Political Structure and Balance of Power

Evidence from Mid-level Officials' Promotion in China

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Abstract

In China, the remarkable rapid development over the past four decades has captured significant attention. However, explaining how a considerable number of officials at various levels in China prioritize economic development rather than engaging in widespread corruption or embezzlement of public funds, in the absence of democratic oversight and freedom of speech, remains a perplexing question for scholars. This article attempts to delve into China's unique dual-headed political structure, where each level of administrative institution has two leaders: the Party secretary and the government chief. By analyzing their promotion sequence and checks and balances, the paper seeks to uncover the mechanisms that reduce misreporting and manipulating of economic performance. Focusing on the level of prefecture-level cities, the study finds that Party secretaries of prefecture cities with faster GDP growth have more opportunities for promotion. Moreover, before facing their final promotion chance, these Party secretaries tend to "fabricate" GDP data to increase their prospects for promotion. Similarly, just before their ultimate promotion opportunity, mayors also tend to manipulate GDP data to enhance their chances of promotion. However, due to China's distinct promotion sequence, mayors often have a high likelihood of succeeding the local Party secretary of same prefecture, reducing their incentive to manipulate data. This creates a balance between the Party secretary and the mayor, reducing the occurrence of widespread data fabrication. In summary, the interplay between China's unique political structure and promotion mechanisms appears to contribute to the focus on economic development among officials, while mitigating the prevalence of large-scale data misreporting.

1 Introduction

As we all know, over the past forty years, China's economy has experienced tremendous growth. However, as a non-democratic country, Chinese government differs significantly from many other non-democratic countries. Despite not being immune to corruption and authoritarianism, the Chinese government has maintained a high-speed economic growth for four decades. Numerous studies have focused on this area, researching why the Chinese government remains focused on economic development in the absence of effective oversight, rather than engaging in corruption or directly exploiting the wealth of the people.

One famous study is the "Tournament Model" by Zhou Li'an. According to this model, the central government decides whether to promote the top officials of a province based on the province's economic performance, specifically its GDP growth. While this model has faced some criticism, suggesting that the promotion of officials is influenced more by their relationships with members of the Politburo or their educational background rather than just GDP growth, Jia Ruixue's work explains that after controlling for these variables, speed of GDP growth still influences the promotion of local officials. Therefore, this model at least partially explains why officials in China are motivated to promote economic development.

In fact, the distribution of officials in China's hierarchical system resembles a pyramid, with a very low percentage of officials being eligible for promotion, from middle-level to top-level. As a centralized government, Communist China lacks parliamentary or other institutions that could effectively supervise the government. China's Discipline Inspection Commission mainly focuses on monitoring lower-level governments, and its monitoring capacity for same-level governments is weak, especially before the reform of the Commission into a vertical management system. Konstantin Sonin points out that in some other non-democratic governments, such as Russia, allowing a certain degree of freedom of speech supplements the central government's access to local information. However, in China, all speech is strictly controlled, and the ability of the public or media to supervise government powers, particularly at the prefectural and higher levels, is very weak. While corruption is prevalent at

all levels of the Chinese government, the Chinese economy has still maintained high-speed growth.

In the past, although there have been numerous articles studying China's development, there have been very few articles that focus on the power allocation of Chinese political system. Unlike other countries, the Chinese government has implemented a unique system that resembles dual-headed politics. This paper focuses on the decision making of each player of prefectural officials' promotion and impact of this dual-headed system.

The second part of this paper introduces China's political institutions, the third part covers data collection, categorization, and statistical analysis, the fourth part shows the reduced form emperical results which is the foundation of decision making model, the fifth part formalizes the decision making process of prefectural secretaries, prefectural mayors and higher authorities, the sixth parts test and discusses how the predictions are revealed in the data, and the final part summarizes.

2 Background

2.1 Hierarchy in China

In China, especially before the institutional reforms in 2017, almost all state-owned institutions held administrative ranks. These ranks were standardized from top to bottom and applied across all 31 provinces, municipalities, and autonomous regions within the mainland. This system of ranks wasn't limited to Party and government offices, but also included institutions like schools, hospitals, research organizations, and state-owned enterprises. From primary school principals to university Party secretaries, and from township health clinics to hospital directors in Beijing, all followed the same administrative rank system. This administrative rank system was categorized into five levels, corresponding to China's administrative hierarchy: national level, provincial level, prefecture-level level, county level, and township level. This system of ranks provided a unified structure across various types of institutions. Figure 1 illustrates this hierarchical structure.

Excluding the military, administrative institutions in China primarily operate within four parallel branches: the Party, the National People's Congress (NPC), the government, and

the Chinese People's Political Consultative Conference (CPPCC). Each branch with its own subordinate departments and the lower level of administrative institutions. Typically, the head of a department in the higher-level administrative institution and the chief official of the lower-level administrative institution hold the same administrative rank. For instance, considering the government branch, the head of the Finance Department at provincial level and the mayor of a prefecture-level city hold the same rank. Similarly, using the provincial level as an example, the Party secretary of a province (the head of the Party branch), the Chairman of the NPC (the head of the NPC branch), the Governor (the head of the government branch), and the Chairman of the CPPCC (the head of the CPPCC branch) all hold the same rank, known as the "zhengshengji", or the provincial level. Still focusing on the provincial level, the deputy positions within these four branches, such as Deputy Party Secretary and Deputy Governor, Deputy Chairman of the NPC, and Deputy Chairman of the CPPCC, hold the rank of "fushengji", or the vice provincial level. Figure 2 and Figure 3 illustrate the positions within the Party branch and the Government branch at various levels.

At the legal level, the heads of departments under these four branches hold the same rank, just like the Party Secretary, NPC Chairman, Governor, and CPPCC Chairman of the lower-level administrative institution. However, it's important to note that the Party leaders at the corresponding rank, while their administrative rank might match that of other administrative branch leaders, always hold a higher political status. In practice, Party department heads often concurrently hold the position of standing member of Party committee, granting them a higher rank even than regular deputy officials in the government. For example, the head of the Organization Department of the Provincial Party Committee typically also serves as a standing member of the Provincial Party Committee, which comes with greater political privileges than regular Deputy Governors.

While Party department head ranks surpass those of their counterparts in the Government, such as the head of the Organization Department of the Provincial Party Committee having a higher rank than the head of the Financial Department of the provincial Government, the Party secretary and the Governor usually hold the same rank at the provincial level. Similarly, in most cases at the prefecture city level, the Party secretary and the mayor also hold the same rank, known as the "zhengtingji", or the prefectural level. Theoretically,

the Party secretary is responsible for Party affairs and cadre selection, while the mayor tends to focus more on economic activities. However, given the Party's comprehensive control, particularly over administrative institutions at the prefecture-level city or lower, this distinction might not be very pronounced in practice.

Similarly, for a province, the heads of the NPC and the CPPCC also hold the same rank as the Party Secretary and the Governor. However, their powers differ significantly. The Party and the Government hold real decision-making authority, while the NPC and the CPPCC, especially at the provincial and lower levels, often serve as preparatory institutions for retiring officials—what is often referred to as "second-tier" organizations. While the NPC theoretically resembles parliamentary systems in democratic countries with legislative powers, in China, the NPC functions more like a rubber stamp. The political status of the CPPCC is even lower than that of the NPC. It's a unique manifestation of China's united front with non-Communist parties and individuals, as China has eight democratic parties alongside the Communist Party. These democratic parties operate under the leadership of the Communist Party, and their leaders are also integrated into the NPC and the CPPCC. The primary role of the CPPCC is advisory, providing suggestions to the Communist Party and the Government, and its actual influence is smaller than that of the NPC. Consequently, for officials, transitioning from the Party or the Government to the NPC or the CPPCC usually signifies the end of their political careers and prepares them for retirement. However, since the NPC and the CPPCC hold the same rank as the corresponding Party committees and governments, Deputy Chairs of the NPC and Deputy Chairs of the CPPCC often become ideal positions for rewarding retiring officials.

In this article, we focus on prefecture-level cities, which is below the provincial level and above the county level. In China, prefecture-level cities hold a unique status. Legally, they don't even exist; they're designated institutions of provincial-level Party committees and governments. However, this intermediary tier between the province and the county level has a longstanding history and has become an established administrative level. There are four direct-administered municipalities in China—Beijing, Shanghai, Tianjin, and Chongqing—each having the administrative status of a province. Aside from these four cities, there are 15 cities that hold a vice-provincial-level. Their Party Secretaries and Mayors are vice-provincial-level

officials. Additionally, all provincial capitals are special prefecture-level cities because the Party Secretary of these capitals is customarily held by a standing member of the Provincial Party Committee, also making them vice-provincial-level officials. Many mayors of these capital city also have experience as Party Secretaries in other prefecture-level cities within the province. Unlike ordinary Mayors of prefecture-level cities, these Mayors of provincial capital have opportunities for promotion to vice-provincial-level officials directly. Finally, there are some important cities. The most notable example is Suzhou in Jiangsu Province. The Party Secretary of Suzhou is typically also a standing member of the Provincial Party Committee. In fact, most of these secretaries of provincial capital cities and important cities also serve as alternate member of Central Committee, which distinguishes them from normal secretaries significantly. In this article, we won't discuss the promotion and economic performance of Party Secretaries and Mayors in these cities. Additionally, the concept of "prefecture-level city" that we're discussing doesn't include these mentioned special cities. Figure4 illustrates the different administrative tiers of cities.

2.2 Why prefectural level

In China, there are a total of 333 prefecture-level administrative divisions, among which 293 are prefecture-level cities, excluding border regions and a few ethnic autonomous areas. There is a significant disparity in population among prefecture-level cities, ranging from a few hundred thousand (Sansha City with a population of only 3,000 is usually not considered at a real prefecture-level city) to over ten million. Typically, a typical prefecture-level city's population is in the millions, ranging from 1 million to 8 million. The differences in the territorial jurisdiction of different prefecture-level cities are similarly substantial. Even without considering cities like Sansha, the smallest prefecture-level city has an area of 1,440 square kilometers, while the largest one covers over 370,000 square kilometers (not including ethnic minority prefectural level autonomous districts). The economic volume and development of each prefecture-level city also exhibit significant variations. Even when excluding border areas, ethnic minority regions, provincial capitals, and economically important cities in various provinces, there are still strong differences between different prefecture-level cities. Prefectural secretaries are usually promoted within province, which means secretaries are compete

with their peers in the same province. After excluding the capital city and important prefecture that secretaries are customarily held by a standing member of the Provincial Party Committee, compare to provinces, prefecture cities in same province, excluded Xinjiang and Xizang(Tibet), are less heterogeneous.

The primary focus of this article is the Party Secretaries and Mayors of various prefecture-level cities. They are prefectural level officials. Although nominally they are regarded as middle-level officials of China, they are not real middle-class. In China, officials at or above the vice-provincial level are considered senior officials. In Xi Jinping's anti-corruption campaign, corrupt officials at or above the vice-provincial level were referred to as "tigers," while officials at or below the prefectural level were called "flies." Therefore, for officials at the prefectural level, the temptation to be promoted to vice-provincial level, particularly to powerful positions, is substantial. In China, there are about 2,000 officials with vice-provincial level, while there are about 10,000 officials with full prefectural level. China's total civil service population is around 7 million, with around 90 million people working in institutions with administrative ranks (such as public schools or hospitals). As the most influential officials at the prefectural level, Party Secretaries and Mayors represent the top 0.1% of Chinese officials, which means they are elite of the society, and we could gather detailed data of working experience, education background, promotion date and other important information from public report and official resume.

In China, it's a common practice for the Party Secretary of a province and the provincial governor to be appointed from different regions. They cannot be officials who are native to the province or have worked in the province for an extended period, although the provincial governor can be promoted to the position of Party Secretary within the same province. On the other hand, the Party Secretaries and mayors of prefecture-level cities are typically officials under provincial organization department, often promoted from within the province, and rarely appointed from other provinces. Therefore, in comparison to the connections between provincial-level officials, and members of the Central Political Bureau, it's challenging for the Party Secretary and governor of a province to have hometown connections or previous working relationships with Party Secretaries and mayors of prefecture-level cities within the same province. As a result, the political connections between the Party Secretary and gov-

ernor of a province and the Party Secretaries and mayors of prefecture-level cities within the province tend to be more distant. Compared to promotion of Provincial Party Secretaries and governors, promotion of Party Secretaries and mayors of prefecture-level cities within the same province are less influenced by political connection.

2.3 Unique dual-head system in China

In the usual promotion sequence, becoming a Party Secretary is often the final step to being promoted to vice-provincial level. Therefore, this promotion opportunity is particularly enticing for these Party Secretaries. Conversely, becoming a mayor often requires first becoming a Party Secretary before having a chance to be promoted to vice-provincial level. Therefore, if pursuing the promotion to Party Secretary doesn't lead to the opportunity to be promoted to vice-provincial level due to age factors, the motivation to pursue this promotion might be significantly diminished.

