politics and Democratic Development*, Baltimore: John Hopkins University Press.

Persico, Nicola., Jose C. R. Pueblita., and Dan Silverman (2011) "Factions and Political Competition", *Journal of Political Economy* 119, 242-288.

Persson, Petra., and Zhuravskaya, Ekaterina (2014) "The Limits of Career Concerns in

Federalism: Evidence from China", forthcoming in the *Journal of European Economic Association*.

Persson, Torsten and Guido Tabellini (2000) *Political Economics: Explaining Economic Policy*, Cambridge, MA: MIT Press.

-------- (2006) "Electoral Systems and Economic Policy", in the *Handbook of Political Economy*, eds. Weingast, B., and D. Wittman, Oxford: Oxford University Press.

Ram, Rati (2009) "Openness, country size, and government size: Additional evidence from a large cross-country panel." *Journal of Public Economics* 93, 213-218.

Rainer, Ilia and Francesco Trebbi (2014) "New Tools for the Analysis of Political Power in Africa", in *African Economic Success*, eds by Edwards, S., S. Johnson., and D. Weil., Chicago, IL: University of Chicago Press.

Rodrik, Dani (1998) "Why Do More Open Economies Have Bigger Governments?" *Journal of Political Economy* 106, 997-1032.

Shepsle, Kenneth., and Barry Weingast (1981) "Political Preferences for the Pork Barrel: A Generalization", *American Journal of Political Science* 25, 96-111.

Shih, Victor (2004) "Factions Matter: Personal Networks and the Distribution of Bank Loans in China", *Journal of Contemporary China* 13, 3-19.

Shih, Victor., Christopher Adolph., and Mingxing Liu (2012) "Getting ahead in the Communist Party: Explaining the Advancement of Central Committee Members in China." *American Political Science Review* 106, 166-187.

Shirk, Susan (2014) "The Domestic Context of Chinese Foreign Security Policies", in the *Oxford Handbook of the International Relations of Asia*, ed. S. Pekkanen., J. Ravenhill. And R, Foot, Oxford: Oxford University Press.

Snyder, Jack (1991) *Myths of Empire: Domestic Politics and International Ambition*, Ithaca NY: Cornell University Press.

Wagner, Adolf (1883) *Finanzwissenschaft*, 3rd ed, Leipzig, excerpted in Richard A Musgrave and Alan T. Peacock, *Classics in the Theory of Public Finance*, London: MacMillan & Co., 1958.

Xu, Chenggang (2011) "The Fundamental Institutions of China's Reforms and Development," *Journal of Economic Literature* 49, 1076-1151.

Vlaicu, Razvan., and Alexander, Whalley (2014) "Hierarchical Accountability in Government: Theory and Evidence", Working Paper.

Figure 1: The trend of GDP and revenue/GDP
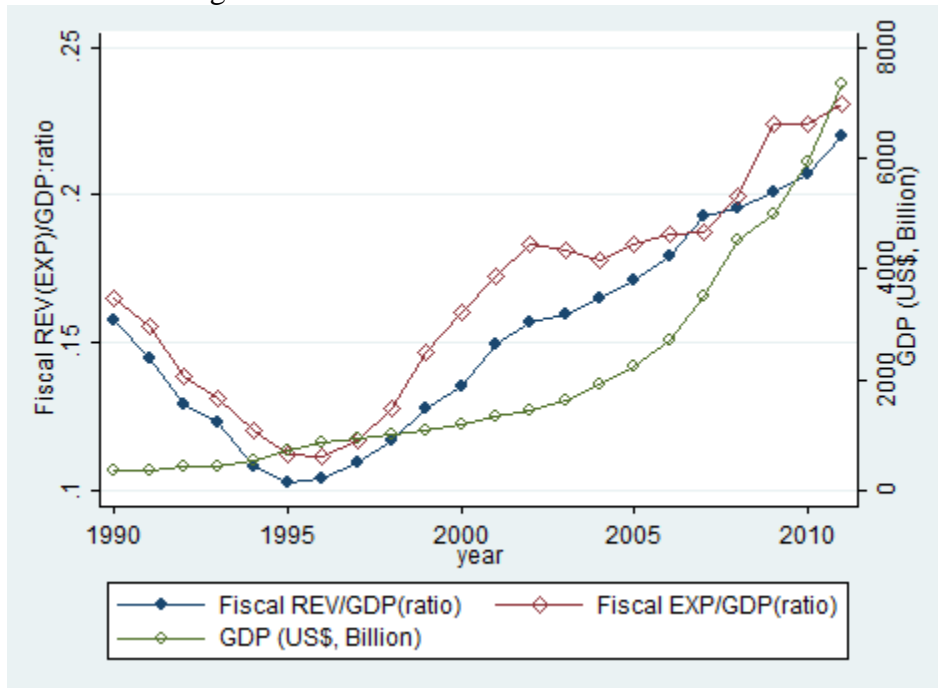
Note: GDP are from World Bank. Fiscal REV(EXP)/ GDP is from Chinese yearbook.

Figure 2: The trend of national gov. worker

Figure 3: SC tenure density
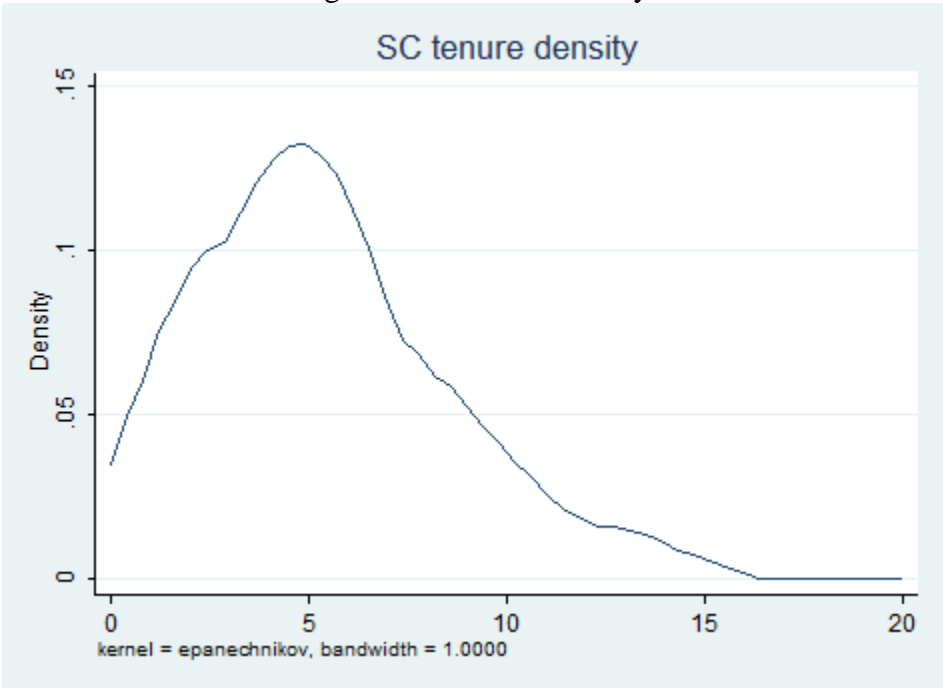
Figure 4: The geographical distribution of gov worker/population (2011)

