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The Effect of Leadership Transition on Government Expenditure: Evidence from China*

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This paper examines the impact of leadership transition on government expenditure, particularly the composition of the expenditure. Using the Chinese provincial-level data during the period 1992-2006, we find that the transition of provincial leaders seems to have no significant effect on expenditure composition, either in the short run or long run. However, if the origins of provincial leaders are taken into consideration, only when they are from the central ministries, the replacement of the party secretary is associated with significant changes in the composition of government expenditure in the long run. Moreover, in comparison with other regions, the composition of government expenditure in autonomous regions is more likely to remain stable in the short run when the replacement of provincial party secretary occurs.

Key Words: Replacement of provincial leaders; Composition of government expenditure; Jingguan.

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1. INTRODUCTION

Leadership and governance are regarded as the key factors to understand China's remarkable economic growth over the past three decades (Li and Zhou, 2005; Zhang and Zhou, 2008; Zhou, 2008). As stated by Li and Zhou (2005), the promotion of Chinese local officials is based on their performance in governing the local economy. A rapid economic growth of a province may indicate good performance of a local leader, especially the provincial party secretary in the Chinese context, who is thereby more likely to be promoted. Therefore, to achieve a rapid provincial economic growth becomes a career goal as well as a political tool for local leaders to acquire promotion. There are several mechanisms through which local leaders may affect a provincial economy. Government expenditure[1] is a crucial mechanism that local leaders may manipulate to achieve a high provincial growth, either temporarily or permanently. According to Guo (2009), China's local leaders have great control on local government expenditure. In particular, the composition of provincial government expenditure varies when the transition of local leaders takes place. Thus, variations in the provincial government expenditure can reveal differences in policies chosen by past and current local leaders to achieve higher economic growth. In this paper, we employ Chinese provincial-level data to examine the impact of the leadership transition on the provincial government expenditure, particularly on the composition of government expenditure.

Many previous studies have examined the relationship between leadership transition and government expenditure. For example, Bawn (1999) argues that patterns of fiscal expenditure should respond to changes of government composition in a coalition government. Change of leaders in a country may lead to a switch of government spending policy. Using panel data from 71 democratic countries during 1972-2003, Brender and Drazen

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[1] In addition to government expenditure, local leaders may affect other public policies of a province, for example, taxation. However, since the 1994 reform in taxation, Chinese local governments have no longer been permitted to set their own tax rates, introduce new taxes or change the base points of tax collection (Wong and Bird, 2005). Hence, with the current fiscal institutions, leaders of local governments have greater economic autonomy on government expenditure than taxation policies.

(2009) find that the transition of a country's leader has no significant effect on the composition of central government expenditure in the short-run, but leadership changes are associated with significant changes in expenditure composition in the medium-run. However, Jones and Olken (2005) find no significant effect of a leader's death on expenditure growth. Among these studies, most addressing the impact of leadership transition on government expenditure uses the stylized fact and data from democratic countries, whereas few cases are undertaken with non-democratic countries (Fornasari et al., 2000; Tabellini, 2005).

China is a unitary country with political centralization, where the power of making decisions on economic policies is highly centralized. Only a few conditional decision-making authorities are delegated to the local government officials. As suggested by Maskin et al. (2000) and Li and Zhou (2005), once local leaders have power to allocate or reallocate resources according to their preferences, they are likely to prioritize their political career concerns over the development of the local economy. Huang (2002), Li and Zhou (2005), and Persson and Zhuravskaya (2009), also suggest alternative institutional forms as imperfect substitutes for democratic system in China. However, the effect of leadership transition on government expenditure has rarely been investigated using Chinese data.

In this paper, we employ Chinese provincial level data from the period 1992-2006 to examine the relationship between transition of provincial leaders and the composition of provincial government expenditure. Our results show that transition of provincial leaders appears to have no significant effect on the composition of government expenditure, either in the short run or long run. However, if taking the origins of provincial leaders into consideration, the replacement of the party secretary, particularly who comes from the central ministries, is associated with significant changes in the composition of local government expenditure in the long run. Moreover, the transition of provincial party secretary in autonomous regions is more likely to keep the composition of government expenditure stable in the short run. Our results are robust even when different measures are used as proxies for the composition of government expenditure.

The paper is organized as follows. Section 2 discusses the data and empirical specifications of the model. Section 3 and 4 presents and interprets the empirical results. The last section concludes the paper with relevant policy recommendations.

2. METHODOLOGY

2.1. Data

Our sample consists of 28 Chinese provinces (excluding Sichuan, Chongqing and Tibet) from 1992 to 2006. The data set contains some personal in-

formation about provincial leaders, including their age, education, native place, tenure and work experience prior to the current appointment. Information of provincial leaders is compiled from He, Li and Xiang (2003), Xu and Wang (2008) and Xinhua website. The data set also contains some economic variables such as total public expenditure per capita (lrpe), GDP growth rate (rggdp), total public expenditure growth rate (rggpe).[2] These economic variables come from the relevant issues of Chinese Statistical Yearbook and Government Finance Statistics Yearbook.

We use $Isq_{it}(n)$ to measure variations of expenditure composition in province i between year t and year $t-n$, which is constructed by Tsebelis and Chang (2004). Let m indexes the expenditure category. $g_{it,m}$ is the expenditure m's share in province i at date t, ranging from 0 to 1 and $\sum_{m=1}^{M} g_{it,m} = 1$.[3] The change of expenditure composition in province i between year t and year $t-1$ is

$$Isq_{i,t}(1) = \sqrt{\sum_{m=1}^{M} (g_{it,m} - g_{it-1,m})^2}.$$

Similarly, the change of expenditure composition in province i between year t and year $t-n$ is

$$Isq_{i,t}(n) = \sqrt{\sum_{m=1}^{M} (g_{it,m} - g_{it-n,m})^2}.$$

Table 1 summarizes descriptive statistics of key variables in our sample. The means and standard deviations of $Isq_{it}(n)$ are increasing in n (Table 1). For one-year sample, replacement rate of party secretary (20.4%) is lower than chief executive (24.2%). 58.4 percent of party secretary is promoted from the same province, 13.5 percent from other provinces, 19.9 percent is laterally transferred from other provinces, and only 8.2 percent comes from central ministries, that is, jingguan. For chief executive, 70.2 percent is promoted from the same province, 8.2 percent from other provinces, 3.6 percent is laterally transferred from other provinces and 18.1 percent is jingguan. The percent of chief executive who is jingguan is higher than party secretary. More chief executives are promoted from the same province and less laterally transferred from other provinces. 13.8 percent party secretary is a member of the Central Politburo, just 0.25 percent for chief

[2]These economic variables are real variables which are adjusted by CPI and the base period is 1992. Appendix B shows some technological details about method of how to construct control variables for different values of n.