For the prefecture-level administrative tier, while the political status of a Party Secretary is higher than that of a mayor, when neither holds concurrent positions in superior institutions, their administrative ranks are the same. They both hold the position of member of the Provincial Party Committee, which means they have the qualification to report upwards and participate in various meetings. However, a mayor concurrently holds the position of Deputy Party Secretary, which means, within the Party's organizational system, the mayor is still subordinate to the Party Secretary. Furthermore, a Party Secretary can be directly promoted to vice-provincial level positions, whether it's influential positions like a standing member of the Provincial Party Committee or a Vice Governor, or rank-based promotions like Deputy Chairman of the Provincial People's Congress or Deputy Chairman of the Provincial CPPCC. In contrast, mayors of prefecture-level cities have very limited chances to be directly promoted to vice-provincial level positions. In fact, for most mayors, becoming a Party Secretary is the necessary path to eventually being promoted to a vice-provincial level position. In summary, for grassroots Chinese officials, whether they start in Party committees or government institutions, they usually need to alternate between Party and government positions to secure promotions. A typical promotion trajectory could be County Mayor, County Party Secretary, Deputy Prefecture Mayor, Deputy Prefectural Party Secretary, Prefecture Mayor,

Prefectural Party Secretary, Vice Governor, Deputy Secretary Provincial Party Committee, Governor, Provincial Party Secretary.

Therefore, this is a unique dual-headed political model, unlike the administrative models commonly seen in other countries. In the United States, for instance, lower-level governments are not accountable to higher-level governments; they are only accountable to their own voters. Moreover, taking the example of the federal government, the Speaker of the House of Representatives in the U.S. usually doesn't ascend to the presidency, and retiring Vice Presidents don't typically transition to becoming Speakers of the House. There is no hierarchical promotion relationship between the executive and legislative branches. In India, although the civil servant system (IAS) and the elected official system are somewhat similar in terms of a dual-headed system, officials in these systems have limited interaction, and there is no sequential promotion relationship between them. When comparing to other non-democratic countries, a prominent example of a dual-headed system is Iran. However, to some extent, Iran shares similarities with India. The interaction between Iran's religious clergy system and government officials is not very frequent. Among other socialist countries, China's system remains highly unique. Former Soviet Union and Cuba also had similar dual-headed systems, but their dual-headed systems resemble those of India or Iran with infrequent interactions between different systems. For example, in the former Soviet Union, if an official originated from the government system, the ideal promotion trajectory would be Mayor, Provincial Government Minister, Deputy Chairman of the Provincial Minister Conference, Chairman of the Provincial Minister Conference, Minister in the Central Government. To provide a specific example, Leonid Brezhnev mostly worked within the Party system throughout his life, while Alexei Kosygin worked predominantly in government departments.

Among the existing socialist countries, Vietnam's promotion trajectory is the most similar to China's. In Vietnam, the provincial People's Committee functions as the government, and the Chairman of the provincial People's Committee corresponds to China's provincial Governor. Like China, it's a common phenomenon in Vietnam for Governors to be promoted to provincial Party Committee Secretaries. However, unlike China, there's a significant difference in political status between provincial Party Committee Secretaries and Governors in Vietnam. Among the members of the 13th Central Committee of the Communist Party of

Vietnam, almost all the serving provincial Party Committee Secretaries are elected as central committee member, but there are very few governors elected as central committee members. In contrast, in China, both serving provincial Party Secretaries and Governors are inevitable central committee members. For a province, both the prefectural Party secretary and Mayor are inevitable members of the provincial Party committee. Thus, compared to Vietnam, the government leaders at various levels in China have relatively greater autonomy and more comparable political rights to their counterparts in the Party. In this article, we attempt to explain China's economic data based on this unique set up. Ultimately, this helps us to understand why superior governments are able to obtain authentic economic data within such power distribution and incentives officials to promote economic development through rewarding those who excel in economic performance.

3 Data

3.1 Data component

As mentioned earlier in this article, our research focuses exclusively on ordinary prefecture-level cities, excluding directly-administered municipalities, deputy provincial-level cities, important cities where the Party secretary is concurrently held by standing member of provincial party committee, deputy prefecture-level cities, and county-level cities. Additionally, due to data limitations and the unique characteristics of border regions, this study does not include minority autonomous cities or cities in Xinjiang, Tibet, and other similar areas. Finally, all prefecture-level cities considered in this article are from mainland China, and do not include Hong Kong, Macau, and Taiwan.

The data used in this article primarily consists of four main parts:

1. The first part includes panel data for each prefecture-level city for each year. This data is sourced from official government-published statistical yearbooks for each year. It includes city population, birth rate, death rate, total GDP, GDP growth rate, GDP per capita, industrial proportion, agricultural proportion, investment amount, fiscal budget revenue, and more.

2. The second part consists of VIIRS nighttime light data used to cross-reference with

GDP data from official statistical yearbooks published by prefecture governments. This study covers nighttime light data for the years from 2010 to 2013.

3. The third part includes GDP growth target set by the central government and provincial government at the beginning of each year. These data collected from the annual central government work report and annual government work report of each provinces.

4. The fourth part includes the profiles of the prefectural Party secretaries and mayors for each year. If there are multiple Party secretaries or mayors within a year, those with a tenure exceeding 6 months are considered. If no Party secretary or mayor holds the position for more than 6 months, the position is considered vacant. The original data for Party secretaries and mayors primarily come from official published resumes. In cases where official resumes are incomplete, they are supplemented with information from publicly available official news reports. The original data of resume is presented in textual narratives, including ethnicity, official education, and tenure periods. I have compiled and organized the data, using numerical variables to record each official's political career experiences. For instance, whether they have worked in the central government, their highest administrative position held during central institution service, whether they have worked in the Communist Youth League, their highest administrative position held during Youth League service, whether they have served as a senior cadre's secretary, and their highest administrative position held during such service, and so on. I have also recorded the officials' work experience in government positions prior to their current roles as Party secretary or mayor. Correspondingly, I have similarly recorded the officials' work experience in Party positions prior to their current roles. I have also tracked whether each Party secretary was promoted from the position of prefecture mayor, and whether each mayor was subsequently promoted to the position of Party secretary. The officials' careers are tracked prior to their roles as Party secretary or mayor.

I have also documented whether they eventually received a promotion to the rank of deputy provincial-level cadre or higher, and the timing of their promotion to deputy provincial-level cadre. I have also tracked whether each official faced prosecution due to corruption. The data about promotion and punishment are updated until the end of 2022.

Additionally, I have attempted to reconstruct the true education level of each Party

secretary and mayor. Previous research indicates that education level has significantly impact on official's potential promotion. However, past studies did not differentiate between officials' first degrees, full-time degrees, and their officially highest degrees. In China, the first degree refers to the degree obtained after taking the national college entrance exam and entering a university. If an individual did not participate in the national college entrance exam, their first degree is the highest full-time degree they obtained. The full-time degree refers to the highest education level achieved through regular academic study. The officially highest degree, on the other hand, includes in-service/part time degrees obtained from Party schools, as well as distance learning degrees. In reality, such degrees are relatively easy for officials to obtain. For senior officials, obtaining an part-time degree from a university in their primary jurisdiction or affiliated with their province does not necessarily involve academic study. All the data of officials used in this paper collected and organized by myself from published resume and news reports.

3.2 Statistic summary

In my database, I have recorded a total of 536 Party secretaries. The average age of these Party secretaries first serve as secretaries was 50.8 years old. Figure 5 displays the age distribution of these Party secretaries at the time they first assumed the position of prefectural Party secretary. On average, these Party secretaries served for 3.83 years. Among them, 62% were eventually promoted to the rank of deputy provincial-level cadre, and 33% of them were promoted to deputy provincial-level positions with real authority. If we focus solely on those Party secretaries who were able to achieve positions of deputy provincial-level authority, we find that their average tenure was 3.37 years. For those who were promoted to deputy provincial-level positions in NPC or CPPCC, the average tenure was 4.83 years.

Figure 6 depicts the distribution of years of service as prefectural Party secretary who were promoted to powerful vice provincial-level positions. From the graph, it can be observed that Party secretaries who aspired to further promotions typically needed to serve in their roles for at least one to two years.

23% of these Party secretaries were sentenced due to corruption. In the database, there are a total of 586 pairs of Party secretaries and prefectures, as some Party secretaries have

served in multiple prefectures. Among these pairs, 79.7% of Party secretaries had previous work as a mayor before assuming the position of Party secretary. Additionally, 48.5% of Party secretaries were promoted to the position of Party secretary from the mayor of the same city. Among them, 5.6% of Party secretaries were investigated for corruption during their tenure and were ultimately sentenced.

Considering the time, we have recorded a total of 1406 combinations of Party secretaries and prefectures at each year. Figure 7 displays the age distribution of Party secretaries during their tenure. The average age of Party secretaries in office is 52.8 years old.

In my database, a total of 583 mayors are recorded. The average age of these mayors when they first took office is 48.8 years old. Figure 8 displays the age distribution of mayors when they assume the position of mayor for the first time. The average tenure of mayors is 3.33 years, among whom 62.6% eventually get promoted to the position of Party secretary, and 36.7% of mayors are directly promoted to become Party secretaries of same city. Normally mayors need to serve as mayor for at least 2 years to succeed as secretary. 38.9% of mayors are eventually promoted to the rank of vice provincial-level cadre or above. If we focus on those mayors who are promoted to the vice provincial-level or above, we find that 80.2% of them have experience as Party secretaries. 20.3% of these mayors are sentenced due to corruption.

In the database, there are a total of 586 pairs of mayors and prefectures, as some mayors have served in multiple prefectures. Among them, 2.1% of mayors are investigated and eventually sentenced due to corruption during their tenure.

In the end, combining all the data over time, we have a total of 1394 mayor-year pairs recorded. Figure 9 illustrates the age distribution of mayors during their tenure. The average age of mayors during their tenure is 50.3 years old. Figure 10 shows the age of mayors when they transition from being mayors to becoming Party secretaries. The average age at this transition is 52.2 years old.

3.3 Age constraint of promotion and retirement

Although the legal retirement age for Party secretaries below vice provincial-level is 60 years old, in reality, the opportunity for Party secretaries to get promoted to the position of vice

provincial-level cadres with real power ceases at the age of 56. In fact, the Chinese government didn't publish the official deadline for promotion of each level and many previous literature about age constraint of promotion, such as Kou and Tsai (2014), are misleading. Since I have collected the exact month when the prefectural party secretary was promoted to the deputy provincial-level cadre position, I can derive conclusions directly from the data instead of non-official reports. I find only a very few Party secretaries, especially some from minority ethnic groups, have the chance to be promoted to the position of vice provincial governor or standing member of the provincial Party Committee after the age of 57. Figure 11 illustrates the age distribution of Party secretaries when they are promoted to the positions of vice provincial governor or provincial standing member of provincial Party Committee. It's quite evident that there is a distinct break-point at the age of 56.

Similar to Party secretaries, although the legal retirement age for mayors is 60 years old, the practical opportunity for mayors to be promoted to Party secretaries ceases around the age of 57. Only a very few mayors have the chance to be promoted to Party secretaries after age of 57. For mayors, what's more crucial is whether they have the chance for further promotion after transitioning to Party secretaries. As mentioned earlier, if a Party secretary wishes to be promoted to a vice provincial-level position, they must have served as a Party secretary for at least one year. Therefore, for mayors, if they aim to retain the possibility of being promoted to powerful vice provincial-level positions, they must become Party secretaries by the age of 54 or earlier. Figure 12 displays the age distribution of all prefectural party secretaries who had experience as a mayor and ultimately promoted to powerful vice provincial-level positions when they were promoted from being a mayor to a party secretary. It's evident that there are distinct breakpoints around the age of 54.

4 Reduced Form Empirical Results

4.1 Which position need better GDP performance

In the previous research on the promotion mechanism of Chinese officials, there are many factors that can influence promotions, including but not limited to, relationships with higher-level governments (Liu 2022), education background, and in-service economic performance,

such as GDP growth rate. Luo (Luo 2021) pointed out that the promotion of prefectural Party secretaries is related to GDP growth rate, while the promotion of mayors is not significantly correlated with GDP growth rate. However, he did not control for officials' career experiences. We re-examined the correlation between promotion and GDP performance. Additionally, since GDP data for the previous year is usually published in March of the following year or later, using the GDP data for the current year to infer its influence on the probability of promotion in the same year is highly inappropriate. As I collected precise promotion dates for all officials down to the month, the promotion periods do not need to be divided by calendar years. Considering that GDP data for each year is typically published in March of the following year, I believe that the GDP data for each year affects the probability of promotion within the 12 months from the April of the following year to the March of third year. I run the following regression:

$$\begin{aligned} Promotion_{ict} = a + bGDPgrowth_{ct} + cSecExperience_{it} + dSec_{it} \\ + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{1}$$

On the left side, the variable is the dummy of promotion result for Secretary i of prefecture city c, with next 12 month after government publish the GDP information of year t. I set four values for the dummy, 0 for not get promotion, including retirement, transfer to other prefecture level position and get punishment, 1 for get promoted to NPC or CPPCC, 2 for get promoted to vice governor and 3 for get promoted to standing member of provincial party committee. On the right side, the first variable, a, is the constant, the second variable captures the GDP growth rate of prefecture city c at year t, the third variable is a control variable captures the experience of secretary i at year t, such as experience as mayor or youth league, the forth variable is another control variable captures the character of secretary i at year t, such as gender or age, the fifth variable is the statistical data of prefecture city c at year t, such as population and total GDP, and the rest are prefecture city fixed effect, year fixed effect and error term.