GOV. worker/Population
(.0115446,.0330033]
(.0109847,.0115446]
(.0094146,.0109847]
[.0078921,.0094146]
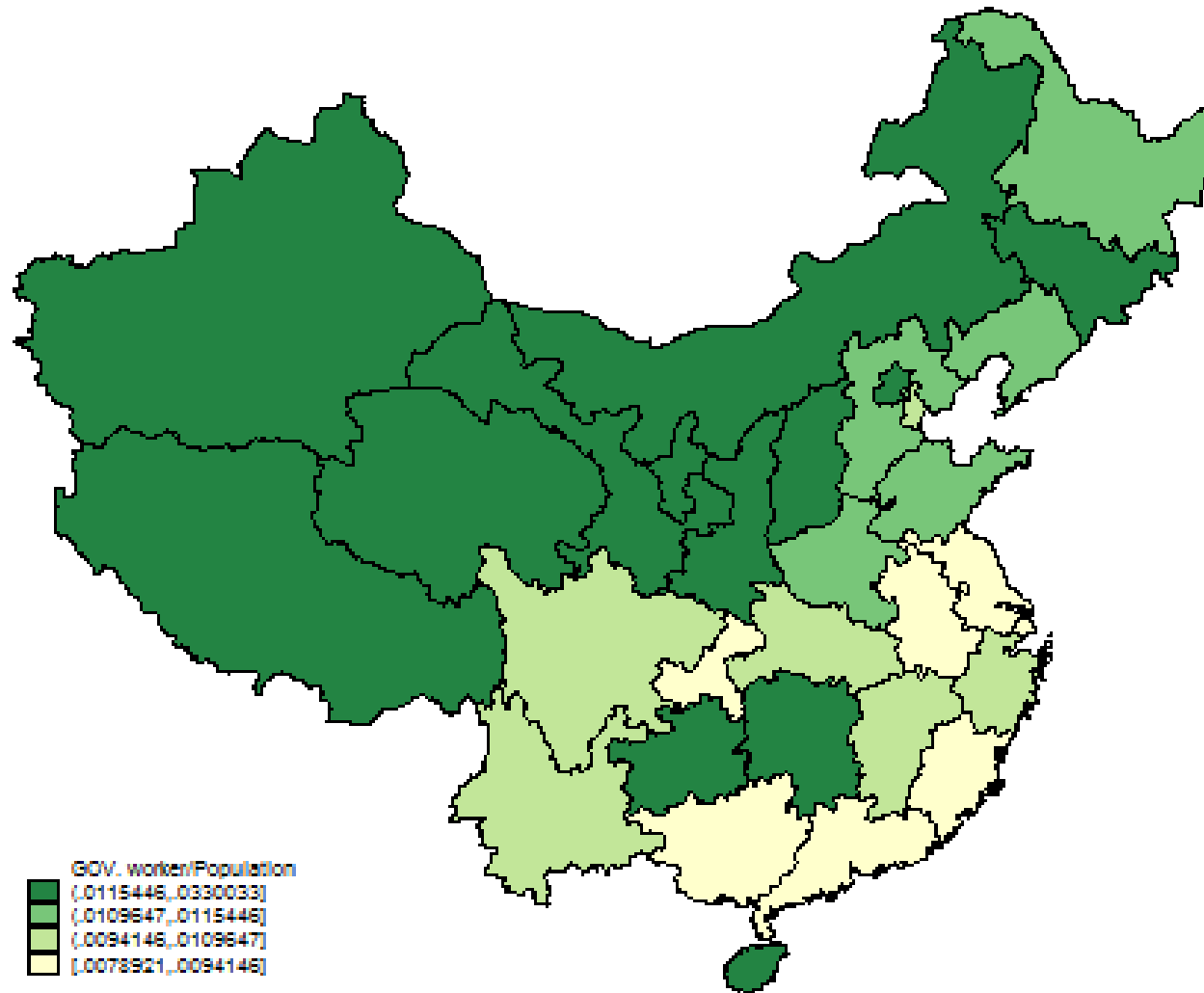
Figure 5: The geographic distribution of gov expenditure/GDP (2011)

GOV expenditure/GDP
(.2103537,1.251358]
(.1510285,.2103537]
(.1251797,.1510285]
[.1102703,.1251797]
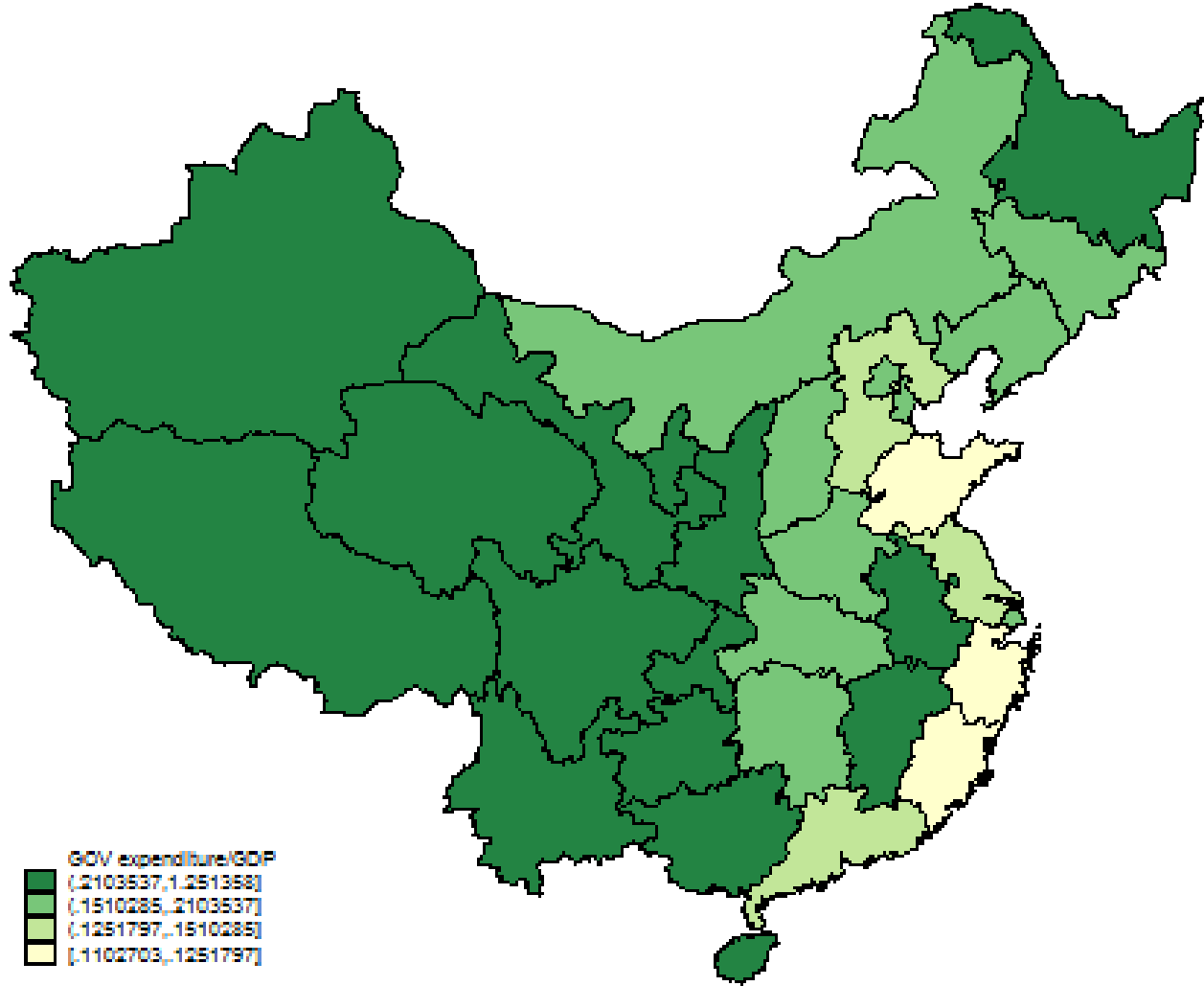
Figure 6: The Trend of the old interest and the number of vice provincial across provinces