[3]We divide provincial expenditure into 21 categories according to Government Finance Statistics Yearbook' classification, more details see appendix A.

TABLE 1.

Descriptive statistics

Variable	Observations	Mean	Std. dev	Min	Max
$Isq_{it}(1)$	392	0.0479	0.0251	0.0105	0.1703
$Isq_{it}(2)$	364	0.0648	0.0304	0.0174	0.2015
$Isq_{it}(4)$	308	0.0964	0.0421	0.0361	0.2788
$Isq_{it}(5)$	280	0.1119	0.0478	0.0410	0.3065
change_chief	392	0.2423	0.4290	0	1
change_party	392	0.2040	0.4035	0	1
promsam_ party	392	0.5841	0.4934	0	1
promoth_party	392	0.1352	0.3423	0	1
mover_party	392	0.1989	0.3997	0	1
jingguan_party	392	0.0816	0.2741	0	1
promsam_chief	392	0.7015	0.4581	0	1
promoth_chief	392	0.0816	0.2741	0	1
mover_chief	392	0.0357	0.1858	0	1
jingguan_chief	392	0.1811	0.3856	0	1
Central Politburo_chief	392	0.0025	0.0505	0	1
Central Politburo_party	392	0.1377	0.3450	0	1
age_chief	392	56.852	4.0864	42	66
age_party	392	58.392	4.0418	46	67
tenure_chief	392	3.0637	1.9332	1	12
tenure_party	392	3.7857	2.5517	1	12
uni_chief	392	0.8341	0.3723	0	1
uni_party	392	0.7091	0.4547	0	1
rggdp	392	10.7604	4.7350	−3.5953	25.0957
lrpe	392	6.2019	0.7252	4.6677	8.4250
rgpe	392	13.6204	10.4867	−18.849	51.3939
areas affected by natural disaster	392	3.9923	1.2099	0	6.0330

Note: Explanatory variables are from one year sample. promsam denotes provincial leader who is promoted from the same province; promoth indicates provincial leader who is promoted from other provinces; and mover is a lateral mover who is from other provinces. For simplify, we use the suffix "_party" to donate characteristic variables for party secretary, and the suffix "_chief" for chief executive.

executive. Mean age of party secretary and chief executive is 58.4 and 56.9, respectively. 83.4 percent of party secretary and 70.9 percent of chief executive have a bachelor degree or above.

Figure 1 plots means and standard deviations of the composition of government expenditure according to provincial leaders' replacements and origins in the short run, and Figure 2 shows the long run. First, according

to whether party secretary and chief executive change or not, we divide the whole sample into four groups. "party" indicates only party secretary changes in the year, "chief" for only chief executive changes in the year, "both" for both party secretary and chief executive change in the year, "neither" for neither party sectary nor chief executive change in the year. Second, based on party secretaries' origins (previous work places), we divide the sample into four categories: promotion from the same province (promsam), promotion from other provinces (promoth), lateral mover who is transferred from other provinces (mover) and jingguan who is from central ministries.

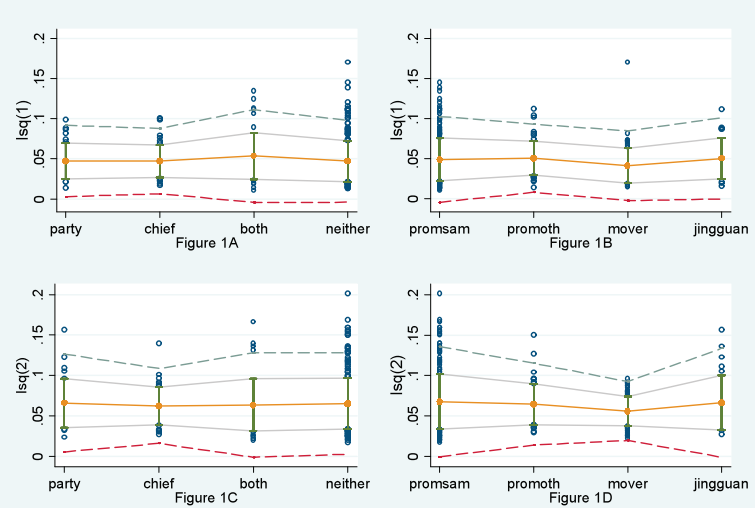

FIG. 1. Provincial leaders and Isq in the short run.

Note: Figure 1A and Figure 1C display means and standard deviations of $Isq(n)$ among different groups of provincial leaders' replacements in the short run. Figure 1B and Figure 1D show means and standard deviations of $Isq(n)$ among different origins of provincial party secretary in the short run.

2.2. Empirical specifications

The purpose of this paper is to investigate the relationship between the replacement of provincial leaders and the composition of government expenditure. We aim to answer the following questions: Does change of local leaders affect government expenditure differently between the short run and the long run? Do the origins of local leaders matter? What are the influences of geographic factors? For example, given the fact that social stability is more emphasized in autonomous regions, are the local leaders in

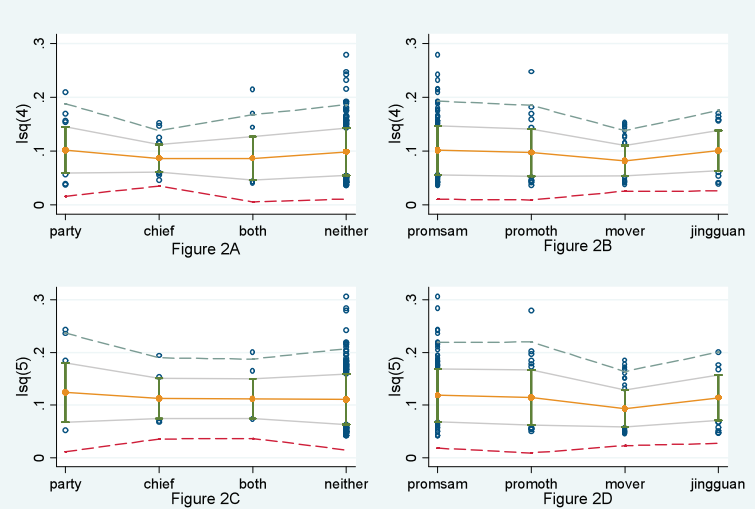

FIG. 2. Provincial leaders and Isq in the long run.