I found that the positive correlation between promotion and GDP performance, as demonstrated in previous research, does indeed exist. Then, we redefined the "promotion" variable as a binary dummy variable (0/1), where 1 represents promotion, including promotion to

NPC or CPPCC, vice governor, or standing member of provincial party committee. 0 represents not receiving any promotion. Results are shown in Table 1. We also tested the probit model, and the results were consistent. However, due to the distinct pathways of promotion for secretaries, such as the promotion to real powerful vice-provincial level officials (vice-governor or standing committee member) versus promotion to NPC or CPPCC, we aimed to clarify which type of promotion was driving the results.

First, I retained only those secretaries who did not receive a promotion and those who were promoted to NPC or CPPCC. Then, I run the following regression:

$$\begin{aligned} Level\_Promotion_{ict} = a + bGDPgrowth_{ct} + cSecExperience_{it} \\ + dSec_{it} + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{2}$$

On the left side, the dependent variable as a binary dummy variable (0/1), where 1 represents promotion to NPC or CPPCC and 0 represents not receiving any promotion. On the right side, the independent variables are the same with regression (1). The results are shown in Table 2. Clearly, GDP growth rate no longer significantly affects the promotion to NPC or CPPCC, in contrast to the previous findings. Instead, the length of tenure as a secretary has a greater impact on the probability of being promoted to vice chairman of the People's Congress or the Political Consultative Conference. In fact, this type of promotion that becoming a vice chairman of NPC or CPPCC seems more like a consolation prize for secretaries who have served for many years in various places, and have neither outstanding performance nor significant misconduct.

Next, I focused on those secretaries who promoted to vice-provincial level positions with real power. I run the following regression:

$$\begin{aligned} Real\_Promotion_{ict} = a + bGDPgrowth_{ct} + cSecExperience_{it} \\ + dSec_{it} + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{3}$$

On left side, I once again defined a binary promotion variable (0/1), where 0 indicates no promotion to a real power vice-provincial level position, including retirement, transfer to other prefecture level position and get punishment and get promoted to NPC or CPPCC,

and 1 indicates promotion to vice governor or standing committee member. On the right side, the independent variables are the same with Regression 1. The results are shown in Table 3. I discovered a clear correlation between GDP growth rate and the probability of promotion to vice governor or standing committee member. I also tested the probit model, and the results were stable.

4.2 Which year of GDP performance matter

I test the influence of GDP performance of previous years. I rerun the regression 3, but changes the independent variable GDP growth of year t. I use two different measurements of GDP performance as independent variable: the average of GDP performance of two years before promotion decision, which is at year t and year t-1, and the average of GDP performance of secretaries' tenure. Compare to use the GDP performance at year t as independent variable, the magnitude and significance of coefficient b decreases from using average of year t and year t-1, and further decreases from using tenure average. I further test the influence of GDP performance of year t-1, and there's no significant correlation between promotion decision in next 12 months of year t and GDP performance of year t-1. In all the aforementioned regressions, our promotion data were based on promotions occurring within 12 months after the release of GDP data for the respective prefecture at year t. Now, I use promotion decision and GDP performance data from the same year, the relationship between GDP performance and promotion would significantly weaken, or even disappear. Results are shown in Table 4.

Therefore, I believe that the GDP performance in the year prior to the promotion decision has a much greater impact on whether a promotion is granted than the GDP performance in the preceding years.

4.3 GDP performance and promotion of mayor

I also tested the impact of GDP performance on the promotion of mayors but did not find stable results. I run the following regression:

$$\begin{aligned} Promotion_{ict} = a + bGDPgrowth_{ct} + cMayorExperience_{it} + dMayor_{it} \\ + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{4}$$

On the left side, the variable is the dummy of promotion result for Mayor i of prefecture city c, with next 12 month after government publish the GDP information of year t. I set four values for the dummy, 0 for not get promotion, including retirement, transfer to other prefecture level city as mayor, transfer to prefecture level institutions such as provincially-owned key enterprises or universities as secretary or executive leader, or get punishment, 1 for get promoted to be director of a "normal" department of provincial government, such as director of department of commerce and department of education (not including directors of department that are usually held concurrently by the vice governor, such as department of police), or to be executive vice director of a department of the provincial party committee (the director of such department held concurrently by the standing member of provincial party committee), such as the executive vice director of provincial organization department. 2 for get promoted to party secretary of any prefecture cities and 3 for get promoted to any vice provincial positions. Results are shown in Table 5.

I rerun the Regression 4, however, I once defined a binary promotion variable (0/1), where 1 indicates promotion to secretary position or vice provincial level position, 0 otherwise. On the right side, the independent variables are the same with Regression (1), the results are shown in Table 6. I also tested the probit model, and the results were stable.

One conceivable reason is that half of the mayors are promoted to become secretaries of their own cities. Therefore, to some extent, the tenure of secretaries determines the timing of mayors transitioning to become secretaries. Moreover, the promotion of secretaries to real powerful vice-provincial level positions based on excellent GDP performance is limited and more secretary positions are left vacant because the secretary is promoted to non-substantive deputy provincial-level positions unrelated to economic performance or because the secretary steps back to the second line due to age concerns, allowing the mayor to take over. As a result, there might be a lack of strong connection between GDP performance and the promotion of mayors.

Based on these findings, combined with our previous discovery of promotion breakpoints, we can draw the following conclusions: GDP performance of each year primarily affects the chances of secretaries being promoted to powerful vice-provincial positions next year before

the age of 56, for secretaries aged 57 to 60, the assistance in promotion to the NPC and CPPCC is minimal, and for mayors, the influence on promotion to secretaries is limited.

5 Model

5.1 Model foundation

In Section 2, I explained that in China both of the Prefecture Secretary of a normal prefecture-level city and the Mayor of a normal prefecture-level city hold the rank of prefecture level. However, the Prefecture Secretary is typically the final step in the promotion process before becoming a deputy provincial-level official. In contrast, only 6 mayors promoted to a deputy provincial-level position directly, among 611 mayor-prefecture pairs (583 mayors) in our dataset. If mayors wish to be promoted to deputy provincial-level officials, promotion to Secretary is the most direct route that over 80% mayors finally got promoted to vice-provincial level get promoted as Prefecture Secretary first.

In Section 3, I showed even though the official retirement age for prefecture-level officials is 60 years old, but in practice, most Prefecture Secretaries and Mayors do not stay in their positions until retirement. More importantly, from previous data analysis, we could find that, for Prefecture Party Secretaries, the latest age to be promoted to powerful deputy provincial-level positions, such as Deputy Provincial Governor or Provincial Standing Committee member, is 56 years old. Therefore, if a Prefecture Party Secretary wishes to impress the higher-level authorities with their economic growth performance, the latest time should be at the age of 55, as GDP statistics are usually completed and reported on February or March of next year.

In Section 4, I showed the reduced form empirical result that Prefecture Party Secretaries with better economic performance are more likely to be promoted to powerful deputy provincial-level positions. However, there is no significant correlation between a Prefecture Mayor's promotion to Secretary and economic growth. Similarly, there is no significant correlation between a Prefecture Party Secretary's promotion to positions with deputy provincial-level privileges, such as Deputy Chairman of the Provincial People's Congress or Deputy Chairman of the Provincial Committee of the Chinese People's Political Consultative Con-

ference, and economic growth. Since Prefecture Party Secretaries typically hold the position for 3-4 years, and the initial economic performance largely depends on the policy effects left by their predecessors, our data demonstrates that the promotion of Prefecture Party Secretaries is most strongly related to economic performance in the year preceding their promotion and, to a lesser extent, the average performance in the two years prior, but not to their economic performance at the beginning of their tenure.

For a Prefecture Party Secretary, promotion to a powerful deputy provincial-level position carries significant benefits. Firstly, compared to the official retirement age of 60 for prefecture-level officials but normally could only hold the powerful position until 57 to 58, deputy provincial-level officials can usually hold the powerful positions until the age of 60, and continue hold a second-line position such as vice chairman of provincial NPC or CPPCC until 63, thereby extending their political life and increasing political and living benefits every year thereafter. Secondly, promotion to a deputy provincial-level position provides further opportunities for advancement. Finally, promotion to a deputy provincial-level position offers additional retirement benefits and privileges. Therefore, promotion to an influential deputy provincial-level position is highly attractive for Prefecture Party Secretaries. In fact, this is also the motivation for Mayors to aspire to become Prefecture Party Secretaries even though Mayors and Secretaries are officials at the same rank, with similar benefits.

The selection and appointment of deputy provincial-level officials in a province are the result of discussions between the Provincial Standing Committee of Party and the Central Organization Department. The promotion of a Prefecture Secretary to the position of Deputy Provincial Governor or Provincial Standing Committee member is usually an internal promotion within the province. Here, we do not specifically distinguish between the roles of Provincial Standing Committee and the Central Organization Department; we collectively refer to them as higher-level authorities. Compare to promotion of provincial officials or county-level officials, the connection between higher-level authorities and prefecture officials are less influenced by political connection or personal connection.

5.2 Model setup

In this section, we construct a theoretical model based on the standard career concern model (Holmström 1982) and a decision making model to maximize life time expected utility, to explain the decision-making process and outcomes of three important players in the promotion process of prefecture-level officials in China: the Prefecture Party Secretary, the Mayor, and the higher-level authorities. The model are testable by empirical method based on our data.

First, we assume that the higher-level authorities simply want to identify the most capable officials and all the utility from this promotion process are derive from promoting capable Prefecture Party Secretaries. The higher-level authorities cannot directly observe the abilities of the Prefecture Party Secretaries but can observe the GDP growth rate reported by each Secretary each year.

For Prefecture Party Secretaries, the GDP growth rate they reported, at age "t" consists of three components.

$$GDPgrowth_{it} = a_i + m_{it} + \eta_{it} \tag{5}$$

On the right side, the first part is their ability, denoted as a_i, and the last part is the economic fluctuations, denoted as η_{it}, with expected value equal to zero. Both of these two parts are objective and beyond secretary's control. The middle part is the difference between the GDP growth a secretary choose to report and the sum of previous two parts, denoted as m_{it}. Here t is the age at the end of current year, and we have t=n+t_0, t_0 as the age of secretary assigned as secretary and "n" as the difference between current year and t_0, which mean the n^{th} year as secretary could determine m.

Here m represents the GDP growth achieved through illegal or short-term means at the expense of the prefecture's future development. This may include but is not limited to excessive auctions of state-owned land to raise funds to increase investment to boost economic growth, negotiations with local companies to obtain advance tax payments in exchange for future tax exemptions, tacit approval of environmental violations or illegal construction by companies, and direct falsification of economic data, among other actions. Such behavior can

boost GDP growth for the current year but harm future economic development. Moreover, due to the existence of audits and reporting mechanisms, it may be discovered by the higher-level authorities, leading to disciplinary action against the Prefecture Party Secretary and the loss of promotion opportunities or even their position.

5.3 Utility function of Secretaries

I assume that before the start of each year, the higher-level authorities will receive each Prefecture Party Secretaries' economic growth report of previous year and decided who to promote. Each prefecture Party Secretary learn about promotion status at the beginning of each year. For given secretary i, if she fails to get promoted and have not reached actual retirement age at the end of this year t, she chooses m_{it} during the year t based on η_{it}, and then report $GDPgrowth_{it}$ to higher-level authorities.

For Prefecture Party Secretaries, each year they have probability of being promoted to a deputy provincial-level position in the following year. As mentioned earlier, the probability of promotion is related to economic performance, which in turn is directly related to their ability.

Since at the beginning of each year, the central government sets economic growth targets for each province. Therefore, the provincial party committee and provincial government establish a target for their jurisdiction that is typically equal to or higher than the national requirement. In majority cases (992/1372), the GDP growth rates reported by the cities will meet this target, since falling short of the target implies incompetence and significant political risks. Furthermore, I found there are 131 secretaries got real promotion and only 7 of them failed to meet both of the requirement from central government and provincial government. In fact among these 7 secretaries, 3 of them from provinces that no secretaries fulfill both of national requirement and provincial requirement at that year, which means it's very rare to get a real promotion without fulfill national and provincial requirement of GDP growth. From the Data, I found the density of GDP growth report is single peak and the peak location is slight higher than province requirement, showed by Figure 13. Since the density is decreasing after fulfill the requirements, for each extra unit of GDP growth given secretary reported, she will surpass less and less peers after fulfill the requirements and pass

the peak of provincial requirement.

In conclusion, I assume that the probability of promotion, denoted as $p(g)$ with $p'(g) > 0$ and $p''(g) < 0$ if $p(g) > 0$.

Here, we assume that Prefecture Party Secretaries are risk-neutral, so their utility function consists of a Bayesian utility function. If the secretaries' age still qualified for promotion before the start of next year, which is at the end of next year, $t <= 56$, the utility function of given year includes four components each year:

First is the basic utility of serving as a Prefecture Party Secretary, denoted as U_s.

Second, if they are promoted at the beginning of current year due to their GDP performance from the previous year, they receive additional utility as a deputy provincial-level official, denoted as U_e.

Third, if they are promoted at the beginning of current year due to their GDP performance from the previous year, they will expect to receive additional retirement utility, denoted as U_r, and utility from extending political life (3 years in most cases) as a deputy provincial-level official.