Old Interest —○—   log(deputy provincial) —●—
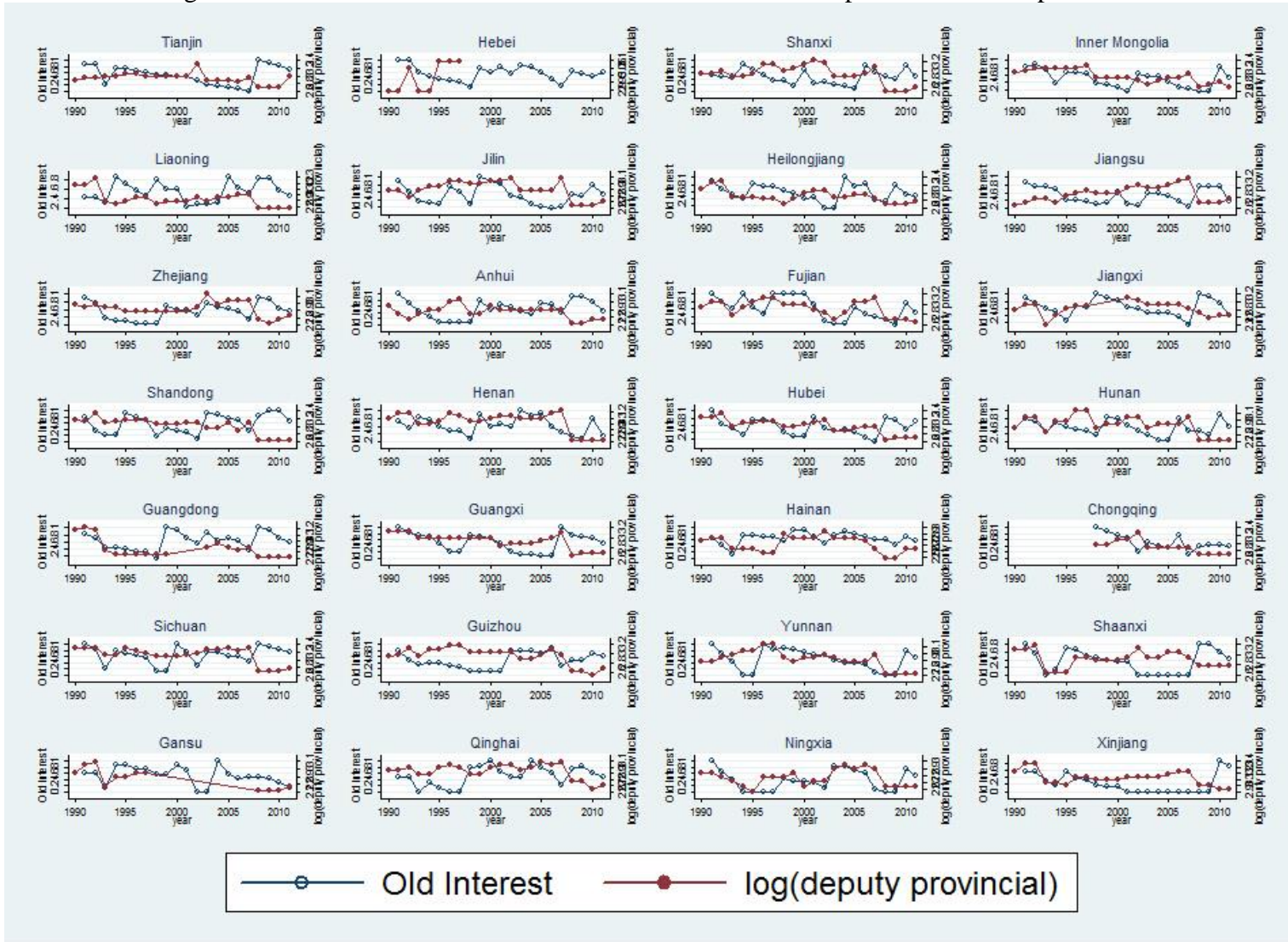
Figure 7 The age distribution of exit SC members
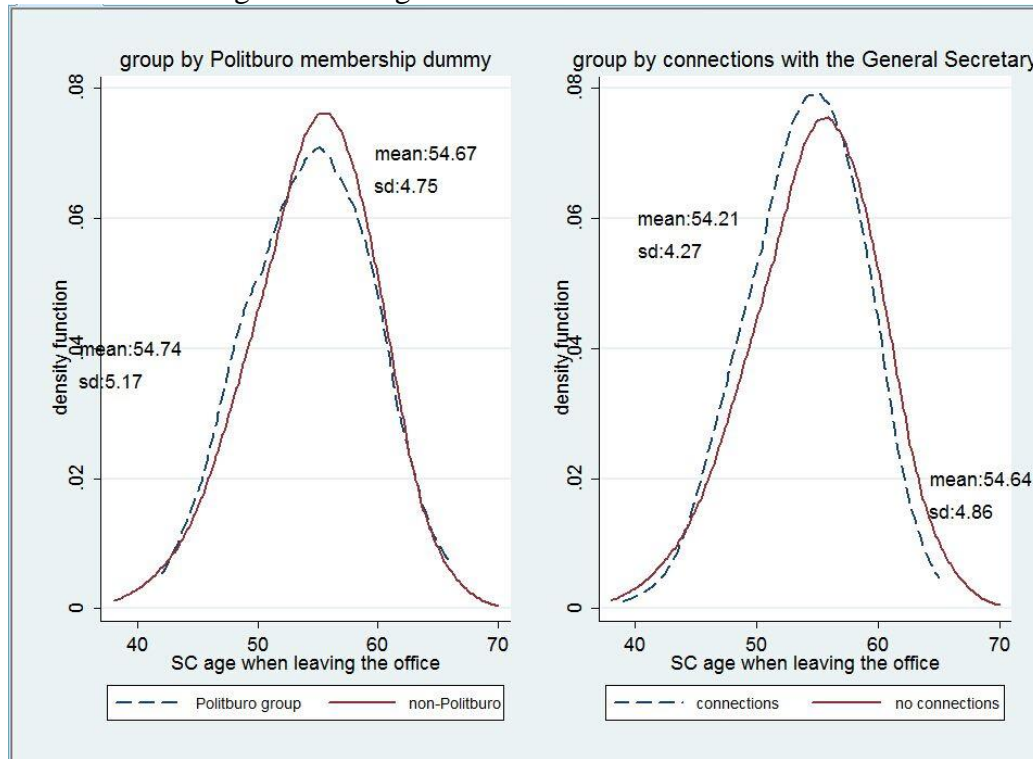
Table 1 Definitions and Summary statistics of Key Variables