Note: Figure 2A and Figure 2C display means and standard deviations of Isq(n) among different groups of provincial leaders' replacements in the long run. Figure 2B and Figure 2D show means and standard deviations of $Isq(n)$ among different origins of provincial party secretary in the long run.

autonomous regions more conservative to adjust government expenditure? Are local officials in the centrally administrated cities more likely to change government expenditure?

Several factors influence the extent to which replacement of provincial leader has an effect on the composition of government expenditure. First, in the case of China, economic and fiscal decentralization increases the capacity of local leaders to manipulate government budget expenditure (Gong and Zou, 2002; Guo, 2009). The capacity of local leaders might be different across individuals. Party secretary and chief executive might have different capacities to manipulate budget expenditure. The provincial party secretary is clearly the "first hand" in a province, exercising political leadership and personnel control over subordinate party and governmen-t cadres. While chief executive is the top administrator of governments and in charge of the day-to-day management of government functions. An important feature of our paper is that, in contrast with previous work, the party secretary and the chief executive are treated as two different types of official, which allows us to analyze their different roles in local economic activities. Second, provincial leaders' individual characteristics might also influence their economic policy decisions. Thus, we incorporate

some variables in the empirical analysis, such as provincial leaders' educational background, whether he/she is a member of the Central Politburo, whether the province is his /her native place or not, as possible determinates of government expenditure. Third, it takes time to change spending policies which means leaders' change might not lead to a rapid adjustment of government expenditure. To take this into consideration, our regressions include both short-run sample (one and two years) and long-run sample (four and five years).

To test for the effects of replacement of provincial leaders (party secretary and chief executive) on the composition of government expenditure, the basic model is

$$\begin{aligned} Isq_{i,t}(n) &= \beta_1 \times \text{change\_party}_{i,t} + \beta_2 \times \text{change\_chief}_{i,t} \\ &\quad + X\gamma + Y\phi + Z\eta + \alpha_i + \lambda_t + t + \varepsilon_{i,t} \end{aligned} \tag{1}$$

Where $Isq_{i,t}(n)$ measures variations of expenditure composition in province i between year t and year $t-n$. In the empirical analysis, we also use Brender and Drazen's (2009) method to measure variations of government expenditure, which is $Iabs(n) = \frac{1}{2}\sum_{m=1}^{M} |g_{it,m} - g_{it-n,m}|$.[4] The main results are not sensitive to the different measures of government expenditure.

Two dummy variables, change_party and change_chief, are equal to one when replacements of party secretary and chief executive have taken place in the province, respectively. X is a vector of macroeconomic variables including government expenditure growth rate, per capita government expenditure, GDP growth rate and areas affected by natural disaster. The growth rate and per capita government expenditure are included as independent variables because the composition of government expenditure might depend on the level and the growth rate of budget spending (Brender and Drazen, 2009). Growth of the government expenditure allows reallocating resources to the local leader's preferences while keeping other types of spending unchanged. We include areas affected by natural disaster in regressions to account for natural disasters such as earthquake, flood, which provide exogenous shocks on government expenditure.

Y is a vector variable which denotes the origins of provincial leaders. According to Li and Zhou (2005), Wang and Xu (2008), we divide provincial leaders into four categories based on their origins (previous work places): promotion from the same province (promsam), promotion from other provinces (promoth), lateral mover who is transferred from other

[4]The difference between these two indexes is on how to weight the changes among specific expenditures. The index used by Tsebelis and Chang (2004) tends to give a larger weight to larger changes of specific expenditure, while $Iabs(n)$ gives the same weight to all kinds of variations.

provinces (mover) and jingguan who is from central ministries. Through the whole process of empirical analysis, we treat jingguan as the base group. Z is a vector of provincial governors' characteristics variables, including their age, tenure, education, native place and whether he/she is a member of the Central Politburo or not. To control for common policy changes over time and some unobserved time-fixed institutional factors, we use a two-way fixed effect model with a time trend. For simplicity, the suffix "_party" donates characteristic variables for party secretary and the suffix "_chief" for chief executive.

A provincial leader's experience in the central ministries may allow him/her to maintain stronger connections with center (Li and Zhou, 2005), which might strengthen his/her bargain power when he/she negotiates with central government or subordinates. In other words, different origins of provincial leaders might have different capability to adjust government expenditure. We add interactions between origins and replacements of provincial leaders into regressions to examine these effects.

$$\begin{aligned} Isq_{i,t}(n) \;=\; & \beta_1 \times \text{change\_party}_{i,t} + \beta_2 \times \text{change\_chief}_{i,t} + \sum_{s=1}^{3} \kappa_s \times \text{origin\_party}_s \\ & + \sum_{p=1}^{3} \delta_p \times \text{origin\_chief}_p + X\gamma + Y\phi + Z\eta + \alpha_i + \lambda_t + t + \varepsilon_{i,t} \end{aligned} \tag{2}$$

Where origin_party are interactions between change_party and the origins of party secretary, origin_chief are interactions between change_chief and origins of chief executive, s denotes the categories of provincial leaders' origins. As jingguan is the base group, β_1 and β_2 measure the jingguan's marginal effect on expenditure composition when replacement of provincial leaders happened. We use the same technique to examine demographic factors' effect on expenditure composition.

3. EMPIRICAL RESULTS

3.1. Replacement of provincial leaders and the composition of government expenditure

Table 2 and 3 report the estimation results of Equation 1. The coefficients of change_party and change_chief in Table 2 and Table 3 show that provincial leaders' replacements have no significant effect on the composition of government expenditure, either in the short run or in the long run. While using $Iabs(n)$ to measure variations of the composition of government expenditure, these results are still unchanged.

However, the origins of provincial leaders have significant effects on the composition of government expenditure. To be specific, party secretary who is a lateral mover makes less change on the composition of government expenditure than party secretary who is jingguan. Moreover, coefficients of promsam_party and promoth_party reduce to zero when regression sample changes from one year sample to five years sample. For instance, in column 4 of Table 2, coefficient of promsam_party is -0.012 and significant at the level of 1%; while in column 9 of Table 3, coefficient of promsam_party is -0.008 and insignificant at the level of 10%. This shows that, party secretary who is promoted from the same province makes less change on the composition of government expenditure than jingguan does, in the short run. However, in the long run, they have the same effect on the composition of government expenditure as jingguan does. Unlike party secretary, the origins of chief executive are always statistically insignificant.