Fourth, if they don't get promoted in beginning of the current year, they incur a cost for the year based on the choice of m_t they made at the end of current year, and m_{t-1} from the previous year, denoted as $C_t(m_{t-1}, m_t)$.

As mentioned earlier, one of the primary methods to accelerate GDP growth in the short term is to increase government investment, which relies on raising more funds through various channels.The main methods for raising funds are through borrowing and land transfer fees. When the government issues bonds through urban investment groups or other economic entities, a higher debt ratio will correspondingly increase the cost of financing. Similarly, putting more land up for auction increases the supply of land and lowers the unit price of land. Both of these factors make fund raising an increasingly challenging process. Therefore, we assume C_{m_{t-1},m_t} is a convex function with weighted m_{t-1} and m_t.

In conclusion, the utility function of each secretary at year t is:

$$U_{t_0+1} = U_s - C_{t_0+1}(m_{t_0}, m_{t_0+1}) \tag{6}$$

$$\text{if } t = t_0 + 1$$

$$U_{t_0+n} = U_s + U_e - \{\prod_{t=t_0+2}^{t_0+n}[1 - p_t(g_{t-1})]\} * [U_e + C_{t_0+n}(m_{t_0+n-1}, m_{t_0+n})] \tag{7}$$

$$\text{if } t_0 + 1 < t < 56$$

$$U_{56} = \{1 - \prod_{t=t_0+2}^{56}[1 - p_t(g_{t-1})]\} * U_f \tag{8}$$

$$\text{if } t = 56$$

Here we assure secretary assigned as secretary for a given prefecture at age t_0. Since many policies may have been determined by previous secretary so we assume there's m_0 as given. Except that, as this is not a full year, so we call this year as year 0 as secretary, and normalize the utility and cost from this year 0 equal to 0. Furthermore, it's very rare for secretaries getting promotion within a year after being assigned, we assume the probability of promotion of next year is 0.

Function (6) captures the total utility of year 1 as secretary, it only have two components, the basic utility as secretary and the cost from m, since probability of promotion at the beginning of year 1 is 0.

Function (7) captures the total utility of year n as secretary, the first two components capture the utility as powerful vice provincial-level official, and the third component captures the expect utility loss with probability that failed to get promoted at any year from year 2 to n.

Function (8) captures the expect total utility of retirement and extending of political life as powerful vice provincial-level official with probability that succeed to get promoted at any year from year 2 to 56.

Since the GDP growth reported by secretary is determined by function (5) and both of a_i and η_{it} are objective, each secretary can only choose m_{it}. Each Prefecture Party Secretary i, need to choose $(m_{t_0+1}, \ldots, m_{55})$ to maximize the sum of utility over all years from the year 1 as secretary to retirement.

$$
\begin{aligned}
ExpectUtility_i = \quad & U_s * (1-\beta^{55-t_0})/(1-\beta) + \beta * U_e * (1-\beta^{54-t_0})/(1-\beta) \\
& - \sum_{n=2}^{55-t_0} \{\{\beta^{n-1} * \prod_{t=t_0+2}^{t_0+n} [1-p_{it}(g_{t-1})]\} * [U_e + C_{it}(m_{t-1}, m_t)]\} - C_{it_0+1}(m_{t_0}, m_{t_0+1}) \\
& + \beta^{57-t_0}\{1 - \prod_{t=t_0+2}^{57} [1-p_{it}(g_{t-1})]\} * U_f
\end{aligned} \tag{9}
$$

$$\text{if } t_0 < 54$$

Here the first line on the right side capture the total utility with time discount β as secretary and extra utility as powerful vice provincial level official, the second line capture the total expect utility loss if a given secretary failed to get promotion at each year with time discount, and the cost of m at first year, the third line capture the expect total extra utility as powerful vice provincial level official after retirement with time discount.

$$
ExpectUtility_i = \quad U_s + \beta * p_{56}(g_{55}) * U_f - C_{55}(m_{t_{54}}, m_{t_{55}}) \tag{10}
$$

$$\text{if } t_0 = 54$$

since $p'(m) > 0$ and $p''(m) < 0$ if $p(m) > 0$ and $C(m_{t-1}, m_t)$ is convex with m_{t-1} and m_t, there's solution $m^* = (m^*_{t_0+1}, \dots, m^*_{55})$.

5.4 Simple version of the model

In this case, I use a simple two-stage model to analyze the Secretary's decision making. For simplicity, I assume the expectation of shock $\eta_{it} = 0$. I further assume the secretary could only choose $m \neq \tilde{m}$ at one single age, either at age 54 or age 55, and for all other age, we have $m_t = \tilde{m}$ and setting $g_t = \tilde{g}$. I also assume m of previous year and m of current year have same influence on cost of current year, which means $\frac{dC(m_{t-1},m_t)}{dm_{t-1}} = \frac{dC(m_{t-1},m_t)}{dm_t}$. At last, I assume $p_t(g_{t-1}) = \tilde{p}$ with $p''(g_{t-1}) < 0$ for all t except at age 54 and 55. Since utility before age 54 is independent with choice of m_{54} and m_{55}, and choice of change m_{54} or m_{55} have exact same influence on change of U_{56}, so the secretary choose to change m at either age 54

or age 55 to maximize: $U_{54} + \beta * U_{55}$

If secretary choose to change m_{54}, then need to max:

$$\begin{aligned} U_{54} + \beta * U_{55} \;=\; & U_s + U_e - (1-\tilde{p})^{53-t0}[U_e + C(\tilde{m}, m_{54})] \\ & + \beta * \{U_s + U_e - (1-\tilde{p})^{53-t_0} * (1-p_{54})[U_e + C(m_{54}, \tilde{m})]\} \end{aligned} \tag{11}$$

If secretary choose to change m_{55}, then need to max:

$$\begin{aligned} U_{54} + \beta * U_{55} \;=\; & U_s + U_e - (1-\tilde{p})^{53-t0}[U_e + C(\tilde{m}, \tilde{m})] \\ & + \beta * \{U_s + U_e - (1-\tilde{p})^{54-t_0}[U_e + C(\tilde{m}, m_{55})]\} \end{aligned} \tag{12}$$

Marginal utility of changes m_{54} from $\tilde{m}$ is:

$$\begin{aligned} MU_{54} = & -(1-\tilde{p})^{53-t_0} C'_{54} + \beta(1-\tilde{p})^{53-t_0} p'_{54} U_e \\ & - \beta(1-\tilde{p})^{53-t_0} C'_{54} + \beta(1-\tilde{p})^{53-t_0} p_{54} C'_{54} + \beta(1-\tilde{p})^{53-t_0} p'_{54} C_{54} \end{aligned} \tag{13}$$

Marginal utility of changes m_{55} from $\tilde{m}$ is:

$$MU_{55} = -\beta(1-\tilde{p})^{53-t_0} C'_{55} + \beta(1-\tilde{p})^{53-t_0} \tilde{p} C'_{55} \tag{14}$$

The difference between MU_{54} and MU_{55} is:

$$MU_{55} - MU_{54} = \beta(1-\tilde{p})^{53-t_0}[C' - \beta p'(U_e + C)] \tag{15}$$

Here $C' = C'_{45} = C'_{55}$ and $p' = p'_{54} = p'_{55}$. From section 4, we know for secretary, report each extra unit of GDP growth rate would give less than 1% of probability getting promoted to powerful provincial position, which means the p' is relative small. Assume $C' > \beta p'(U_e + C)$, we have $MU_{55} > MU_{54}$. Intuitively, at age 55, there's no future potential cost for manipulate GDP growth since the secretary will leave the office no mater getting promotion or not. As long as the extra utility as powerful vice provincial official for single year is not huge enough, secretary should have more incentive to manipulate GDP growth at age 55 instead of age 54. Furthermore, if we assume in different provinces k, the $p_k(g)$ is different for same GDP growth reported, we should have different p' at same p, which means for provinces with more chances to get promotion, the difference between MU_{55} and MU_{54} should be smaller. Mathematically, with $p_k(g) > p_j(g)$ and $p_k(g_k)$=$p_j(g_j)$, we have $g_k < g_j$,

which gives us $p'_g(g_k) > p'_g(g_j)$. Therefore we should observe the GDP growth reported at age 54 and age 55 are closer at provinces with higher probability for promotion compare to provinces with lower probability for promotion.

5.5 Decision making of Higher authority

Next, we can further assume that if the higher-level authorities observe these reported results and understands the motivations of the prefecture party secretaries, what should they do? The higher-level authority's motivation is to select secretaries with higher ability (a), not necessarily higher reported GDP growth (g). The higher-level authorities can only observe the GDP growth reported by secretaries but also knows the age of each secretary. Therefore, if the higher-level authority believe secretary does not make strategic moves but simply makes decisions based on the decision model mentioned earlier, the higher-level authorities will adjust their expectations of the secretary's true ability based on the age of the Secretary.

Assume the utility of higher-level authorities is:

$$V = E(U(a|g, age)) + X$$

Here X captures all other unobservable factors higher-level authorities care about promotion, such as political connection or personal taste. For simplicity, I assume X is independent with g and t, and E(X)=0. Assume higher-level authorities will promote secretary if $V > \bar{u}$, then we have $g^*(age) = a^* + E(m|age)$ for secretary at different age solves $E(U(a|g, age) = \bar{u}$. Since we have already know that secretary would have higher incentive to manipulate GDP growth at age 55 compare to age 54, we know $E(m|age = 55) > E(m|age = 54)$. In order to select secretaries with expected ability no less than a^*, higher-level authority should set $g^*(age = 55) > g^*(age = 54)$, which means we should observe that the higher-level authorities have different promotion standards for secretaries of different ages.

However, if secretary finds out that higher-level authority sets different promotion standard depends on secretary's age, then secretary will have less incentive to over-report GDP growth at the age they should over-report more originally solved by Equation 9. On the other side, secretary will have more incentive to over report GDP growth at the age they should over-report less originally. As a result, the difference between promotion standard at different

age should be less significant. Even if secretary report GDP growth strategically, since the higher-level authority will update belief, so in the equilibrium situation there will still be different promotion standards at different age, but the difference will be less. Unfortunately, I could not distinct whether the different standard of promotion is the equilibrium situation that both secretary and higher-level authority behave strategically, or simply because secretary just solve their decision-making model and not find out higher-level authority know their trick and set different promotion standard.

5.6 Example of mayor's choice

Finally, for the mayor, the motivation is more complex. First, if the secretary get promotion, there is higher probability for the mayor to succeed as the secretary if mayor is qualified, which means by helping secretary manipulate GDP growth, mayor could slightly increase the probability of getting promoted to secretary. Even though we found there's no significant correlation between mayor's promotion and GDP performance in Section 5, it could because only very limited number of secretaries get promoted to powerful vice provincial position at the same time mayors of same city are qualified for promotion. Second, the mayor would consider their own future in the succeeding years, which means over-report GDP growth will increase future cost after succeeding as secretary. Third, if mayor choose not to cooperate with secretary, there would be social cost. For simplicity, here I focus on a special case about what mayors would do when the secretary of same city at age 55. From previous sub-section, we know secretary would have high incentive to bump the GDP performance at age 55. More importantly, compare to secretaries younger than 55, secretary at age 55 would be more likely to leave the office in next one or two years. As a result, even if secretary at age 55 didn't get a promotion next year, it would be very likely for the mayor to succeed as secretary in next one of two years. Then we could assume the GDP performance will have no influence on mayor's promotion.

Then the utility function of Mayor when the secretary she work with is:

$$U = \beta * Q(t) * E[U_s - C(m_s - l, m)] - s(l)$$

Here t is the round up year term as mayor until the end of year and we have Q(t)=1 if

$t > 2$ which means normally mayor who has serve as mayor at least for 2.5 years will automatically succeed as secretary if secretary leave the office. And Q(t)=0 if $t <= 2$ since the higher authorities could be more likely assign another secretary for mayors with less experience especially those who are not assigned by central or provincial government with prefecture-level before appointment as mayor. Here l is the cooling down effect that mayor want to reduce from m_s decided by secretary, with $\frac{dC(m_s-l,m)}{dl} < 0$. s(l) is the social cost with secretary because of l, with $s^{'}(l) > 0$. We know

$$MU_l(Q=1) = -\frac{dC(m_s-l,m)}{dl} - s^{'}(l) > -s^{'}(l) = MU_l(Q=0)$$

which means only mayors qualified for succeed as secretary have incentive to reduce the m_s decided by secretary at age 55.

6 Empirical Result

6.1 Summary of testable predictions

There are five testable predictions concluded from previous section.

Prediction 1: Secretaries have more incentive to boost GDP growth at age 55 since next year is the last chance to get promoted to powerful vice provincial position that there's less future cost for over-report GDP growth at age 55

Prediction 2: Compare to provinces with higher promotion rate, secretaries from provinces with lower promotion rate have more incentive to boost GDP growth at age 55.

Prediction 3: Higher level authority have incentive to set different promotion standards for secretaries at different age.

Prediction 4: Mayors have incentive to boost GDP growth at age 54 since it's the last chance to promote as secretary with probability of promotion to powerful vice provincial position

Prediction 5: Only mayors qualified to succeed as secretary have incentive to reduce the manipulation of GDP growth made by secretaries.