Variables	Definition	Obs	Mean	Std.Dev	Min	Max
number of vice provincial	Composed of Congress and Political Consultative Deputy Member	578	19.000	3.282	11.000	29.000
Old interest	The ratio of SC member that is in standing committee before secretary	603	0.529	0.276	0.000	1.000
weight tenure of old SC	Weighted tenure of *OLD* SC	603	2.526	1.453	0.000	6.400
Old interest_2*	Broader definition of old interest	603	0.709	0.296	0.000	1.000
GDP per capita	GDP per Capita (in nominal)	625	1.165	1.176	0.080	8.345
Gov. expenditure ratio	Government Expenditure over GDP	541	0.165	0.129	0.049	1.251
Primary output ratio	Primary Output over GDP	545	0.174	0.076	0.014	0.364
Manufacturing output ratio	Manufacturing Output over GDP	545	0.444	0.080	0.195	0.590
log(population)	Log(population)	625	8.075	0.887	5.403	9.344
SC average age	Average Age of Standing Committee	631	54.472	1.730	48.800	60.500
Secretary age	Provincial Secretary's Age	602	59.613	4.080	47.000	68.000
Urbanization	Ratio of Urban Population	485	0.416	0.144	0.165	0.887
log(number of firms)	Log(Enterprise Above Designated Size)	541	8.652	1.313	4.025	11.090
degree of resources allocated by market	Degree of Resources Allocated Through Market	374	6.949	4.607	-23.310	14.320
degree of government interfere firm	Degree of Government interfere firm	374	4.039	2.743	-12.950	12.670
degree of decentralization (expenditure side)	Ratio of Central Government Expenditure over National Expenditure	541	0.007	0.006	0.001	0.030
degree of decentralization (revenue side)	Ratio of Central Government Revenue over National Revenue	541	0.020	0.042	0.001	0.271
degree of openness	Import and Export Amount over GDP	542	0.235	0.298	0.032	1.803
Gov. reform dummy	=1 if year=1992, 1998 2002 and 2008	639	0.182	0.386	0.000	1.000
Political Bureau Dummy	Whether Secretary is Enter into Politburo	639	0.074	0.261	0.000	1.000
log(fiscal employee to population)	Log(Fiscal supporting employee/population)	425	5.725	0.282	3.391	8.388
log(fiscal employee)	Log(fiscal supporting employee)	431	13.790	0.818	11.500	16.376

Note: *: broader definition of old interest including the standing committee members that enter into standing committee the same year as the current provincial secretary.

Table 2 The effect of old interest on number of vice provincial positions: Baseline, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					log(vice provincial)				
L.old interest	0.0423*	0.0447*	0.0484**	0.0533***	0.0526***	0.0555***	0.0671***	0.0592***	0.0792**
	(0.0231)	(0.0231)	(0.0229)	(0.0153)	(0.0156)	(0.0166)	(0.0176)	(0.0159)	(0.0294)
L.GDP per capita	-0.0524***	-0.0489***	-0.0461***	-0.0460**	-0.0505**	-0.0538	-0.0281	-0.0435**	-0.0532***
	(0.0130)	(0.0121)	(0.0122)	(0.0221)	(0.0224)	(0.0362)	(0.0288)	(0.0193)	(0.0126)
L.Primary output ratio	0.2189	0.2331	-0.0483	0.0997	0.0769	0.1573	0.4538	0.1684	0.1882
	(0.4792)	(0.4570)	(0.4066)	(0.3763)	(0.3724)	(0.3932)	(0.4439)	(0.3493)	(0.4185)
L.Manufacturing output ratio	-1.0401***	-0.9696**	-0.9134**	-0.1898	-0.1079	-0.1220	0.0475	-0.2014	-1.0040***
	(0.3606)	(0.3553)	(0.3380)	(0.4325)	(0.4133)	(0.4460)	(0.4621)	(0.2977)	(0.3502)
L.log(population)		-0.0389	-0.0335	-0.0421	-0.0384	-0.0444	-0.0047	-0.0285	-0.0576
		(0.0809)	(0.0821)	(0.0475)	(0.0439)	(0.0560)	(0.0480)	(0.0382)	(0.0769)
L.Gov. expenditure ratio			-0.5051*	-0.1617	-0.1405	-0.1464	-0.1961	-0.1037	-0.5418*
			(0.2917)	(0.2906)	(0.3040)	(0.2808)	(0.3090)	(0.2781)	(0.2964)
L.Gov.Reform					-0.0399***	-0.0384***	-0.0517***	-0.0383***	
					(0.0072)	(0.0079)	(0.0089)	(0.0073)	
scage_mean						-0.0044	-0.0078	-0.0040	
						(0.0057)	(0.0057)	(0.0054)	
Provincial Secretary age						0.0020	-0.0001	0.0015	
						(0.0077)	(0.0065)	(0.0064)	
L.dummy2003									0.0772**
									(0.0359)
L.dummy2003*L.old_interest									-0.0519
									(0.0523)
Constant	3.3802***	3.6393***	3.6885***	3.3796***	3.3404***	3.2972***	3.2377***	3.3853***	3.8581***
	(0.2373)	(0.6838)	(0.6900)	(0.4354)	(0.3997)	(0.5133)	(0.5497)	(0.5127)	(0.6477)
Provincial Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Term dummy	No	No	No	No	No	No	Yes	No	No
secretary dummy	No	No	No	Yes	Yes	Yes	Yes	Yes	No
Beijing & Shanghai	No	No	No	No	No	No	No	Yes	No
Observations	469	469	469	469	469	469	469	505	469
R-square	0.351	0.426	0.436	0.755	0.765	0.766	0.741	0.764	0.447

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table 3 The linkage between fiscal employee and vice provincial: OLS