Also, the regressions reported in Table 2 show that the characteristics variables of provincial leaders, such as age, education, tenure, native place, membership of Central Politburo, have no significant effect on the composition of government expenditure. Among macroeconomic variables, only total public expenditure has a positive effect on the composition of government expenditure. This is consistent previous findings by Brender and Drazen (2009) that more public expenditure associates with larger change of the composition of government expenditure.

3.2. Origins, replacement of provincial leaders, and the composition of government expenditure

Table 4 and 5 contain the estimation results for equation 2. As Table 4 shows that, using one-year and two-year samples, replacement of provincial leaders has no significant effect on the composition of government expenditure, even if we consider the interaction effects of the origins of provincial leaders on the composition of government expenditure. However, when we expand our estimation to 4 and 5 year sample, coefficients of interaction variables are statistically significant (see Table 5). The results obtained here differ from those for regression 1, which means that, when replacement of provincial leaders occurs, the origins of party secretary have different effects on the composition of government expenditure in the long run. The explanation is as follows: after adding interactions, coefficient of chang_party denotes marginal effect of party secretary who is jingguan, not the average effect of all types of party secretary as in Table2 and Table3. Taking column 3 of Table 5 as an example, coefficient of change_party is 0.035, which shows that replacement of party secretary who is jingguan will increase $Isq(4)$ by 0.035. Coefficient of change$*$promsam_party is -0.037, which suggests that replacement of party secretary, who is promoted from the same province, will reduce $Isq(4)$ by $0.002(= 0.037-0.035)$. Since 0.002

TABLE 2.

Replacements of provincial leaders and composition of government expenditure (short run sample)

	$Isq(1)$				$Iabs(1)$	$Isq(2)$				$Iabs(2)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
change_party	0.003		0.002	0.004	0.003	−0.005		−0.002	−0.005	−0.003
	(0.005)		(0.003)	(0.005)	(0.005)	(0.003)		(0.004)	(0.004)	(0.004)
change_chief		0.000	−0.001	−0.001	−0.003		−0.005**	−0.005*	−0.002	−0.003
		(0.004)	(0.003)	(0.004)	(0.005)		(0.002)	(0.003)	(0.002)	(0.003)
promsam_party	−0.013***		−0.011***	−0.012**	−0.016***	−0.012**		−0.011*	−0.010	−0.013*
	(0.004)		(0.004)	(0.005)	(0.005)	(0.006)		(0.006)	(0.007)	(0.007)
promoth_party	−0.014**		−0.014**	−0.010	−0.014*	−0.011		−0.011	−0.010	−0.016**
	(0.006)		(0.007)	(0.006)	(0.008)	(0.007)		(0.008)	(0.007)	(0.008)
mover_party	−0.011**		−0.011**	−0.011**	−0.015**	−0.017***		−0.015**	−0.015**	−0.016**
	(0.004)		(0.005)	(0.005)	(0.006)	(0.006)		(0.006)	(0.007)	(0.007)
promsam_chief		0.000	0.002	0.002	0.004		0.003	0.003	0.003	0.006
		(0.003)	(0.003)	(0.004)	(0.004)		(0.003)	(0.003)	(0.005)	(0.006)
promoth_chief		0.008	0.007	0.008	0.007		0.002	−0.000	0.005	0.004
		(0.006)	(0.006)	(0.008)	(0.008)		(0.007)	(0.007)	(0.010)	(0.011)
mover_chief		−0.001	0.001	0.001	0.003		−0.002	0.001	−0.003	0.002
		(0.008)	(0.008)	(0.008)	(0.009)		(0.006)	(0.004)	(0.006)	(0.008)
rggdp	0.001	0.000	0.001	0.001	0.001	−0.000	−0.000	−0.000	−0.000	−0.000
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lrpe	0.006	0.005	0.008	0.000	0.001	0.001	−0.001	0.001	−0.007	−0.002
	(0.017)	(0.017)	(0.017)	(0.015)	(0.015)	(0.023)	(0.026)	(0.024)	(0.025)	(0.026)
rgpe	0.001**	0.001**	0.001**	0.001**	0.001**	0.000**	0.001**	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	0.224	0.015	0.035	0.130	0.099	0.059	0.219	0.096	0.167	0.093
	(0.239)	(0.153)	(0.099)	(0.260)	(0.239)	(0.376)	(0.223)	(0.136)	(0.456)	(0.378)
Z_party	yes			yes	yes	yes			yes	yes
Z_chief		yes		yes	yes		yes		yes	yes
Trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	392	392	392	392	392	364	364	364	364	364
Within R^2	0.356	0.344	0.342	0.382	0.465	0.267	0.258	0.261	0.291	0.399

Note: In column 1 and 6, regression analysis only includes party secretary's related explanatory variables; only chief executive's related explanatory variables for column 2 and 7. Explained variable is $Iabs(n)$ for column 5 and 10. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

is statistically insignificant at 10% level (p value is 0.7293), this means that replacement of party secretary, who is promoted from the same province,

TABLE 3.

Replacements of provincial leaders and composition of government expenditure (long run sample)