6.2 Last chance for secretary

Prediction 1

Secretaries have more incentive to boost GDP growth at age 55 since next year is the last chance to get promoted to powerful vice provincial position that there's less future cost for over-report GDP growth at age 55. However fabricating GDP data is costly and the cost of manipulating GDP encompasses two parts: 1) the manipulation may be detected by the discipline committee, and 2) GDP manipulation in a given year could complicate future manipulation in subsequent years. More importantly, when it comes to data fabrication, the motivations of secretaries and mayors are not the same.

Firstly, secretaries and mayors have different potential rewards that they can obtain through data fabrication. As summarized earlier, secretaries can significantly increase their chances of direct promotion to a position of real authority at the vice-provincial level by improving GDP performance, creating a strong incentive for such promotion. However, the same does not hold true for mayors. It's extremely rare for "normal" prefecture mayors (those where the prefecture secretary is not a standing member of the provincial party committee, not the capital of the province, and not the most/second most important prefecture of the province) to be promoted to any vice-provincial level officials. Furthermore, secretaries have a motivation to start manipulating GDP data in their first year of office because by the second year when the data is published, they will have completed one year in their position and become eligible for promotion. Secretaries need to be cautious about manipulating GDP growth too significantly in a certain year, as if they artificially inflate the growth and don't receive a promotion in the following year, it could make it harder to manipulate data in the future and reduce their chances of promotion. However, for secretaries who are 55 years old, this concern might not apply. This explains why secretaries at the age of 55 might be more inclined to manipulate data.

Building on this, a natural inference is that secretaries who are approaching the deadline where promotion is unlikely are more motivated to manipulate data to prolong their political lives. This is reflected in the regression, where secretaries at the age of 55 should have more incentive to manipulate data compared to secretaries in other age groups. Therefore, I ran the following regression:

$$GDPgrowth_{ct} = a + bSecAge55_i + cSecExperience_{it} + dSec_{it} + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \tag{16}$$

Here, we are interested in the second term on the right side, which is a 0/1 variable for 55-year-old secretaries. 0 represents secretaries of other ages, while 1 represents secretaries at aged 55. The results I found are shown in Table 7. It's evident that secretaries at aged 55 report higher GDP than secretaries of other ages when controlling for other variables. Additionally, we also observed that secretaries over the age of 56 had significantly lower GDP performance, results showed on Figure 14. To test whether this effect arises from genuine additional effort or data manipulation, we replaced the locally published GDP data on the left side with other indicator of economic development such as the growth in satellite nighttime light and electricity consumption. The results indicated that secretaries at aged 55 do not show a significant relationship with these indicator that difficult to manipulate. Therefore, I believe this significant change likely stems from the manipulation of GDP data in pursuit of promotion. Furthermore, I use the government investment as dependent variable and found secretaries may increase government investment to boost the GDP growth, result showed on Table 8.

6.3 Heterogeneity of provinces

Prediction 2

Compare to provinces with higher promotion rate, secretaries from provinces with lower promotion rate have more incentive to boost GDP growth at age 55. In China, the probability of secretaries of prefecture-level city getting promotion varies significantly among different provinces, primarily due to three factors.

First, in China, except for Xinjiang and Xizang(Tibet), each province has a maximum of 13 standing committee members, and up to 8 vice governors. Among these 13 standing committee members, there are few positions not open for secretaries prefecture-level city getting promotion. First, the party secretary and the governor are full provincial level officials,

and the vice party secretary is often considered the most senior vice provincial-level official which is the final step before promotion to full provincial-level. In the time frame covered by the database, there are no examples of secretaries from regular prefecture-level cities being promoted to the position of vice province secretary. Second, The province commission for discipline inspection is under vertical management and the secretary is typically appointed by the central commission for discipline inspection. Third, there is one member of the standing committee represents the local military force, holding the rank of major general. As a result, only a maximum of 8 positions can theoretically be promoted directly by secretaries of prefecture-level city. In practice, some positions, such as executive vice provincial governors and director of provincial organization department, which are rarely directly promoted by secretaries of prefecture-level city. Among the vice governors, the highest-ranking vice governor, usually known as the executive vice provincial governor, is conventionally held by a member of the provincial standing committee. In some places, the second-ranking vice governor can also become a member of the provincial standing committee. By convention, one vice governor is not a member of the Communist Party. Therefore, there are typically only 5 to 6 positions available for direct promotion by secretaries of prefecture-level city. In practice, standing committees and vice governors may not be fully staffed for a long time, and it is quite common to have a vacancy for one standing committee member or vice governor. In summary, only about 10 positions are typically available for direct promotion by secretaries of prefecture-level city. Therefore, for larger provinces with a higher number of regular prefecture-level cities in their jurisdiction, such as Guangdong (which has 19 regular prefecture-level cities, excluding the vice-provincial-level cities of Guangzhou and Shenzhen), the difficulty of promotion is higher compared to provinces with fewer regular prefecture-level cities, such as Zhejiang (which has 9 regular prefecture-level cities, excluding the vice-provincial-level cities of Hangzhou and Ningbo).

Second, there is a significant difference in economic development between different provinces in China. Guangdong Province, with the highest total GDP in 2022, had a total GDP exceeding 1.9 trillion, while Qinghai Province, with the lowest total GDP, had less than 54 billion (excluding Xizang(Tibet), which have the lowest total GDP in China). Even excluding border areas, traditional ethnic minority regions, and Hainan Province, Gansu Province has the

lowest total GDP, with a total GDP of only 167 billion. After the implementation of reform and opening up, the eastern regions were the first to achieve rapid development, and as a result, the central government transferred officials from economically developed southeastern coastal areas to regions with lower economic development, such as the northeast, northwest, and southwest. Therefore, many officials from central government and vice provincial-level officials from more developed provinces are assigned to less developed provinces, rather than promoting local officials within these less developed provinces. For example, as mentioned earlier, in Gansu Province (which has 13 regular prefecture-level administrative units, excluding the provincial capital, Lanzhou, where it's conventionally held by a provincial standing committee member as the party secretary), the probability of secretaries of prefecture-level city being promoted to powerful vice provincial-level positions is lower compared to more developed provinces such as Shandong province (which has 14 regular prefecture-level administrative units, excluding the vice-provincial-level cities of Jinan and Qingdao).

Third, there are political reasons that will not be further discussed here.

I calculated the total number of secretaries from 2010 to 2015 and how many secretaries getting promoted to powerful vice provincial level position including provincial standing committee member and vice governor at each province. I simply set the average probability of promotion to powerful vice provincial position for secretaries of normal prefecture level city:

$$\bar{p}_k = \frac{total\ number\ of\ secretaries\ getting\ promoted\ to\ powerful\ vice\ provincial\ position}{total\ number\ of\ secretaries}$$

There are 24 provinces in my database and I found $\bar{p}$ is varies from 0.03 to 0.17, exclude Qinghai province with only one normal prefecture-level city.

Compare to prefecture secretary from provinces with higher promotion rate, who decide to report a given GDP growth rate to achieve a certain probability of promotion, prefecture secretary from provinces with lower promotion rate need to report higher GDP growth rate to achieve same promotion probability. Compare to prefecture secretary from provinces with higher promotion rate, prefecture secretary from provinces with lower promotion rate, reporting one additional percentage point of GDP growth will surpass less colleagues, since

the density decrease with growth rate reported after full-fill the provincial requirement.

As a result, we know the marginal utility of manipulation at age 55 compare to manipulation at age 54 would be higher for secretaries from provinces with lower promotion probability than from provinces with higher promotion probability. Secretaries from high promotion rate provinces will have less incentive to manipulate GDP at age 55 and secretaries from low promotion rate provinces will have more incentive to manipulate GDP at age 55.

To test this prediction, I compared average of GDP growth reported by secretary i at year t minus average GDP growth of province k at year t, reported by prefecture secretaries with different age, which is:

$$\overline{GDPgrowth\ by\ age} = \overline{GDPgrowth_{ct} - \overline{GDPgrowth_{kt}}}$$

from 6 provinces with highest $\bar{p}$ (top 25%) and 6 provinces with lowest $\bar{p}$ (bottom 25%), showed on Figure 15.

I also run the regression of Equation 16 separately with data of top25 % provinces and bottom 25% provinces on $\bar{p}$m the result showed on Table 9.

6.4 Different standards for secretary

Prediction 3

Higher level authority have incentive to set different promotion standards for secretaries at different age. Since if the higher-level authority understands the motives behind local party secretaries falsifying GDP growth, the higher-level authority should change the belief of ability on GDP growth, based on the behavior of these secretaries. The higher-level authority desires to select capable individuals rather than those who merely report higher GDP growth rates. For secretaries aged 54 and 55, their differences on other dimensions are minimal. Therefore, if the higher-level authority does not understand in which year the secretaries are likely to manipulate GDP growth data, the promotion criteria for 54-year-old and 55-year-old secretaries should be similar. In other words, the average GDP growth rate for promoted 54-year-old secretaries should be similar to promoted 55-year-old secretaries.

However, if the higher-level authority can predict that secretaries are more likely to manipulate GDP growth data in their last year when they can directly promote to powerful vice provincial-level positions, then the higher-level authority should establish different promotion criteria. Assuming compared to 54-year-old secretaries, 55-year-old secretaries might have inflated their reported GDP growth rates. The higher-level authority can then raise the promotion criteria for 55-year-old secretaries to eliminate the inflation and ensure that promoted 55-year-old secretaries have capabilities similar to those promoted at the age of 54. In fact, higher authorities could set different promotion standards for different age, which makes the average of GDP performance reported by secretary who get promoted to powerful vice provincial position next year are quite different by age, results showed on Figure 16. Furthermore, based on our model, even when comparing only those secretaries who were promoted to powerful vice provincial-level positions, we should still observe that 55-year-old secretaries reported higher GDP growth, result showed on Table 10.

I also test if different promotion standards on age lead to the promotion rate for each age differently, however there's no significant difference among ratios of secretary getting promoted to powerful vice provincial position at each age, showed at Figure 17.

6.5 Ambition of mayors

Prediction 4

As mentioned earlier, mayors' promotions have a very weak connection with GDP performance, however, if mayors aspire to achieve further promotion, the most likely route is to become a secretary, with the easiest path being promotion to the same city's secretary after the incumbent secretary is promoted.

Over 80% of mayors who ultimately get promoted to vice-provincial level or higher positions have experience working as a secretary and over 70% of mayors get promoted to the secretary position of the same city after the previous secretary is promoted to vice-provincial level officials. After mayors are promoted to secretary, they need to work in that position for at least one year to have a chance for further promotion (only one mayor became a vice-provincial level official within a year after being promoted to secretary in my dataset).

Therefore, it can be inferred that if a mayor is involved in the secretary's GDp growth manipulation plan and the secretary gets promoted as planned, the mayor has a high likelihood of succeeding the secretary. In the following one or two years, it would be difficult for the mayor to manipulate data, thereby reducing their future chances of promotion.

Since the last chance for secretaries to receive a promotion based on GDP performance is at the age of 56. Therefore, even though mayors can be promoted to secretary before the age of 57 based on our statistic summary, the last opportunity for mayors to succeed as secretary with probability to receive further promotion to powerful vice provincial position based on GDP performance is at the age of 54. During the final window for mayors to be promoted to vice-provincial level positions, specifically at ages 53-54, a certain level of effect similar to that of 55-year-old secretaries is observed.

I run the following regression:

$$\begin{aligned} GDPgrowth_{ct} = a + bMayorAge54_{it} + cMayorExperience_{it} \\ + dMayor_{it} + fCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{17}$$

I found the dummy of MayorAge54 is positive and significant, which means mayors reported significant higher GDP at age 54, results showed on Table 11. However, such effect does not exist if we use data more difficult to manipulate such as night light or electricity instead of GDP growth reported. Furthermore, I didn't find any effect at age 56 for mayors even if age 57 is the last chance for mayors to get promoted to secretary. This shows the true incentive for mayors to manipulate GDP growth is to use secretary as a step-stone to get further promotion to vice-provincial level officials, especially to powerful vice provincial position and if can't get further promotion, getting promoted to secretary itself is less attractive. This ambition also makes mayors have incentive to reduce the manipulation made by secretaries, if mayors believe they have higher enough probability to succeed as secretary next year, which would be discussed in next subsection.

6.6 Help or not

Prediction 5

As mentioned earlier, the average term for a mayor is around 3.3 years. Consequently, the probability of succeeding a secretary varies during different periods of a mayor's tenure. For instance, if a mayor just takes the office and the secretary immediately steps down, it's more likely that a new secretary will be appointed rather than promoting the mayor directly. Therefore, for a mayor in office for just one year, there might be motivation to cooperate with the secretary in data manipulation. In cases where a secretary is promoted, it's more likely for a mayor to succeed them. If a mayor can serve one or two years as mayor and then become the secretary, it undoubtedly buys them more time for future promotions. However, if a mayor has been in office for three years or longer, the succession to secretary might be more expected. Additionally, if a 56-year-old secretary is not promoted, there's still a high probability of them leaving their position. In such a scenario, cooperating with the secretary in data manipulation holds little benefit for the mayor. Furthermore, since mayors and secretaries both hold the position of prefecture-level officials and don't have significant rank differences or strict hierarchical relationships, mayors have the ability to refuse requests from secretaries to manipulate data.