	(1)	(2)	(3)	(4)	(5)
	log(fiscal employee)			log(fiscal employee to population)	
L.log(vice provincial)	0.2215**	0.2386***	0.2220**	0.1816	0.1766*
	(0.0805)	(0.0849)	(0.0869)	(0.1095)	(0.0909)
L.GDP per capita	0.0802**	0.0788**	0.1092***	0.0205	0.0209
	(0.0369)	(0.0359)	(0.0362)	(0.0376)	(0.0364)
L.Primary output ratio	-1.0003***	-1.5544***	-1.1812***	-0.7048*	-0.5441
	(0.2923)	(0.3865)	(0.3615)	(0.3595)	(1.0222)
L.Manufacturing output ratio	-0.2031	-0.2806	-0.2495	-0.0015	0.0209
	(0.4506)	(0.4436)	(0.4571)	(0.5584)	(0.6546)
L.Gov. expenditure ratio		-0.9335**	-0.9207**		0.2707
		(0.4111)	(0.3639)		(1.4126)
L.log(population)			0.1815***		
			(0.0516)		
Constant	13.4206***	13.6315***	12.0967***	5.3210***	5.2599***
	(0.3975)	(0.3605)	(0.4859)	(0.5629)	(0.8426)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	363	363	363	363	363
R square	0.199	0.210	0.234	0.0404	0.0410

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

This is the correlation between provincial deputy and the size of fiscal employee, the explained variables are log(# of fiscal employee (column 1 to 3) and ratio of fiscal employee over population (last two columns). Other control variables such as GDP per capita, fiscal expenditure over GDP, economy structure, etc. are included.

Table 4 The correlations between the growing vice provincial positions and other variables

	log(vice provincial)	Corruption	Ratio of SOE	SOE Asset Value/GDP	social investment per capita	private invest per capita
log(vice provincial)	1.0000					
Corruption	0.2426***	1.0000				
Ratio of SOE	0.2021***	-0.2267***	1.0000			
SOE Asset Value/GDP	0.1110**	-0.1221**	0.3819***	1.0000		
social investment per capita	-0.3793***	-0.4631***	-0.4533***	-0.1260***	1.0000	
private invest per capita	-0.5032***	-0.3931***	-0.5334***	-0.2684***	0.8854***	1.0000

$^{*} p < 0.1$, $^{**} p < 0.05$, $^{***} p < 0.01$

Table 5 The Power of Secretary, OLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Secretary is a Politburo member	log(vice provincial)							
	Politburo Group	Excluding Politburo group	Politburo dummy	Interaction term	Politburo Group	Excluding Politburo group	Politburo dummy	Interaction term
L.Old interest	-0.3127** (0.1193)	0.0533** (0.0213)		0.0562** (0.0213)	0.0006 (0.1675)	0.0531*** (0.0159)		0.0567*** (0.0157)
Politburo Dummy			-0.0004 (0.0500)	0.1175** (0.0445)			0.0057 (0.0708)	0.0988 (0.0657)
L.Old interest*Politburo				-0.4381*** (0.1251)				-0.4102*** (0.1298)
Constant	13.7123 (8.6104)	3.8636*** (0.5773)	3.6147*** (0.6828)	3.7907*** (0.6392)	20.5319* (8.5277)	3.4038*** (0.4945)	3.3224*** (0.4881)	3.5851*** (0.4440)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy					Yes	Yes	Yes	Yes
Observations	24	445	470	469	24	445	470	469
R-sq	0.688	0.454	0.429	0.447	0.748	0.765	0.749	0.760
Panel B: Secretary connected to the General Secretary	connecting to the GS	W/O connection to the GS	Connection to the GS dummy	Interaction term	connecting to the GS	W/O connection to the GS	Connection to the GS dummy	Interaction term
L.Old interest	0.0350 (0.0472)	0.0649** (0.0235)		0.0700*** (0.0239)	-0.0062 (0.0335)	0.0613*** (0.0170)		0.0664*** (0.0171)
Connection to the GS			0.0154 (0.0311)	0.0902* (0.0475)			0.0919** (0.0391)	0.1148*** (0.0341)
L.Old interest*connection to the GS				-0.1383** (0.0645)				-0.0663** (0.0289)
Constant	-10.3593* (5.8872)	3.8615*** (0.4982)	3.6144*** (0.6856)	3.7429*** (0.6542)	4.9574 (8.6204)	3.4420*** (0.4329)	3.2746*** (0.3889)	3.4929*** (0.3771)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy					Yes	Yes	Yes	Yes
Observations	68	401	470	469	68	401	470	469
R-sq	0.414	0.434	0.430	0.446	0.678	0.722	0.754	0.761

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table 6 Robustness Check (Alternative measures of old interest)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Weighted tenure of OLD SC			Broader definition of old SC log(vice provincial)			Old interest ratio over than 50%		
L.weight tenure of old SC	0.0128**	0.0158***	0.0166***						
	(0.0059)	(0.0042)	(0.0041)						
L.dependency of sc_2				0.0281	0.0291**	0.0318**			
				(0.0215)	(0.0135)	(0.0136)			
L.old interest>50%							0.0341**	0.0309**	0.0320***
							(0.0121)	(0.0126)	(0.0116)
Constant	3.6485***	3.3543***	3.2633***	3.6372***	3.3377***	3.2432***	3.6995***	3.3453***	3.2638***
	(0.6761)	(0.4324)	(0.4182)	(0.6894)	(0.4376)	(0.4274)	(0.6679)	(0.4406)	(0.4273)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sec Dummy	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Beijing & Shanghai	No	No	Yes	No	No	Yes	No	No	Yes
Observations	469	469	505	469	469	505	469	469	505
R-sq	0.440	0.759	0.757	0.432	0.751	0.748	0.441	0.756	0.753

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

This table shows the robustness check of the model. We consider different indexes to measure old interests. Column one to three uses weighted tenure of old SC member as explanatory variable, column four to six uses a broader definition of Old SC (which also contains members that enter into SC the same time as Provincial Secretary), the last three column uses the dummy indicating whether the fraction of old interest is over 50% as the main explanatory variable. Column one, four and seven only controlled GDP per capita, economy structure, population and government change dummy, column two, five and eight adds provincial secretary individual fix effect, while column three, six and nine including observations of Beijing and Shanghai.