	$Isq(4)$				$Iabs(4)$	$Isq(5)$				$Iabs(5)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
change_party	0.000		0.003	0.001	0.002	0.003		0.003	0.004	0.006
	(0.004)		(0.004)	(0.005)	(0.005)	(0.006)		(0.006)	(0.006)	(0.006)
change_chief		−0.004	−0.008	−0.004	−0.001		0.002	0.001	−0.000	0.002
		(0.004)	(0.005)	(0.004)	(0.004)		(0.005)	(0.005)	(0.005)	(0.006)
promsam_party	−0.014		−0.017*	−0.016*	−0.015	−0.007		−0.008	−0.008	−0.005
	(0.009)		(0.009)	(0.009)	(0.010)	(0.013)		(0.011)	(0.014)	(0.014)
promoth_party	−0.004		−0.013	−0.012	−0.023*	0.003		−0.003	0.001	−0.008
	(0.010)		(0.011)	(0.011)	(0.013)	(0.016)		(0.014)	(0.016)	(0.018)
mover_party	−0.027**		−0.029**	−0.027**	−0.025**	−0.027**		−0.028**	−0.027*	−0.026*
	(0.010)		(0.011)	(0.011)	(0.012)	(0.013)		(0.013)	(0.014)	(0.015)
promsam_chief		0.002	−0.004	0.003	0.007		0.006	−0.001	0.008	0.011
		(0.006)	(0.005)	(0.006)	(0.007)		(0.006)	(0.005)	(0.007)	(0.007)
promoth_chief		−0.013*	−0.018***	−0.010	−0.011		−0.012	−0.016*	−0.008	−0.008
		(0.007)	(0.006)	(0.007)	(0.009)		(0.009)	(0.008)	(0.009)	(0.010)
mover_chief		−0.001	0.003	0.003	0.004		0.006	0.011	0.012	0.014
		(0.012)	(0.013)	(0.015)	(0.017)		(0.017)	(0.014)	(0.016)	(0.020)
rggdp	0.000	0.000	0.000	0.000	0.000	−0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lrpe	0.022	0.025	0.020	0.014	0.015	0.033	0.026	0.018	0.037	0.034
	(0.030)	(0.032)	(0.028)	(0.032)	(0.039)	(0.041)	(0.036)	(0.038)	(0.038)	(0.044)
rgpe	0.000***	0.000***	0.000***	0.000***	0.001***	0.000**	0.000***	0.000**	0.000**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	−0.288	0.461	−0.027	0.219	0.162	−0.625	0.394	0.001	−0.095	0.170
	(0.492)	(0.274)	(0.158)	(0.550)	(0.589)	(0.919)	(0.354)	(0.209)	(0.770)	(0.785)
Z_party	yes			yes	yes	yes			yes	yes
Z_chief		yes		yes	yes		yes		yes	yes
Trend	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	308	308	308	308	308	280	280	280	280	280
Within R^2	0.529	0.515	0.523	0.550	0.633	0.596	0.560	0.571	0.611	0.675

Note: In column 1 and 6, regression analysis only includes party secretary's related explanatory variables; only chief executive's related explanatory variables for column 2 and 7. Explained variable is $Iabs(n)$ for column 5 and 10. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

has no significant effect on the composition of government expenditure in four-year sample. Similarly, replacement of party secretary, who is promot-

ed other province or laterally transferred, has no effect on the composition of government expenditure (p value is 0.3617 and 0.1986, respectively). In other words, appointed jingguan from central ministries is the only kind of party secretary that their replacements lead to significant change in the composition of government expenditure in our four-year sample. This explains why coefficients of change_party are insignificant in Table 3. As replacement of party secretary who is jingguan is only 8.4% in four years sample, it is too few observations to make estimation of change_party significant in Table 3, where change_party measures the average effect of all types of party secretary.

This finding is consistent with results obtained by a number of previous researchers. A provincial leader who is jingguan may have closer links with central ministry (Li and Zhou, 2005) and therefore have higher probability to be promoted. As reported by Wang and Xu (2008), jingguans' probability of promotion is higher than other provincial leaders, even if jingguan has a worse economic performance. Less pressure for better economic performance allows jingguan to invest more resources in other social tasks rather than economic growth, which results in higher chances of changes or larger variations of the composition of government expenditure. Furthermore, an expected promotion also strengthens jingguan's bargain power in dealing with local affairs. All of these make jingguan's behaviors be different from provincial leaders from other origins.

In the long run samples, the origins of party secretary are statistically insignificant after controlling the interaction effect. As in column 3 of Table 5, coefficient of promsam_party is insignificant, which shows that when there is no replacement of party secretary, the composition of government expenditure in a province with the official promoted from the same province is not significantly different from the one who is jingguan. However, when there is a replacement of party secretary, the former has a smaller effect ($-0.046 = -0.037 + (-0.009)$) on the composition of government expenditure than jingguan does. To summarize, there are no different effects among the origins of party secretary on the composition of government expenditure, when no replacement has taken place. However, other origins of party secretary have smaller effect on the composition of government expenditure than jingguan does, when the replacement of party secretary has happened.

It should be pointed out that, party secretary and chief executive have played different roles on the composition of government expenditure. Replacement of chief executive is always statistically insignificant. Even when we only include replacement of chief executive in the regressions, this result did not change in any relevant way.

TABLE 4.

origins, replacements of provincial leaders and composition of government expenditure (short run sample)

	$Isq(1)$			$Iabs(1)$	$Isq(2)$			$Iabs(2)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
change_party	0.006		0.005	0.004	0.014		0.014	0.017
	(0.012)		(0.012)	(0.012)	(0.016)		(0.014)	(0.015)
change∗promsam_party	−0.001		0.003	0.004	−0.021		−0.019	−0.020
	(0.012)		(0.012)	(0.012)	(0.015)		(0.014)	(0.015)
change∗promoth_party	−0.011		−0.008	−0.004	−0.032		−0.035*	−0.037*
	(0.012)		(0.013)	(0.013)	(0.019)		(0.019)	(0.019)
change∗mover_party	−0.009		−0.005	−0.005	−0.022		−0.022	−0.023
	(0.011)		(0.011)	(0.011)	(0.016)		(0.015)	(0.017)
change_chief		−0.005	−0.007	−0.006		−0.008	−0.005	−0.004
		(0.006)	(0.006)	(0.007)		(0.007)	(0.007)	(0.007)
change∗promsam_chief		0.004	0.003	0.002		0.006	0.005	0.004
		(0.006)	(0.007)	(0.007)		(0.007)	(0.008)	(0.008)
change∗promoth_chief		0.026*	0.026*	0.015		−0.004	−0.007	−0.007
		(0.013)	(0.013)	(0.014)		(0.018)	(0.018)	(0.018)
change∗mover_chief		−0.003	−0.003	−0.011		0.001	0.000	−0.005
		(0.007)	(0.008)	(0.009)		(0.012)	(0.012)	(0.015)
promsam_party	−0.012***		−0.012*	−0.017**	−0.006		−0.005	−0.008
	(0.004)		(0.006)	(0.006)	(0.007)		(0.008)	(0.009)
promoth_party	−0.011*		−0.008	−0.013	−0.003		−0.003	−0.008
	(0.006)		(0.007)	(0.008)	(0.008)		(0.009)	(0.009)
mover_party	−0.008		−0.010	−0.013**	−0.010		−0.009	−0.010
	(0.005)		(0.006)	(0.006)	(0.006)		(0.007)	(0.008)
promsam_chief		−0.001	0.001	0.003		0.001	0.003	0.006
		(0.004)	(0.005)	(0.005)		(0.004)	(0.006)	(0.006)
promoth_chief		−0.001	−0.001	0.002		0.003	0.007	0.007
		(0.006)	(0.008)	(0.008)		(0.009)	(0.011)	(0.012)
mover_chief		0.000	0.002	0.006		−0.002	−0.000	0.007
		(0.008)	(0.008)	(0.009)		(0.007)	(0.009)	(0.012)
rggdp	0.001	0.000	0.001	0.001	−0.000	−0.000	−0.000	−0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lrpe	0.007	0.004	0.000	0.002	0.001	−0.001	−0.008	−0.004
	(0.017)	(0.016)	(0.013)	(0.014)	(0.023)	(0.027)	(0.025)	(0.025)
rgpe	0.001**	0.001**	0.001**	0.001**	0.001***	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	0.202	0.011	0.079	0.052	0.058	0.213	0.185	0.114
	(0.242)	(0.157)	(0.279)	(0.260)	(0.362)	(0.224)	(0.435)	(0.358)
Z_party	yes		yes	yes	yes		yes	yes
Z_chief		yes	yes	yes		yes	yes	yes
Trend	yes	yes	yes	yes	yes	yes	yes	yes
Year effect	yes	yes	yes	yes	yes	yes	yes	yes
Observations	392	392	392	392	364	364	364	364
Within R^2	0.361	0.358	0.400	0.473	0.279	0.261	0.307	0.413