As a result, if the hypothesis presented earlier regarding mayors being able to counterbalance secretaries is indeed valid, we should observe that the effect of secretaries manipulating data at the age of 55 primarily comes from mayors stay in office for only one or two years, since they are less likely to succeed as secretary. Consequently, I ran the following regression:

$$\begin{aligned} GDPgrowth_{ct} = a + bSecAge55_{it} + cMayor\_over3years_{ict} \\ + dSecAge55_{it} * Mayor\_over2years_{ict} + fSecExperience_{it} + gSec_{it} \\ + hMayorExperience_{it} + mMayor_{it} + nCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{18}$$

In this case, we are interested in the interaction term. The first part of the interaction term is the binary variable representing whether the secretary is 55 years old or not as discussed earlier. The second part represents a dummy variable indicating whether the mayor is experienced, where 1 denotes that the mayor has begun their third year in office or more (i.e., experienced mayor with more likely to succeed as secretary if secretary get promotion after report GDP growth at the beginning of next year), and 0 represents the

opposite scenario. The other two variables on the right side are control variables related to mayors. The results I found are shown in Table 12. I also ran regressions without controlling for the situation of secretaries, and the results remained stable. It can be observed that the effect of secretaries manipulating data at the age of 55 indeed comes mainly from their collaboration with less experienced mayors, indicating the presence of a check and balance mechanism between mayors and secretaries.

For a mayor, the probability of succeeding as a secretary when the incumbent secretary leaves is correlated with the number of years served as mayor, especially for those without central government working experience or other political connections. If the prediction is correct, we should observe that for mayors in office for more than two years but less than five years (one term), the longer they serve as mayor, the more likely they are to succeed after the incumbent secretary leaves. This also implies that they are more inclined to reduce the manipulations carried out by the secretary when they reach the age of 55. To test this, I run the following regression:

$$\begin{aligned} GDPgrowth_{ct} = a + bSecAge55_{it} + cSecAge55_{it} * Mayorlength_{ict} \\ + dSecExperience_{it} + fSec_{it} + gMayorExperience_{it} + mMayor_{it} \\ + nCity_{ct} + \delta_c + \eta_t + \epsilon_{ict} \end{aligned} \tag{19}$$

I observed that the reported GDP growth by the secretary at the age of 55 decreases as the length of time the mayor is in office increases. Results showed on Table 13.

7 Conclusion

In this paper, I initially confirmed the existence of a tournament model, wherein higher-level governments promote officials based on their GDP performance. Specifically, at the prefecture-level, prefectural party secretaries with better economic performance are more likely to be promoted to powerful vice provincial positions. However, promotions to positions such as vice president of the provincial People's Congress or Political Consultative Conference, which hold less power and are more about length as secretary and prefecture level

official, show no significant correlation with in-office GDP performance. Similarly, mayors' promotions are also not significantly related to GDP performance.

Summarizing the promotions of over 500 secretaries, we found that the final age for prefecture-level party secretaries to be promoted to powerful vice provincial positions is 56. Since Chinese local governments usually announce the previous year's GDP data in March of the following year, prefectural party secretaries have an incentive to manipulate data at the age of 55 in order to secure their promotion by the time they turn 56, without future potential cost of manipulation. Our findings were supported by nighttime light data.

Higher level authorities would observe secretaries' incentive of manipulation at age 55 and establish higher promotion standards based on this to ensure that when promoting prefectural party secretaries at the age of 55, their reported GDP growth rates are more accurate and reliable, rather than being influenced by manipulated data. This helps to ensure the selection of more capable and performance-driven officials, rather than just those skilled at exaggerating GDP growth rate.

The primary motivation for mayors seeking promotion to the position of party secretary is to pursue chances of further promotion to become vice provincial level officials that the role of prefectural secretary is only a step-stone. Since mayors, especially those who are senior, are likely to succeed secretaries either due to promotion or retirement of the current secretaries, incumbent mayors hold the office for over 2 full years choose not to engage in data manipulation, as it could affect their future economic performance if they succeed the secretary position, which would reduce their probability for further promotion. Additionally, the balanced status of secretaries and mayors empowers mayors to resist secretaries' requests to manipulate data. Therefore, the effect of secretaries' data manipulation at the age of 55 is primarily attributed to the collaboration of relatively junior mayors, highlighting how the presence of mayors can act as a check on secretaries and reduce data manipulation.