Table 7 Robustness Check (Negative Binomial regression)

	log(vice provincial)				
	(1)	(2)	(3)	(4)	(5)
L.old interest	0.0182***	0.0194***	0.0225***	0.0186***	0.0173
	(0.0046)	(0.0047)	(0.0051)	(0.0055)	(0.0112)
Politburo Dummy		0.0349*			
		(0.0193)			
L. old interest *Politburo		-0.1404***			
		(0.0376)			
Sec Connections with the General Secretary			0.0390***		
			(0.0102)		
L. old interest *connections			-0.0231***		
			(0.0089)		
local born SEC				-0.0464***	
				(0.0083)	
L. old interest *sec local dummy				-0.0066	
				(0.0171)	
Local promote sec dummy					-0.1165***
					(0.0121)
L. old interest *local promoted dummy					0.0025
					(0.0138)
Constant	1.1960***	1.2544***	1.2325***	1.1805***	1.2535***
	(0.1040)	(0.1048)	(0.0898)	(0.0986)	(0.0771)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
Sec Dummy	Yes	Yes	Yes	Yes	Yes
Observations	469	469	469	469	469

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.
This table is robustness check for the major regression models using negative binomial regression method. Other control variables such as GDP per capita, government expenditure over GDP ratio, primary and secondary industry output ratio, population and secretary dummy are controlled in the model. First column is the baseline model, we then consider the effect that provincial secretary is connected to central government or not, we measure the connection from two perspective: whether secretary are politburo membership during their term in Secretary Position (column 2) and ever co-worked with President before (column 3), we add the connection dummy and its interaction term with old interest variable in the model. The last two column considers the effect that if secretary have connections with local region, we explore this by adding dummy variable to identify if secretary is local born (column 4) or locally promoted to secretary (column 5) and its interaction term with old interest variable.

Table 8 Robustness Check (subsample before 2003)

	(1)	(2)	(3)	(4)	(5)
L.old interest	0.0331	0.0295	0.0357	0.0274	0.0297
	(0.0240)	(0.0249)	(0.0252)	(0.0252)	(0.0488)
Politburo Dummy		0.0465			
		(0.0698)			
L.Old interest*Politburo		-0.3220[*]			
		(0.1883)			
Connections			0.0565		
			(0.0700)		
L.Old interest*connections			-0.0185		
			(0.1144)		
local born SEC				-0.0528	
				(0.0516)	
L.Old interest*sec local dummy				0.0247	
				(0.0863)	
Local promote sec dummy					-0.2752[***]
					(0.0590)
L.Old interest*local promoted dummy					0.0160
					(0.0677)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
Sec Dummy	Yes	Yes	Yes	Yes	Yes
Observations	257	257	257	257	257
R-sq	0.557	0.569	0.559	0.557	0.486

Note: Standard errors clustered at the province level are reported in parentheses; [*] Significant at 0.1, [**] 0.05, [***] 0.01

This table is robustness check for the major regression models using subsample of before 2003. Other control variables such as GDP per capita, government expenditure over GDP ratio, primary and secondary industry output ratio, population and secretary dummy are controlled in the model. First column is the baseline model, we then consider the effect that provincial secretary is connected to central government or not, we measure the connection from two perspective: whether secretary are politburo membership during their term in Secretary Position (column 2) and ever co-worked with President before (column 3), we add the connection dummy and its interaction term with old interest variable in the model. The last two column considers the effect that if secretary have connections with local region, we explore this by adding dummy variable to identify if secretary is local born (column 4) or locally promoted to secretary (column 5) and its interaction term with old interest variable.

Table 9 Robustness Check (subsample after 2003)

	(1)	(2)	(3)	(4)	(5)
L.old interest	0.0639*	0.0644*	0.0812**	0.0657*	0.0905
	(0.0364)	(0.0374)	(0.0400)	(0.0390)	(0.0628)
Politburo Dummy		0.8319			
		(5.4863)			
L.Old interest*Politburo		-0.0743			
		(0.3260)			
Connections			-0.0680		
			(0.0799)		
L.Old interest*connections			-0.0683		
			(0.0509)		
local born SEC				-0.1886	
				(0.3389)	
L.Old interest*sec local dummy				-0.0203	
				(0.0629)	
Local promote sec dummy					3.7357***
					(0.2814)
L.Old interest*local promoted dummy					-0.0194
					(0.0704)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
Sec Dummy	Yes	Yes	Yes	Yes	Yes
Observations	212	212	212	212	212
R-sq	0.800	0.800	0.802	0.800	0.759

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01

This table is robustness check for the major regression models using subsample of after 2003. Other control variables such as GDP per capita, government expenditure over GDP ratio, primary and secondary industry output ratio, population and secretary dummy are controlled in the model. First column is the baseline model, we then consider the effect that provincial secretary is connected to central government or not, we measure the connection from two perspective: whether secretary are politburo membership during their term in Secretary Position (column 2) and ever co-worked with President before (column 3), we add the connection dummy and its interaction term with old interest variable in the model. The last two column considers the effect that if secretary have connections with local region, we explore this by adding dummy variable to identify if secretary is local born (column 4) or locally promoted to secretary (column 5) and its interaction term with od interest variable.

Table 10 The latent effect of local-based secretaries (whether provincial secretary is locally promoted, OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
	log(vice provincial)					
	Local promoted	Excluding local promoted	Interaction term	Local promoted	Excluding local promoted	Interaction term
L.old interest	0.0723**	0.0543	0.0185	0.0538***	0.0546	0.0589
	(0.0272)	(0.0375)	(0.0517)	(0.0179)	(0.0320)	(0.0348)
Local promote sec			-0.0101			-0.1151
			(0.0436)			(0.0832)
L.Old interest*local promoted dummy			0.0545			-0.0102
			(0.0672)			(0.0481)
L.GDP per capita	-0.0414***	-0.0791***	-0.0461***	-0.0245	-0.0683	-0.0461**
	(0.0084)	(0.0250)	(0.0119)	(0.0253)	(0.0420)	(0.0222)
L.Gov. expenditure ratio	-0.0100	-1.0219***	-0.5116*	0.2681	-0.2069	-0.1670
	(0.3596)	(0.3124)	(0.2923)	(0.4001)	(0.3173)	(0.2940)
L.Primary output ratio	0.0242	0.2410	-0.0991	0.1353	0.5030	0.0920
	(0.4344)	(0.5374)	(0.4185)	(0.3157)	(0.6220)	(0.3659)
L.Manufacturing output ratio	-0.9996**	-0.3190	-0.9369**	-0.6439	0.2604	-0.1883
	(0.4735)	(0.4498)	(0.3437)	(0.5209)	(0.5882)	(0.4329)
L.log(population)	-0.0819*	1.2354***	-0.0379	-0.0292	-0.0848	-0.0415
	(0.0467)	(0.4171)	(0.0806)	(0.0426)	(0.6951)	(0.0475)
Constant	4.0486***	-6.7146*	3.7503***	3.4054***	3.4965	3.3646***
	(0.4597)	(3.3695)	(0.6885)	(0.4028)	(5.6736)	(0.4536)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy	No	No	No	Yes	Yes	Yes
Observations	258	211	469	258	211	469
R-sq	0.405	0.464	0.441	0.699	0.721	0.755