Note: In column 1 and 6, regression analysis only includes party secretary's related explanatory variables; only chief executive's related explanatory variables for column 2 and 7. Explained variable is $Iabs(n)$ for column 5 and 10. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

TABLE 5.

origins, replacements of provincial leaders and composition of government expenditure (long run sample)

	$Isq(4)$			$Iabs(4)$	$Isq(5)$			$Iabs(5)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
change_party	0.035**		0.035**	0.044***	0.047**		0.043*	0.042
	(0.016)		(0.017)	(0.014)	(0.023)		(0.023)	(0.026)
change∗promsam_party	−0.038**		−0.037**	−0.046***	−0.050*		−0.044*	−0.039
	(0.017)		(0.017)	(0.014)	(0.025)		(0.024)	(0.027)
change∗promoth_party	−0.048**		−0.043**	−0.047**	−0.052**		−0.047*	−0.034
	(0.020)		(0.019)	(0.019)	(0.025)		(0.027)	(0.032)
change∗mover_party	−0.040**		−0.039**	−0.050***	−0.048*		−0.046*	−0.049
	(0.017)		(0.017)	(0.015)	(0.026)		(0.026)	(0.029)
change_chief		−0.004	−0.003	0.000		0.007	0.005	0.014
		(0.007)	(0.007)	(0.008)		(0.009)	(0.010)	(0.010)
change∗promsam_chief		0.001	0.001	−0.002		−0.003	−0.001	−0.013
		(0.009)	(0.010)	(0.010)		(0.012)	(0.012)	(0.013)
change∗promoth_chief		−0.006	−0.006	0.011		−0.028*	−0.037*	−0.039**
		(0.019)	(0.024)	(0.022)		(0.014)	(0.019)	(0.019)
change∗mover_chief		−0.008	−0.002	0.004		0.000	0.000	0.000
		(0.021)	(0.022)	(0.026)		(.)	(.)	(.)
promsam_party	−0.006		−0.009	−0.006	0.002		0.001	0.002
	(0.010)		(0.010)	(0.010)	(0.012)		(0.013)	(0.013)
promoth_party	0.005		−0.004	−0.015	0.012		0.010	−0.001
	(0.009)		(0.011)	(0.013)	(0.013)		(0.014)	(0.016)
mover_party	−0.020*		−0.020*	−0.017	−0.020		−0.021	−0.019
	(0.010)		(0.011)	(0.011)	(0.012)		(0.013)	(0.013)
promsam_chief		0.001	0.002	0.007		0.006	0.007	0.011
		(0.007)	(0.007)	(0.008)		(0.007)	(0.008)	(0.008)
promoth_chief		−0.012	−0.011	−0.013		−0.011	−0.008	−0.008
		(0.008)	(0.009)	(0.010)		(0.009)	(0.010)	(0.010)
mover_chief		−0.000	0.003	0.002		0.006	0.010	0.013
		(0.015)	(0.016)	(0.018)		(0.017)	(0.015)	(0.019)
rggdp	0.000	0.000	0.000	0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lrpe	0.013	0.025	0.006	0.005	0.018	0.029	0.026	0.024
	(0.030)	(0.032)	(0.032)	(0.036)	(0.041)	(0.035)	(0.038)	(0.043)
rgpe	0.000***	0.000***	0.000***	0.001***	0.000**	0.000**	0.000**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	−0.244	0.461	0.247	0.156	−0.627	0.367	−0.230	0.078
	(0.512)	(0.275)	(0.575)	(0.625)	(0.918)	(0.357)	(0.701)	(0.734)
Z_party	yes		yes	yes	yes		yes	yes
Z_chief		yes	yes	yes		yes	yes	yes
Trend	yes	yes	yes	yes	yes	yes	yes	yes
Year effect	yes	yes	yes	yes	yes	yes	yes	yes
Observations	308	308	308	308	280	280	280	280
Within R^2	0.542	0.516	0.563	0.647	0.610	0.563	0.627	0.685

Note: In column 1 and 6, regression analysis only includes party secretary's related explanatory variables; only chief executive's related explanatory variables for column 2 and 7. Explained variable is Iabs for column 5 and 10. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

3.3. Geographical factors, replacements of provincial leaders and the composition of government expenditure

We use interactions of regional dummy and replacement of provincial leaders to examine whether geographical factors matter for the composition of government expenditure. eparty is the interaction of eastern of China and change_party, wparty is the interaction of western of China and change_party, echief is the interaction of eastern of China and change_chief, wchief is the interaction of western of China and change_chief; cparty is the interaction of centrally administrated city and change_party, cchief is the interaction of centrally administrated city and change_chief; mparty is the interaction of autonomous regions and change_party, mchief is the interaction of autonomous regions and change_chief. Results are shown in Table 6.