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8 Appendix

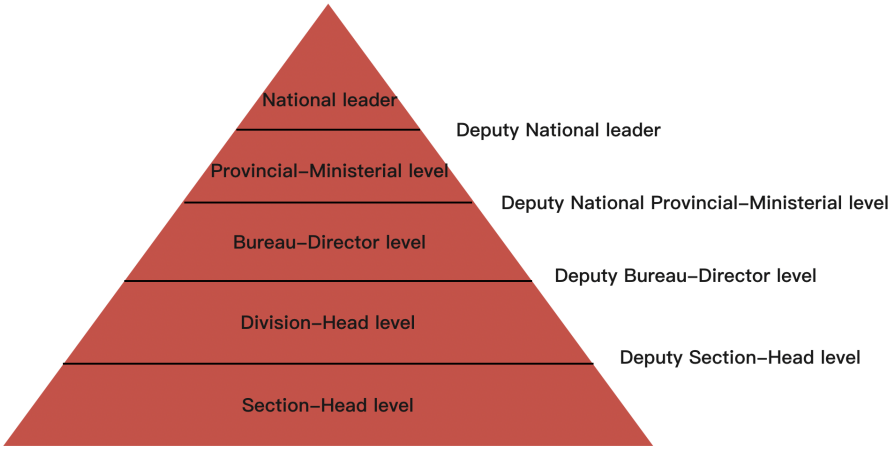

Figure 1: Hierarchy in China

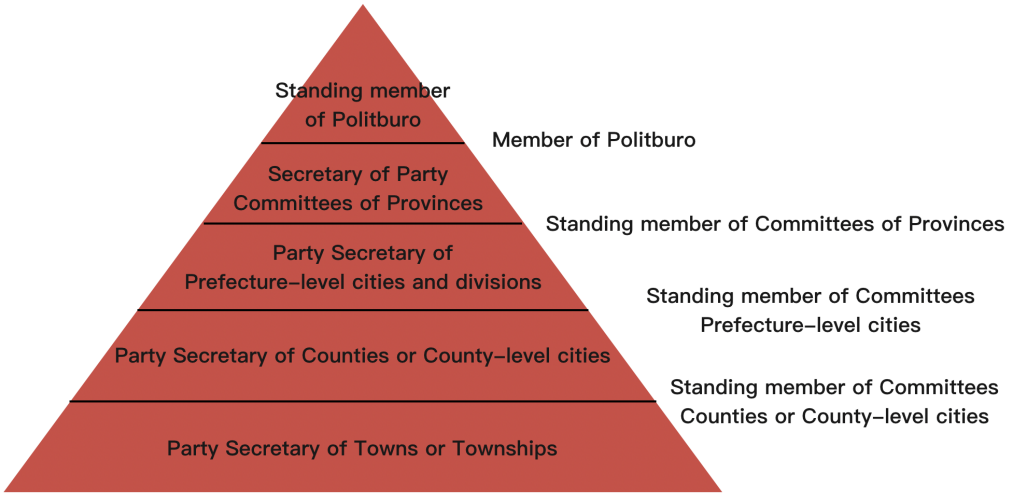

Figure 2: Level of Party

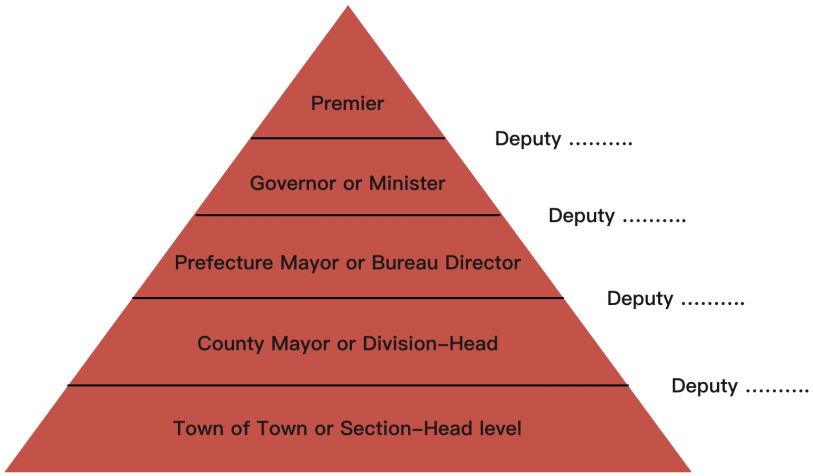

Figure 3: Level of Government

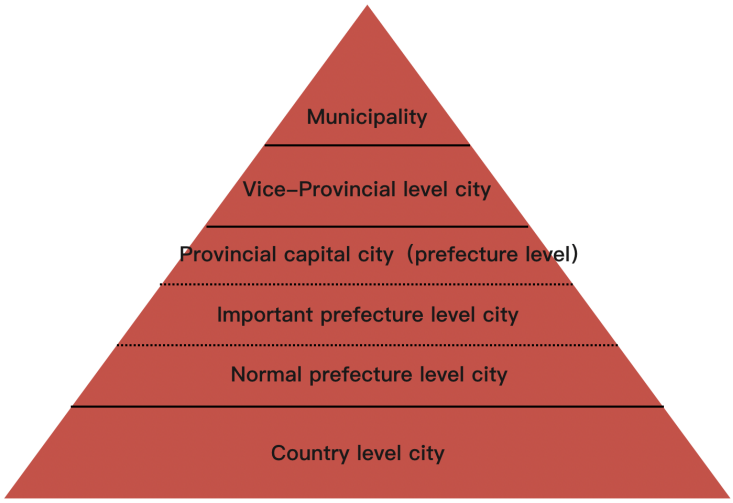

Figure 4: Level of City

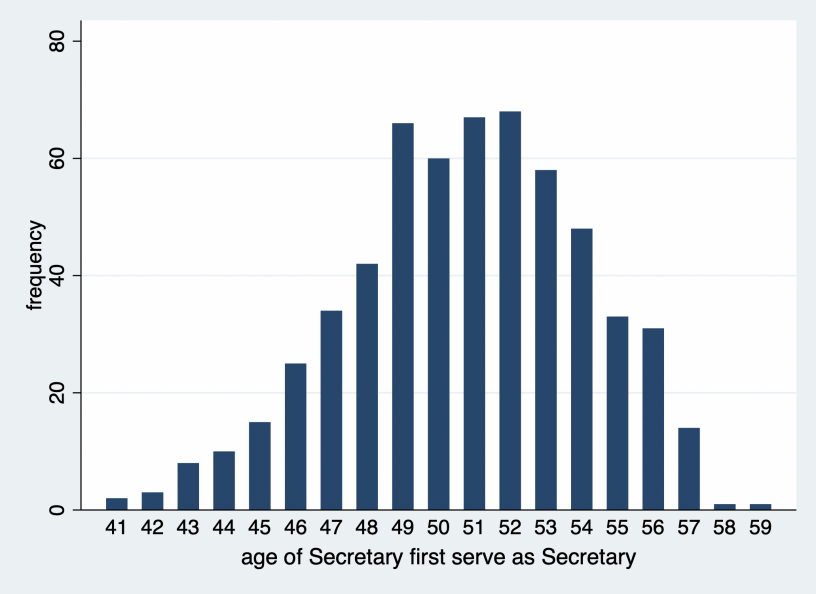

Figure 5: Figure 5

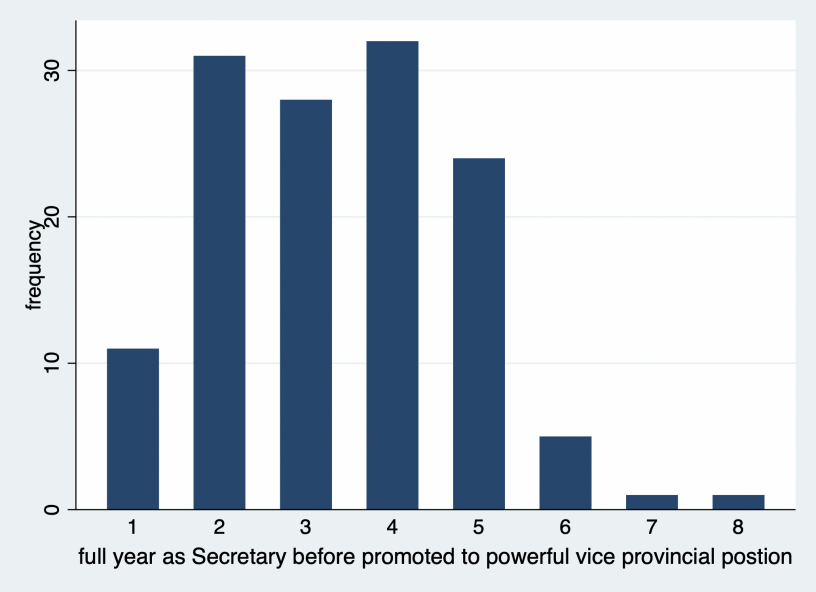

Figure 6: Figure 6

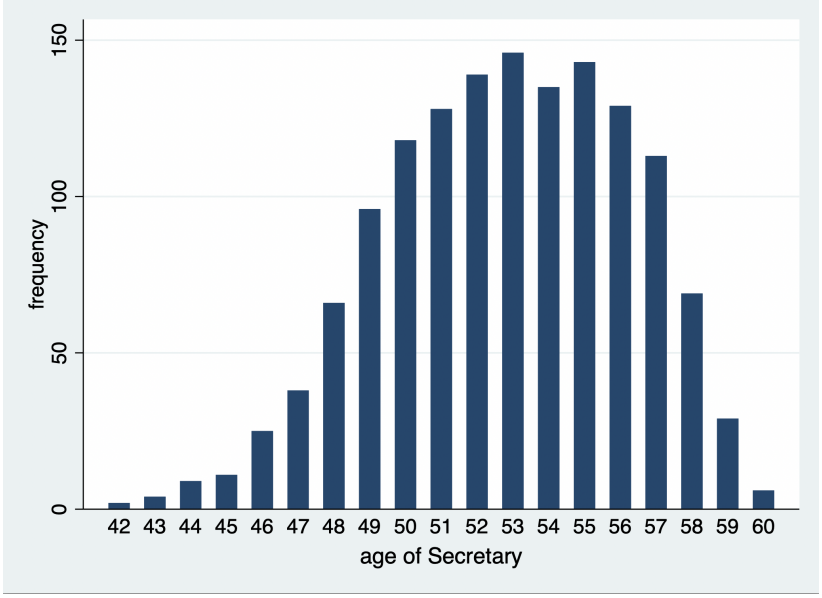

Figure 7: Figure 7

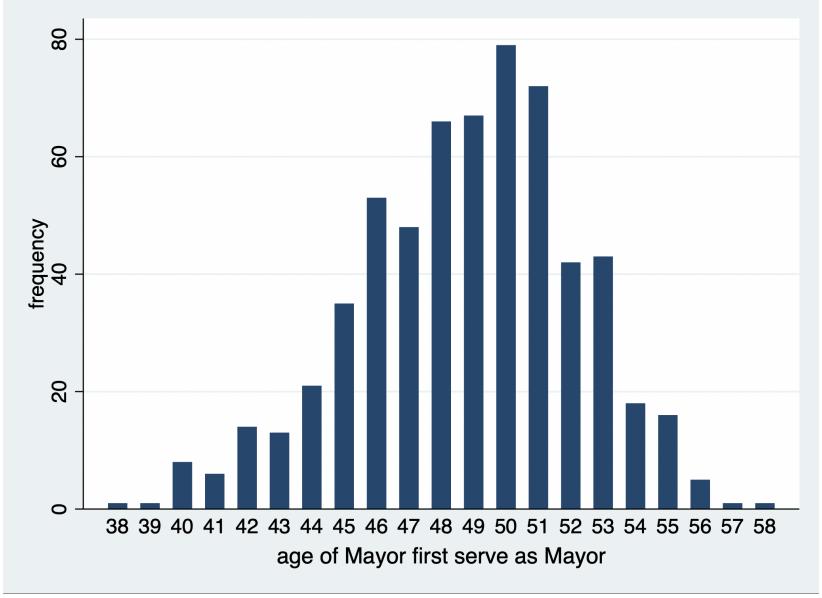

Figure 8: Figure 8

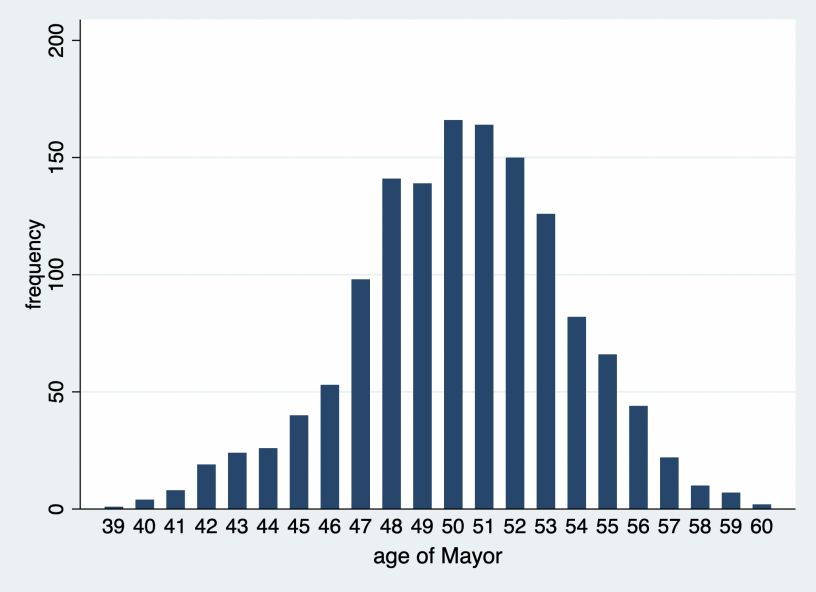

Figure 9: Figure 9

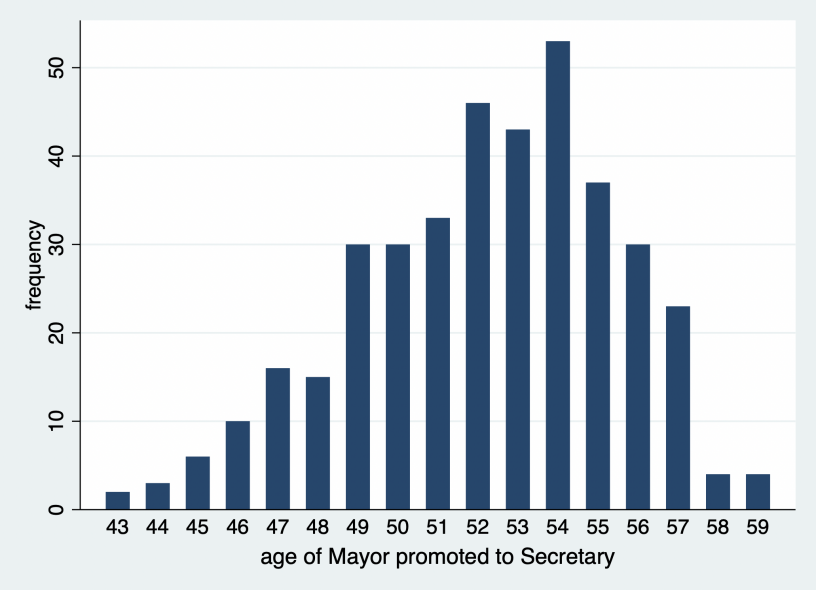

Figure 10: Figure 10

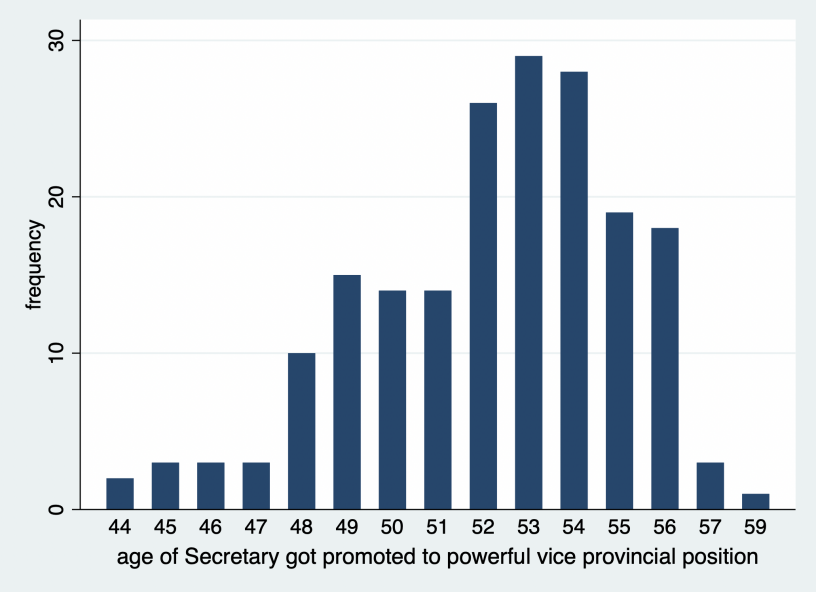

Figure 11: Figure 11

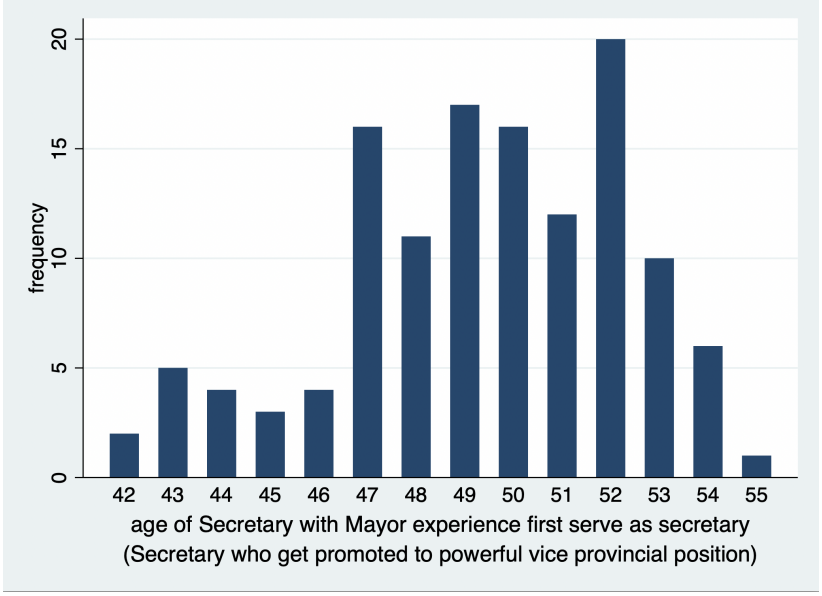

Figure 12: Figure 12

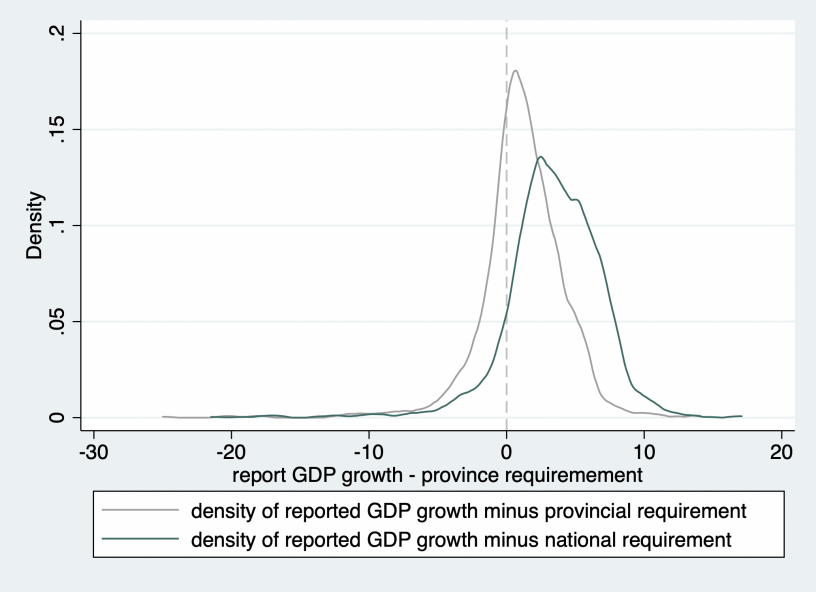

Figure 13: Figure 13

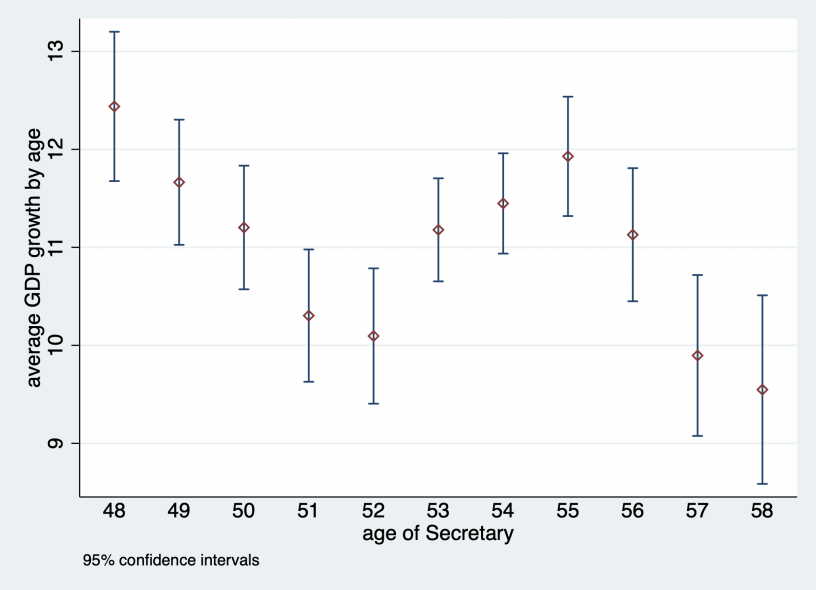

Figure 14: Figure 14

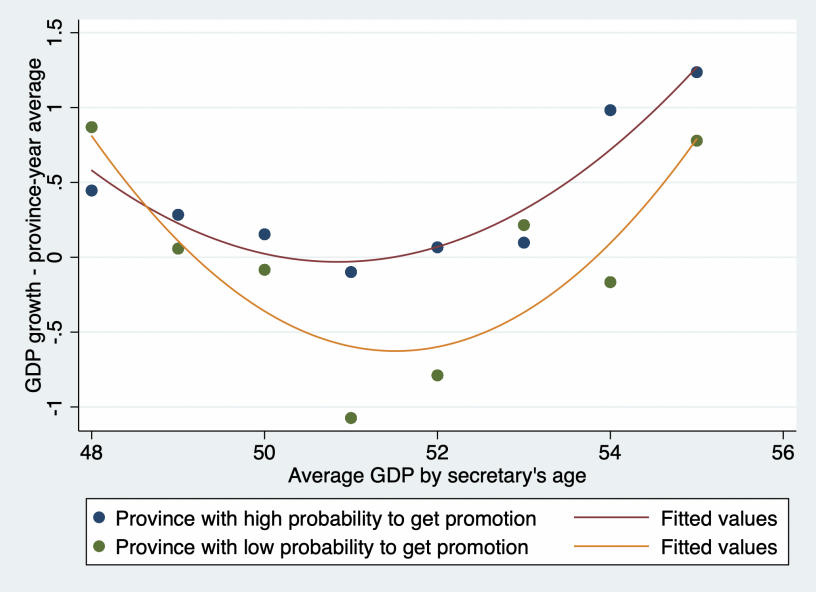

Figure 15: Figure 15

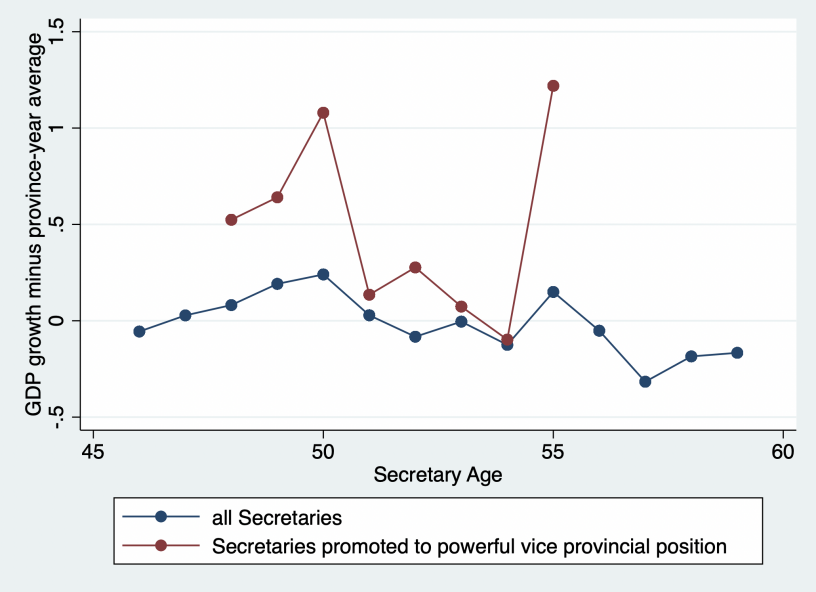

Figure 16: Figure 16

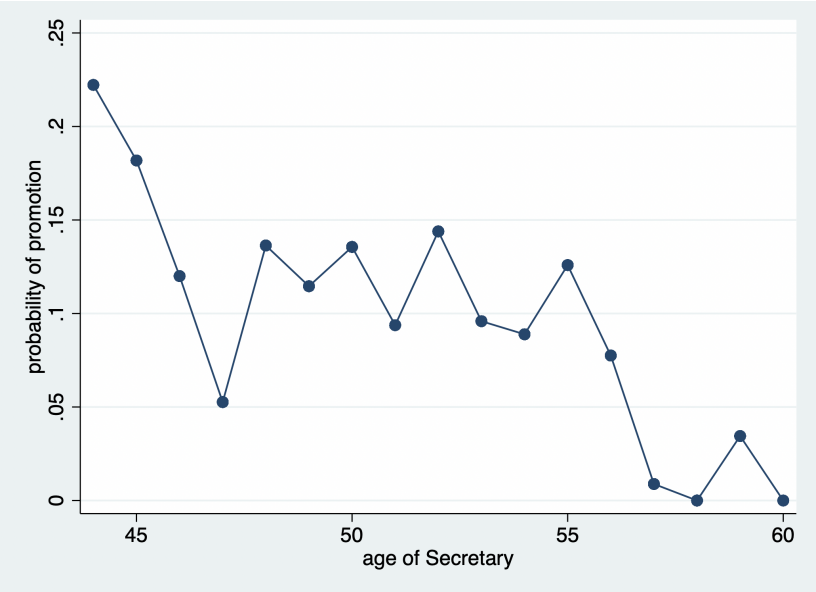

Figure 17: Figure 17

Secretary promoted to vice provincial position			
	(1)	(2)	(3)
GDP Growth	0.0208**	0.0222***	0.0240***
	(0.0082)	(0.0084)	(0.0090)
Years as Secretary	0.0111	0.0293**	0.0279**
	(0.0117)	(0.0139)	(0.0140)
Experience of Youth-league	-0.0265	-0.0519	-0.0490
	(0.0326)	(0.0345)	(0.0343)
Full time Education		-0.0616	-0.0556
		(0.0491)	(0.0488)
Final Education		0.0258	0.0261
		(0.0480)	(0.0473)
Gender		0.0097	-0.0175
		(0.1129)	(0.1113)
Secretary Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1395	1384	1365

Table 1:

Secretary promoted to People's Congress or CPPCC			
	(1)	(2)	(3)
GDP Growth	0.0006	-0.0000	0.0010
	(0.0024)	(0.0026)	(0.0029)
Years as Secretary	0.0211***	0.0189***	0.0186***
	(0.0040)	(0.0051)	(0.0050)
Experience of Youth-league	0.0091	0.0044	0.0059
	(0.0125)	(0.0134)	(0.0134)
Full time Education		0.0034	0.0066
		(0.0197)	(0.0193)
Final Education		0.0123	0.0123
		(0.0155)	(0.0154)
Gender		0.0603	0.0598
		(0.0696)	(0.0696)
Secretary Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	977	966	956

Table 2:

Secretary promoted to powerful vice provincial position			
	(1)	(2)	(3)
GDP Growth	0.0085**	0.0085**	0.0095**
	(0.0034)	(0.0034)	(0.0037)
Years as Secretary	-0.0020	0.0005	-0.0001
	(0.0047)	(0.0064)	(0.0065)
Experience of Youth-league	-0.0188	-0.0311**	-0.0302**
	(0.0138)	(0.0145)	(0.0144)
Full time Education		-0.0275	-0.0261
		(0.0203)	(0.0204)
Final Education		0.0128	0.0128
		(0.0190)	(0.0188)
Gender		-0.0148	-0.0284
		(0.0496)	(0.0495)
Secretary Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1395	1384	1365

Table 3:

Secretary promoted to powerful vice provincial position				
	(1)	(2)	(3)	(4)
Average GDP of Last	0.0114**			
Two Years Before Promotion	(0.0058)			
Average GDP		0.0091		
During Tenure		(0.0058)		
GDP of Two Years			0.0013	
Before Promotion			(0.0040)	
GDP of Year				0.0067*
got Promotion				(0.0038)
Full time Education	-0.0265	-0.0705*	-0.0249	-0.0353
	(0.0246)	(0.0402)	(0.0248)	(0.0219)
Final Education	-0.0062	0.1137***	-0.0051	0.0429**
	(0.0213)	(0.0361)	(0.0211)	(0.0177)
Experience of Youth-league	-0.0246	-0.0333	-0.0240	-0.0168
	(0.0159)	(0.0266)	(0.0158)	(0.0144)
Gender	-0.0302	0.1192	-0.0340	0.0375
	(0.0531)	(0.1348)	(0.0533)	(0.0706)
Secretary Characters	Yes	Yes	Yes	
Prefecture Statistic	Yes	Yes	Yes	
Obs	1134	578	1136	1365

Table 4:

Promotion of Mayors			
	(1)	(2)	(3)
GDP Growth	-0.0080	-0.0074	-0.0091
	(0.0080)	(0.0082)	(0.0091)