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01

Table 11 The Effect of Old interest and information (whether provincial secretary is locally born, OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
	log(vice provincial)					
	Local Secretary	Excluding local secretary	Interaction term	Local Secretary	Excluding local secretary	Interaction term
L.Old interest	0.0399	0.0505**	0.0582**	0.0385	0.0533***	0.0542***
	(0.0547)	(0.0216)	(0.0276)	(0.0452)	(0.0171)	(0.0180)
local born SEC			0.0106			-0.1375***
			(0.0437)			(0.0270)
L.Old interest*sec local dummy			-0.0594			-0.0183
			(0.0716)			(0.0569)
L.GDP per capita	-0.0953	-0.0855***	-0.0464***	0.1264**	-0.0793**	-0.0366*
	(0.0901)	(0.0141)	(0.0116)	(0.0420)	(0.0298)	(0.0205)
L.Primary output ratio	-1.4016	0.0531	-0.5041*	0.6328	0.6056	-0.0646
	(1.1686)	(0.3934)	(0.2880)	(0.7687)	(0.4076)	(0.2828)
L.Manufacturing output ratio	-2.5385**	-0.5467	-0.0178	-0.6784	0.0663	0.2970
	(0.9998)	(0.3435)	(0.4140)	(0.8771)	(0.4222)	(0.3583)
L.log(population)	-0.1750	0.9598***	-0.9084**	0.2048**	0.6468	-0.2342
	(0.1556)	(0.2083)	(0.3385)	(0.0686)	(0.3879)	(0.4068)
L.Gov. expenditure ratio	1.9090	-0.7828***	-0.0310	-1.6937*	-0.1376	-0.0311
	(1.5521)	(0.2147)	(0.0815)	(0.9023)	(0.2657)	(0.0457)
Constant	5.7209***	-4.3905**	3.6593***	1.3507	-2.4684	3.2807***
	(1.5051)	(1.6532)	(0.6840)	(0.7794)	(3.1131)	(0.4236)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy	No	No	No	Yes	Yes	Yes
Observations	74	395	469	74	395	469
R-sq	0.342	0.504	0.439	0.835	0.744	0.760

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01

Table 12 The Effect of Old interest on central government transfer (OLS)

	Y=log(center government fiscal transfer)							
	Old interest		Politburo dummy			Connections with the General Secretary		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Old interest	-0.1660**	-0.1642***		-0.1612**	-0.1393**		-0.1647*	-0.1524**
	(0.0742)	(0.0515)		(0.0783)	(0.0563)		(0.0812)	(0.0628)
Politburo Dummy			0.2094	0.0401	0.2357			
			(0.1258)	(0.0498)	(0.1600)			
L.Old interest*Politburo				-0.0279	-0.2958			
				(0.1377)	(0.2674)			
Connections						0.2220	0.0639	0.2017
						(0.1818)	(0.0679)	(0.1728)
L.Old interest*Connections							0.0011	-0.0220
							(0.1907)	(0.1587)
L.GDP per capita	0.3014***	0.2902***	0.2765***	0.3026***	0.2750***	0.3034***	0.3004***	0.2991***
	(0.0648)	(0.0811)	(0.0859)	(0.0666)	(0.0851)	(0.0784)	(0.0644)	(0.0800)
L.Gov. expenditure ratio	3.7128*	2.1029	1.8411	3.7065*	1.9522	1.8067	3.6340	1.9778
	(2.1634)	(1.4198)	(1.4665)	(2.1686)	(1.3398)	(1.4565)	(2.1796)	(1.3397)
L.revenue per GDP	0.7195	1.8172*	1.5727	0.6863	1.7581	1.5446	0.6160	1.7007
	(1.3629)	(1.0429)	(1.0964)	(1.3483)	(1.0638)	(1.0550)	(1.3492)	(1.0438)
L.Primary output ratio	-10.2218***	-7.4261***	-8.1365***	-10.2160***	-7.6355***	-8.0208***	-10.1876***	-7.4850***
	(1.1635)	(1.2611)	(1.1795)	(1.1647)	(1.1863)	(1.1662)	(1.1309)	(1.1771)
L.Manufacturing output ratio	1.9657*	1.4195	1.1991	1.9520*	1.2074	1.1520	1.9630*	1.2684
	(1.1175)	(0.9482)	(0.9181)	(1.1242)	(0.8674)	(0.8741)	(1.0989)	(0.8067)
L.log(population)	0.4988***	1.6391	1.2937	0.5003***	1.3518	1.2787	0.4991***	1.3542
	(0.1651)	(1.0332)	(0.8700)	(0.1670)	(0.8293)	(0.8760)	(0.1584)	(0.8433)
Constant	1.4938	-8.4232	-5.3741	1.4843	-6.0390	-5.3895	1.4967	-5.9775
	(1.4206)	(8.7156)	(7.2723)	(1.4316)	(6.9316)	(7.3146)	(1.3655)	(7.0019)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy	No	YES	YES	No	YES	YES	No	YES
Observations	484	484	485	484	484	485	484	484
R-sq	0.873	0.958	0.958	0.873	0.959	0.958	0.873	0.958

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01

Table 13 The correlation b/w secretaries' power and SC's age when leaving the office

	Y=Ratio of SC leaving office before 55 years old			
	(1)	(2)	(3)	(4)
Politburo Dummy	-0.0056	-0.0129		
	(0.0194)	(0.0247)		
Connections			-0.0024	-0.0287
			(0.0123)	(0.0206)
L.GDP per capita	0.0136*	0.0200	0.0139*	0.0187
	(0.0079)	(0.0159)	(0.0080)	(0.0143)
L.Gov. expenditure ratio	0.1836**	0.3094	0.1854**	0.3237*
	(0.0767)	(0.1907)	(0.0754)	(0.1841)
L.revenue per GDP	-0.0617	-0.1335	-0.0624	-0.1357
	(0.2685)	(0.3714)	(0.2665)	(0.3716)
L.Primary output ratio	0.2193	0.4809	0.2191	0.4661
	(0.2023)	(0.3516)	(0.2032)	(0.3430)
L.Manufacturing output ratio	0.5842***	0.1196	0.5828***	0.1287
	(0.1672)	(0.3149)	(0.1686)	(0.3239)
L.log(population)	0.0426*	0.1015*	0.0430*	0.1011*
	(0.0235)	(0.0554)	(0.0232)	(0.0531)
Constant	-0.5745**	-0.7821	-0.5782**	-0.7911
	(0.2417)	(0.5276)	(0.2402)	(0.5104)
Prov. Fixed Effect	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes
Secretary dummy	No	Yes	No	Yes
Observations	512	512	512	512
R-sq	0.0845	0.279	0.0844	0.280

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table 14 The effect of senior cadres size on secretaries promotion

	Promotion Dummy							
	Baseline		Excluding local born Sec group	Local born sec group	Excluding connections group	Connections with the General Secretary group	Whole sample (Local born)	Whole sample (Connections)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.log(vice provincial)	0.3072***	0.4540***	0.4263**	0.6999	0.4098**	0.6010	0.4223**	0.4030**
	(0.0970)	(0.1598)	(0.1764)	(0.5473)	(0.1642)	(0.4528)	(0.1783)	(0.1720)
L.GDP per capita	0.0427***	-0.1397**	-0.1419**	-0.4154**	-0.1171**	-0.3883**	-0.1659**	-0.1416**
	(0.0068)	(0.0529)	(0.0669)	(0.1691)	(0.0495)	(0.1370)	(0.0634)	(0.0533)
L.Gov. expenditure ratio	0.3511	0.0695	-0.4786	3.4065	-0.0224	0.8024	-0.2287	0.0851
	(0.3011)	(0.7463)	(0.8716)	(3.4077)	(0.8885)	(1.5599)	(0.7636)	(0.8164)
L.first industry output ratio	0.1065	-0.3728	-1.3814*	1.2828	-0.6189	6.2307*	-0.8758	-0.3279
	(0.2619)	(0.8460)	(0.7606)	(3.3148)	(1.0670)	(3.0065)	(0.7882)	(0.9133)
L.secondary output ratio	-0.3084	0.1951	-0.0456	0.6040	-0.2546	5.0618	0.3315	0.1593
	(0.2090)	(0.7768)	(0.9929)	(3.6512)	(0.8859)	(3.6091)	(0.8031)	(0.7680)
L.log(population)	0.0586***	-0.1670**	-0.1528	-0.6101**	-0.1469*	-0.7536	-0.1887*	-0.1738**
	(0.0174)	(0.0808)	(0.4549)	(0.2289)	(0.0751)	(1.7235)	(0.0939)	(0.0781)
local born SEC							0.1631	
							(1.7950)	
log(vice provincial) *local promoted SEC							0.0697	
							(0.6201)	
Sec Connected with the General Secretary								-0.6481
								(1.2996)
log(vice provincial)* connection w/ General Sec.								0.2223
								(0.4249)
Constant	-1.2989***	0.3178	0.6209	2.7451	0.5775	1.5986	0.6579	0.6641
	(0.4111)	(0.7330)	(3.6105)	(1.9438)	(0.8236)	(12.9948)	(0.8956)	(0.6884)
Prov. Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secretary dummy	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	470	470	396	74	402	68	470	470
R-sq	0.0577	0.369	0.364	0.421	0.388	0.297	0.388	0.371

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table 15: The effect of senior cadres size on secretaries' promotion (Before/After 2003)

	Sec upgrade dummy			
	Before 2003		After 2003	
	(1)	(2)	(3)	(4)
L.log(vice provincial)	0.0790	-0.0291	0.5734***	0.5299**
	(0.0800)	(0.0553)	(0.1852)	(0.2307)
L.GDP per capita	0.0312	0.0595	0.0205	-0.2129*
	(0.0734)	(0.0836)	(0.0365)	(0.1061)
L.Gov. expenditure ratio	0.1961	0.9693	1.3768*	-0.3889
	(0.7099)	(1.2091)	(0.6769)	(1.4765)
L.first industry output ratio	0.5181	1.4654	-0.3569	-2.6361
	(0.9594)	(1.4152)	(1.6128)	(2.8524)
L.secondary output ratio	0.1572	1.4128	-0.2437	0.1035
	(0.7482)	(0.9202)	(0.7147)	(1.4240)
L.log(population)	0.0682	0.0925	0.2014	-0.9209
	(0.1137)	(0.1126)	(0.5913)	(1.3652)
Constant	-0.9806	-1.7059	-3.3230	7.0547
	(1.4164)	(1.5200)	(4.6379)	(10.7089)
Prov. Fixed Effect	Yes	Yes	Yes	Yes
Election Dummy	Yes	Yes	Yes	Yes
Secretary dummy	No	Yes	No	Yes
Observations	234	234	236	236
R-sq	0.0165	0.445	0.0726	0.367

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table A1 The distribution of offices held by SC members in the end of 2013

SC membership	Northeastern	North China	Eastern China	Northwestern	Southwestern	Southern	Minorities	Municipalities
Party secretary	1	1	1	1	1	1	1	1
Vice secretary	2	1.5	1.83	2	1.67	1.8	2.6	2
Governor	1	1	1	1	1	1	1	1
Vice governor	1.33	1.5	1	1.67	1	1	1.4	1.5
Secretaries in Subordinate jurisdictions	2	1.5	2	1	1	2	2.2	1
Director of Disciplinary commission	1	1	1	1	1	1	1	1
Military commissioner	1	1	1	1	1	1	1	1
Chief of staff	1	1	1	1	1	1	0.8	1
United Frontier department	0.3	1	0.5	1	0.6	0.8	0.6	1
Propaganda department	1	1	1	1	0.6	1	1	1
Political and Legal affairs commission	1	1	1.17	1	1	0.8	0.8	1
Organization department	1	1	1	1	1	1	1	1
Others	0.3		0.67	1	2	1.4	0.8	0.75

Table A2 The cases of large scale purge in the standing committee

Province	Year	Secretary name	Old interest	change of old interest
Tianjing	1993	Tan Shaowen	0.2	-0.68889
Shandong	1998	Wu Guanzheng	0.166667	-0.56061
Chongqing	2007	Wang Yang	0.142857	-0.60714
Sichuan	1993	Yang Rudai	0.222222	-0.63492
Guizhou	2007	Shi Zhongyuan	0.285714	-0.61429
Shaanxi	1993	Zhang Boxing	0	-0.57143
Gansu	2002	Song Zhaosu	0	-0.7
Qinghai	1993	Yin Kesheng	0	-0.5
Ningxian	2007	Chen Jianguo	0.090909	-0.53409

Large-scale purge is defined as the ratio of Old interest changed 50% or above from the end of year t-1 to the end of year t.

Table A3 The effect of secretary on old SC member

	(1) Old interest	(2) Old interest	(3) Old interest	(4) Old interest
L.change1	-0.0089 (0.0154)		-0.0084 (0.0161)	-0.0255 (0.0162)
L.sec tenure		0.0013 (0.0028)	0.0011 (0.0030)	0.0007 (0.0020)
L.scage_mean				-0.0122 (0.0076)
L.sec_age				0.0028 (0.0022)
Constant	0.7108*** (0.1475)	1.2904*** (0.1695)	-0.3570 (0.2356)	1.4719*** (0.4235)
Prov. Fixed Effect	Yes	Yes	Yes	Yes
Gov. Change Dummy	Yes	Yes	Yes	Yes
Sec Dummy	Yes	Yes	Yes	Yes
Observations	545	546	545	442
R-sq	0.855	0.856	0.855	0.869

Note: Standard errors clustered at the province level are reported in parentheses; * Significant at 0.1, ** 0.05, *** 0.01.

Table A4 The name of secretaries who also have seat in the Politburo (excluding Beijing and Shanghai)

Year to enter Politburo	Sec. name	province	Sec. starts from
1993	Shaowen Tan	Tianjing	1990
2003	Lichang Zhang	Tianjing	1998
2008	Gaoli Zhang	Tianjing	2008
1993	Chunyun Jiang	Shandong	1988
1998	Guanzheng Wu	Shandong	1998
1998	Changchun Li	He'nan	1993
2003	Zhengsheng Yu	Hubei	2002
1993	Fe Xie	Guangdong	1992
2003	Dejiang Zhang	Guangdong	2003
2008	Yang Wang	Guangdong	2008
2008	Xilai Bo	Chongqing	2008
2003	Lequan Wang	Xinjiang	1995