From panel A of Table 6, coefficients of eparty, wparty, eshz and wchief are statistically insignificant, which indicates that replacement of provincial leaders does not have different effects on the composition of government expenditure among eastern, central and western of China, either in the short run or long run. The coefficients of regional dummies are insignificant in all the regressions where it was included, as shown in panel B of Table 6, suggesting that whether a province is centrally administrated city or not has no significant effect on the composition of government expenditure. Compared with others, replacement of party secretary in the autonomous regions has negative effect on the composition of government expenditure in the short-run but has no significant effect in the long run. One possible explanation is that, social stability is a more important political mission of provincial leaders in autonomous regions than other provinces. Furthermore, some special historical and culture factors are also major challenges for governors in autonomous regions, which take provincial leaders longer to familiarize with local affairs in the regions. It is therefore a wise strategy for new provincial leaders in autonomous regions to act more conservative in the short run. Using Iabs(n) to measure variation of expenditure composition, all the results are still held.

4. INTERPRETATION

Our empirical study suggests that the replacement of provincial leaders has no significant effect on the composition of government expenditure, either in the short run or long run. There are two main reasons: First, there is maybe little room for provincial leaders to adjust fiscal budget according to their preferences. Brender and Drazen (2009) argue that some entitlement spending is made pursuant to laws and thus is lack of annual variation. For instance, 75 percents of federal budget of U.S is uncontrol-

TABLE 6.

demographic factors, replacements of provincial leaders and Isq,

	$Isq(n)$				$Iabs(n)$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1 year	2 years	4 years	5 years	1 year	2 years	4 years	5 years
Panel A: eastern, central and western of China								
change_party	0.006	−0.004	0.001	0.003	0.007	−0.002	0.002	0.005
	(0.006)	(0.006)	(0.007)	(0.008)	(0.007)	(0.006)	(0.008)	(0.008)
change_chief	0.002	−0.003	−0.006	0.000	−0.000	−0.003	−0.001	0.004
	(0.006)	(0.003)	(0.006)	(0.007)	(0.006)	(0.004)	(0.006)	(0.008)
eparty	−0.005	−0.002	0.001	0.002	−0.009	−0.002	0.002	0.003
	(0.006)	(0.008)	(0.008)	(0.016)	(0.007)	(0.009)	(0.009)	(0.015)
wparty	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
echief	−0.008	0.000	0.005	−0.001	−0.006	0.000	−0.000	−0.005
	(0.006)	(0.006)	(0.008)	(0.012)	(0.005)	(0.007)	(0.009)	(0.013)
wchief	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Observations	392	364	308	280	392	364	308	280
Within R^2	0.391	0.292	0.551	0.611	0.473	0.399	0.633	0.675
Panel B: centrally administrated cities								
change_party	0.006	−0.004	0.001	0.003	0.007	−0.002	0.002	0.005
	(0.006)	(0.006)	(0.007)	(0.008)	(0.007)	(0.006)	(0.008)	(0.008)
change_chief	0.002	−0.003	−0.006	0.000	−0.000	−0.003	−0.001	0.004
	(0.006)	(0.003)	(0.006)	(0.007)	(0.006)	(0.004)	(0.006)	(0.008)
cparty	−0.005	−0.002	0.001	0.002	−0.009	−0.002	0.002	0.003
	(0.006)	(0.008)	(0.008)	(0.016)	(0.007)	(0.009)	(0.009)	(0.015)
cchief	−0.008	0.000	0.005	−0.001	−0.006	0.000	−0.000	−0.005
	(0.006)	(0.006)	(0.008)	(0.012)	(0.005)	(0.007)	(0.009)	(0.013)
Observations	392	364	308	280	392	364	308	280
Within R^2	0.390	0.301	0.554	0.612	0.474	0.413	0.635	0.676

lable in 1989 (Peters, 1991; Brueckner, 2000). Meanwhile, bureaucrats in ministries and their subordinate departments play an important role in implementing public policy, which might restrict the discretionary power of provincial leaders on government expenditure. Peters (1991) argues that when the chance of own department budget cutting rises, bureaucrats would try their best to prevent it. The divergence of preferences between provinces and ministries causes some inflictions between the interests of sectors and territories. As ministries and provincial governments are of

Panel C: autonomous regions								
change_party	0.006	−0.002	0.003	0.002	0.006	0.000	0.005	0.005
	(0.005)	(0.004)	(0.005)	(0.007)	(0.005)	(0.004)	(0.006)	(0.007)
change_chief	−0.004	−0.004	−0.008	0.003	−0.006	−0.004	−0.003	0.005
	(0.004)	(0.003)	(0.005)	(0.005)	(0.005)	(0.004)	(0.006)	(0.006)
mparty	-0.015^{*}	-0.026^{**}	−0.007	0.006	-0.021^{***}	-0.035^{***}	−0.013	0.000
	(0.009)	(0.010)	(0.013)	(0.013)	(0.007)	(0.011)	(0.014)	(0.015)
mchief	0.014	0.006	0.019^{*}	-0.016^{**}	0.015^{*}	0.003	0.014	-0.019^{*}
	(0.009)	(0.007)	(0.010)	(0.008)	(0.008)	(0.007)	(0.010)	(0.009)
Observations	392	364	308	280	392	364	308	280
Within R^2	0.390	0.301	0.554	0.612	0.474	0.413	0.635	0.676

Note: ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

the same bureaucratic rank in China, provincial government exercises no direct personnel control over those bureaucrats who are working in the subordinate departments of ministries in the province. Furthermore, recently the Chinese central government has reformed its administration system by strengthening vertical control of some functional departments. This is not good news for provincial leaders, who want to change government expenditure composition. For example, in October 1998, the People's Bank of China carried out a major reform in the management system. This reform combined 31 provincial branches into 9 regional branches in order to strengthen authority and independence of People's Bank of China in the execution of the monetary policy. This reform created implicit check and balance mechanisms to keep provincial leaders from abusing their power while in office, which weakened provincial government's ability of finance for public goods indirectly. As a result, these vertical reforms constrained provincial leaders' manipulating behaviors of government expenditure while they are in office.

Second, while it is hard to change budget expenditure, provincial leaders might use other public policies as substitutes. Extra budgetary funds may be a good alternative. In China, local government engages in many activities off budget, budget expenditure is only part of the fiscal story, and not necessarily the most important part (Gong and Zou, 2003; Wong and Bird, 2005). According to formal reports, total extra budgetary funds are up to 611 billion in 2007, while 566 billion?92.6 percent) belong to local government.[5] In Table 7, we tested whether replacement of provincial leaders tend to expand extra budgetary funds or not. The replacement of party

[5]Wong and Bird (2005) argue that official report has underestimated the size of extra budgetary funds, and extra budgetary funds and extra budgetary activities of government is up to 19-27 percent of GDP.

secretary will lead to 2% increase of extra budget funds, while replacement of executive chief has no effect. It should be noted here that, although the results in Table 7 provide empirical evidence that replacement of party secretary expands extra budgetary funds, there is no direct evidence that these extra funds was used as a substitution of adjusting budget expenditure to achieve economic goals.

5. CONCLUSION

We analyze the impact of leadership transition on government expenditure, particularly the composition of the expenditure, using Chinese provincial data during the period 1992-2006. We find that the transition of provincial leaders has no significant effect on the composition of government expenditure, either in the short run or long run. The divergence in the preferences or interests of bureaucrats and provincial leaders limits the discretion of provincial leaders and their attempt to change the composition of government expenditure in the Chinese context. Moreover, the huge size of extra budgetary funds may also affect provincial leaders' willingness to adjust budget expenditure to achieve their goals. This phenomenon reflects one of the popular sayings in China, "budget expenditures are for government operation, while extra budgetary expenditures are for development" (yusuannei baoyunzhuan, yusuanwai gaofazhan).

APPENDIX A

Government expenditure classification

To be consistent with China's economic transition from planning economy to market economy, the classifications of government expenditure in Government Finance Statistics Yearbook are adjusted several times. In this paper, based on the 1995 classification in the Yearbook, we rearrange government expenditures into 21 categories, as follows: expenditures for construction, innovation enterprises, geological prospecting, science and technology promotion, circulating funds, agriculture, forestry, operating expenses of departments industry & transportation, operating expenses of department commerce, operating expenses of departments of culture, sport & broadcasting and education, operating expenses of departments of science, operating expenses of departments of other departments, pensions and social security, national defense, government administration, public security agency, procuratorial agency and court of justice, city maintenance, price subsidies, supporting underdeveloped areas, special items and other expenditures.

To be specific, we combine "city youth employment fee" into "special items", "simple construction" into "construction", "assisting rural produc-

TABLE 7.

replacement of provincial leaders and extra budgetary funds

	Extra budgetary spending				Extra budgetary income			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
change_party	0.0224*		0.0205*	0.0205*	0.0218**		0.0213*	0.0213*
	(0.0110)		(0.0114)	(0.0114)	(0.0105)		(0.0106)	(0.0106)
change_chief		−0.0051	0.0090	0.0090		−0.0058	0.0080	0.0080
		(0.0216)	(0.0258)	(0.0258)		(0.0230)	(0.0273)	(0.0273)
promsam_party	0.0960		0.0740	0.0740	0.0833		0.0608	0.0608
	(0.1054)		(0.1001)	(0.1001)	(0.1013)		(0.0964)	(0.0964)
promoth_party	−0.0011		−0.0336	−0.0336	−0.0025		−0.0391	−0.0391
	(0.0514)		(0.0468)	(0.0468)	(0.0490)		(0.0464)	(0.0464)
mover_party	0.0172		0.0162	0.0162	0.0259		0.0243	0.0243
	(0.0428)		(0.0319)	(0.0319)	(0.0361)		(0.0286)	(0.0286)
promsam_chief		0.0979***	0.0765**	0.0765**		0.0821***	0.0638**	0.0638**
		(0.0265)	(0.0309)	(0.0309)		(0.0232)	(0.0279)	(0.0279)
promoth_chief		0.0400	0.0385	0.0385		0.0391	0.0325	0.0325
		(0.0723)	(0.0772)	(0.0772)		(0.0707)	(0.0737)	(0.0737)
mover_chief		−0.0439	−0.0768	−0.0768		−0.0457	−0.0763	−0.0763
		(0.0971)	(0.0785)	(0.0785)		(0.0921)	(0.0685)	(0.0685)
rggdp	−0.0022	−0.0028	−0.0033	−0.0033	−0.0012	−0.0017	−0.0021	−0.0021
	(0.0031)	(0.0031)	(0.0030)	(0.0030)	(0.0030)	(0.0029)	(0.0028)	(0.0028)
lrpe	0.5348**	0.5876**	0.4998*	0.4998*	0.5147**	0.5490**	0.4707*	0.4707*
	(0.2215)	(0.2568)	(0.2456)	(0.2456)	(0.2323)	(0.2649)	(0.2578)	(0.2578)
rgpe	−0.0035**	−0.0043**	−0.0036**	−0.0036**	−0.0034**	−0.0040**	−0.0033**	−0.0033**
	(0.0013)	(0.0016)	(0.0013)	(0.0013)	(0.0014)	(0.0016)	(0.0013)	(0.0013)
constant	0.1903	2.9072	2.8316	2.7297	0.3744	3.1039	3.2117	3.1019
	(1.1601)	(2.0229)	(2.0911)	(2.1007)	(1.2422)	(2.2133)	(2.2814)	(2.2909)
Z_party	yes		yes	yes	yes		yes	yes
Z_chief		yes	yes	yes		yes	yes	yes
Trend	yes	yes	yes	yes[a]	yes	yes	yes	yes[a]
Year effect	yes	yes	yes	yes	yes	yes	yes	yes
Observations	392	392	392	392	392	392	392	392
Within R^2	0.8444	0.8428	0.8530	0.8530	0.8542	0.8532	0.8622	0.8622

Note: In column 1 and 5, regression analysis only includes party secretary's related explanatory variables; only chief executive's related explanatory variables for column 2 and 6. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent level, respectively. Standard errors are robust and clustered at provincial level in parentheses.

[a] we add a quadratic polynomial trend in regressions.

tion" and "agricultural comprehensive development" into "agriculture", "operating of agriculture, forestry, water conservancy and meteorology"

into "forestry", "aimed police troops" into "national defense", "foreign affair" into "government administration", "developing land and sea area" and "interest debt" into "other expenditures", "vehicle tax" into "special items", "pensions and relief funds for social welfare", "retired persons in administrative department" and "subsidies to social security programs" into "pensions and social security".

APPENDIX B

Control variables for different values of n

In this paper, regression samples include short-run (one and two years) samples and long-run (four and five years) samples. As $n = 1$, these control variables are all the current observation value. As $n > 1$, there are several rules to construct control variables according to different features of variables. As some variables are time-invariant, such as education, native place and the origins of provincial leaders, there are all the observation values at t year no matter for different values of n. Provincial leaders' characteristic variables and some macroeconomic variables, such as age, tenure, public expenditure per capita and areas affected by natural disaster are the observation values at t year. Dummy variables of replacement of provincial leaders are the observation values at $t - n$ year. Growth rate GDP and public expenditure are the total growth rate from $t - n$ year to t year.

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