Experience of Youth-league	-0.0196	-0.0216	-0.0339
	(0.0232)	(0.0260)	(0.0262)
Full time Education		-0.0203	-0.0228
		(0.0439)	(0.0445)
Final Education		-0.0029	-0.0133
		(0.0380)	(0.0385)
Gender		-0.0627	-0.0409
		(0.0988)	(0.0998)
Length in office		0.0697***	0.0708***
		(0.0162)	(0.0168)
Mayor Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1389	1378	1360

Table 5:

Mayors get promotion to Secretary			
	(1)	(2)	(3)
GDP Growth	0.0015	0.0018	-0.0001
	(0.0081)	(0.0084)	(0.0092)
Experience of Youth-league	-0.0134	-0.0157	-0.0277
	(0.0257)	(0.0285)	(0.0289)
Full time Education		-0.0073	-0.0097
		(0.0433)	(0.0441)
Final Education		-0.0137	-0.0235
		(0.0402)	(0.0409)
Gender		-0.0597	-0.0390
		(0.1101)	(0.1118)
Length in office		0.0668***	0.0681***
		(0.0160)	(0.0166)
Mayor Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1389	1378	1360

Table 6:

GDP growth reported by prefectural government			
	(1)	(2)	(3)
Secretary at Age 55	0.5574**	0.5579**	0.7225***
	(0.2756)	(0.2741)	(0.2476)
Academia Experience	-0.2428*	-0.3610**	-0.2599**
	(0.1423)	(0.1484)	(0.1257)
Study abroad	0.5394**	0.4031	0.5576**
	(0.2497)	(0.2753)	(0.2785)
Gender		-0.9547*	-0.4297
		(0.4989)	(0.4587)
Secretary Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1395	1384	1365

Table 7:

	other measurement of development		
	(1)	(2)	(3)
	(light growth)	(electricity growth)	(investment growth)
Secretary at Age 55	0.0055	-0.0045	0.0357*
	(0.0041)	(0.0188)	(0.0195)
Academia Experience	0.0028	0.0228	-0.0090
	(0.0032)	(0.0146)	(0.0187)
Study Abroad	-0.0094*	-0.0235	0.0213
	(0.0054)	(0.0199)	(0.0358)
Gender	-0.0011	-0.0154	0.1280**
	(0.0081)	(0.0517)	(0.0562)
Secretary Characters	Yes	Yes	Yes
Prefecture Statistic	Yes	Yes	Yes
Obs	816	1310	659

Table 8:

GDP growth of prefectures in different provinces				
	(1)	(2)	(3)	(4)
	(high probability)	(high probability)	(low probability)	(low probability)
Secretary at Age 55	-0.0733	-0.1751	0.9608**	0.9124***
	(0.5154)	(0.5505)	(0.4078)	(0.3081)
Academia Experience	0.5750*	0.3906	-0.7625**	-0.2006
	(0.2910)	(0.2757)	(0.3221)	(0.3051)
Study Abroad	0.4119	0.3510	1.3611	1.0169
	(0.6572)	(0.5395)	(1.1086)	(0.9164)
Gender	-2.8723**	-3.9104***	0.0521	1.2442
	(1.1169)	(1.1557)	(1.5063)	(1.2275)
Secretary Characters	Yes	Yes	Yes	Yes
Prefecture Statistic	Yes	Yes	Yes	Yes
Obs	198	191	379	370

Table 9:

GDP reported before Secretaries got promoted			
	(1)	(2)	(3)
Secretary at Age 55	0.9459***	1.4066***	1.4563**
	(0.2800)	(0.3848)	(0.5351)
Secretary Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	142	142	141

Table 10:

GDP growth reported by prefectural government			
	(1)	(2)	(3)
Mayor at Age 54	0.5151**	0.6416***	0.4564***
	(0.2043)	(0.2010)	(0.1670)
Mayor Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1389	1378	1360

Table 11:

GDP growth reported by prefectural government			
	(1)	(2)	(3)
Sec at Age 55	-0.1294	-0.1519	0.0965
	(0.1671)	(0.1863)	(0.1690)
Mayor in office for over 2 years	0.2653	0.3710	0.7471
	(0.5382)	(0.5323)	(0.4876)
Sec at Age 55*Mayor in office for over 2 years	0.6407**	0.5872*	0.7518**
	(0.2901)	(0.3231)	(0.3122)
Secretary Characters	No	Yes	Yes
Mayor Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	1380	1361	1343

Table 12:

GDP growth reported by prefectural government			
	(1)	(2)	(3)
Sec at Age 55	2.6787*	2.4336	2.6420*
	(1.5049)	(1.5588)	(1.5764)
Mayor Length in Office	-0.0917	-0.0818	-0.0846
	(0.1566)	(0.1787)	(0.1699)
Sec at Age 55*Mayor Length in Office	-0.8468**	-0.7383*	-0.7295*
	(0.3645)	(0.3984)	(0.3991)
Secretary Characters	No	Yes	Yes
Mayor Characters	No	Yes	Yes
Prefecture Statistic	No	No	Yes
Obs	677	668	664

Table 13: