

# Study on the Relationship Between Local Official Change and Economic Growth Data from 14 prefecture-level cities in a province

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## ABSTRACT

Using the panel data of 14 prefecture-level cities in G province from 2005 to 2017, a multiple regression analysis was established to test the impact of the change of municipal city officials on the economic growth of the jurisdiction. The results showed that the change of mayor led to a decrease in the GDP growth rate and GDP growth rate per capita that year, and the change of party secretary affected the growth rate of the output value of the three industries. There is no significant correlation with the growth rate of urban residents' disposable income.

**Keywords:** Change of municipal officials, Economic growth, Local government governance

## 1. INTRODUCTION

The rapid economic growth of China after the reform and opening up has attracted the attention of the world. In the past period of rapid development, some studies have focused on the influence of provincial local officials on the performance of their jurisdictions. During the tenure, local officials can realize their influence on the public policy of the district through fiscal budget and expenditure policy, so the change of officials can be reflected in the governance structure of the district through the local fiscal budget structure. For example, when officials are replaced, the growth rate and proportion of science, education, culture and health expenditure in the fiscal expenditure budget of the current year will increase, the proportion of business expenditure and economic construction expenditure in the total expenditure will increase<sup>[1]</sup>, and the investment in transportation infrastructure will decrease significantly and show an inverted U-shape during the term of office<sup>[2]</sup>. Enterprises within the jurisdiction will adjust their business strategies according to local policies. Local officials have different political views and preferences, which will lead to policy changes and then affect the interaction between government and enterprises. For example, the term of office of municipal Party secretary is significantly positively correlated with the loan issuance of city commercial banks<sup>[3-4]</sup>, and the change of officials will weaken the investment of private enterprises<sup>[5]</sup>, significantly reduce the probability of

urban bond issuance<sup>[6]</sup>, and cause the efficiency loss of manufacturing enterprises<sup>[7]</sup>. The change of local officials leads to the change of administrative structure and regional policy, which is further reflected through the development of regional economy.

Nowadays, the economic growth trend has shifted from high speed to medium speed growth. As an important part of the national economy, municipal economic performance plays an important role in promoting high-quality economic development, but the relationship between the change of local official and economic growth in prefecture-level cities is rarely studied.

## 2. METHODS AND DATA SOURCES

### 2.1. Data Sources

This article collected the data on the change of officials from 2005 to 2017, and finally formed a sample of 61 mayors and 58 party secretaries. In the selected study period, only 1 party secretary confirmed that the violation of discipline led to an abnormal replacement that year. Therefore, the collected data can overcome the interference of the abnormal replacement in the analysis of this article.

The core explanatory variable in this paper is official change, "official" refers to the mayor and secretary of the municipal Party committee of municipal cities, "change"

includes three situations of "promotion", "transfer or stay in office", and "demotion". The data of officials' change is obtained from official websites such as the Official Minutes of the People's Republic of China and People's Daily Online. The core explained variable is economic growth, which refers to the growth of the total output of a country or region over a certain time span compared

with the previous period. This paper uses GDP growth rate, per capita GDP growth rate, three industries growth rate<sup>[8-12]</sup>, as well as urban residents disposable income growth rate to measure economic growth. The educational background and age of officials were the control variables.

**Table 1.** Variable description

variable type	variable name	variable content	variable definitions
Independent variable	Change of officials	of virtual variable	Change before June 30th, the current year's change is recorded as "1"; otherwise, and the next year's change is recorded as "1".
		GDP growth rate	GDP growth rate of the jurisdiction.
Dependent variable	Economic Growth	GDP growth rate per capita	Per capita GDP growth rate in the jurisdiction.
		Growth rate of output value of three industries	Growth rate of output value of primary industry, secondary industry and tertiary industry in the jurisdiction.
		Urban residents' disposable income growth rate	It is calculated by the disposable income of urban residents in the district in the year when officials are replaced and the year before.
Control variable	Personal characteristics of officials	Education	The highest degree before taking office, middle school or below is recorded as 1, college degree is recorded as 2, undergraduate degree is recorded as 3, master's degree student is recorded as 4, doctoral degree is recorded as 5.
		Age	The age of the officials at the time of change.
		Previous position	Before taking office, the central position is recorded as 5, the provincial position is recorded as 4, the local promotion is recorded as 3, the transfer from another city is recorded as 2, the demotion is recorded as 1, and the others are recorded as 0.
		Promotion	After the replacement, those who go to the central government are recorded as 5, those who are appointed by the province are recorded as 4, the mayor's promotion to the party secretary is recorded as 3, the same level of adjustment is recorded as 2, the demotion is recorded as 1, and the others are recorded as 0.

The data of economic growth comes from the "Statistical Yearbook of Province G". Due to changes in the statistical caliber in 2004, the missing data on the growth rate of urban residents' disposable income is

calculated based on the data of the last two years, so the number of observations for the calculation of the growth rate of urban residents' disposable income is less than other variables.

**Table 2.** Descriptive statistics of economic growth

variable name	sample size	mean	the median	standard deviation	the minimum	the maximum
GDP growth rate	182	12.3	12.9	3.99	-0.7	22.6
Per capita GDP growth rate	182	11.4	11.9	4.29	-11.3	24.8
The first industrial output growth	182	5.1	5.1	1.70	1.4	10.2
The second industrial output growth	182	17.0	17.6	8.05	-6.8	38.7
The tertiary industrial output growth	182	11.3	10.5	4.23	3.9	29.2
Growth rate of disposable income of urban residents	175	11.8	10.9	6.18	-19.63	33.42

The descriptive statistics of the control variable data are as follows:

**Table 3.** Descriptive statistics of control variables (mayor)

mayor	sample size	mean	the median	standard deviation	the minimum	the maximum
Education	60	3.98	4	0.74	2	5
Age	60	48.82	49	3.95	39	59
Previous position	60	0.82	1	0.85	0	4
Promotion	50	1.40	1	1.44	0	9

**Table 4.** descriptive statistics of control variables (party secretary)

party secretary	sample size	mean	the median	standard deviation	the minimum	the maximum
Education	61	3.89	4	0.68	2	5
Age	60	50.93	51	3.45	42	58
Previous position	61	0.85	1	0.81	0	2
Promotion	50	1.52	2	0.92	0	3

**2.2. Methods**

This article aims to explore the relationship between the change of municipal officials and the economic growth and proposes a hypothesis, that is the change of mayors and municipal Party secretaries will bring short-term negative effects on the economic growth of the district. The model is set as follows:

$$Y_{it} = \alpha_0 + \alpha_1 \text{chan}_{it} + \alpha_2 Z_{it} + \alpha_3 \log(Y_{i,t-1}) + \mu_i + \theta_t + \varepsilon_{it}$$

In the model,  $Y_{it}$  is the key explanatory variable, to measure the economic growth level;  $\text{chan}_{it}$  is the key independent variables, which is a dummy variable representing the change of officials.  $Z_{it}$  is control variable,  $\log(Y_{i,t-1})$  represents the logarithmic value of the indicator that measures the level of economic growth of each city in the previous year.  $\mu_i$ ,  $\theta_t$ ,  $\varepsilon_{i,t}$  represents individual fixed effects, annual fixed effects, and random disturbance terms. This article focuses on the coefficient  $\alpha_1$ , if  $\alpha_1$  is significantly greater than 0, it indicates that the change of officials will significantly affect the

economic growth of the jurisdiction. The larger the value of  $\alpha_1$ , the more significant the effect; otherwise, it means that the change of officials will not have an impact on the economic growth measured by this indicator.

**3. RESULTS**

**3.1. Regression Results of GDP Growth Rate**

Table 5 (1) shows that  $\alpha_1$  is significant at the 10% level, it shows that the change of mayor has a significant negative impact on the GDP growth rate of the district in that year; The impact of the municipal district's economic level in the previous year was significantly negative at the 5% level, indicating that the higher the economic level in the previous year, the more difficult it would be to maintain the same high growth rate that year. This is consistent with the reality that my country's economic downturn is facing tremendous pressure. Column (2) shows that the change of the party secretary did not show a significant negative impact.

**Table 5.** Regression results of GDP growth rate

mayor	( 1 )	party secretary	( 2 )
change	-1.078* ( -1.70 )	change	0.0121 ( 0.02 )
Education	0.0694 (0.14)	Education	-1.907** ( -3.35 )

Age	-0.0336 (-0.39)	Age	-0.226* (-2.11)
Previous position	-0.0354 ( -0.39 )	Previous position	0.0228 (0.05)
Promotion	-0.489 ( -1.33 )	Promotion	-0.0264 (-0.09)
Previous year's logarithm economic level	-12.33** ( -3.09 ) -0.0226 ( -0.00 )	Previous year's logarithm economic level	-10.98** (-2.87) -21.89** (2.43)
R <sup>2</sup> -Ajusted Individual fixed effect	0.426 exists	R <sup>2</sup> -Ajusted Individual fixed effect	0.429 exists
Annual fixed effect	exists	Annual fixed effect	exists
Sample size	126	Sample size	125

\*\*\*, \*\* and \* represent significant at the statistical level of 1%, 5% and 10%.

### 3.2. Regression Results of GDP Growth Rate Per Capita

Table 6 shows that  $\alpha_1$  of the mayor is significantly negative at the 5% level, indicating that the per capita

GDP growth rate within the jurisdiction of the mayor slowed down significantly during the year when the mayor changed, and the change of the party secretary had no significant impact.

**Table 6.** Regression results of GDP growth rate per capita

mayor	( 1 )	party secretary	( 2 )
change	-1.605** (-2.53)	change	-0.584 ( -0.92 )
Education	0.334 (0.61)	Education	-0.996 ( -1.57 )
Age	-0.0795 (-0.85)	Age	0.0112 (0.09)
Previous position	0.0870 ( 0.24 )	Previous position	-0.350 (-0.67)
Promotion	-0.0169 ( -0.04 )	Promotion	-0.376 (-1.33)
Previous year's logarithm economic level	-1.686** ( -0.70 ) -7.676 ( -1.18 )	Previous year's logarithm economic level	-1.551** (-0.65) -1.226 (-0.12)
R <sup>2</sup> -Ajusted Individual fixed effect	0.491 exists	R <sup>2</sup> -Ajusted Individual fixed effect	0.459 exists
Annual fixed effect	exists	Annual fixed effect	exists
Sample size	126	Sample size	125

\*\*\*, \*\* and \* represent significant at the statistical level of 1%, 5% and 10%.

### 3.3. Regression Results of the Growth Rate of Urban Residents' Disposable Income

Table 7 (1) and (2) show that,  $\alpha_1$  is not significant in the overall sample regression, indicating that the change

of the mayor and the party secretary will not have a significant impact on the growth rate of urban residents' disposable income in the jurisdiction.

**Table 7.** Regression results of the growth rate of urban residents' disposable income

<b>mayor</b>	<b>( 1 )</b>	<b>party secretary</b>	<b>( 2 )</b>
Change	0.654 ( 0.82 )	change	1.307 ( 1.61 )
Education	0.598 ( 1.15 )	Education	-0.992 ( 1.56 )
Age	-0.112 (-1.09)	Age	-0.656 (-0.54)
Previous position	0.276 ( 0.65 )	Previous position	-0.127 (-0.27)
Promotion	0.0948 ( 0.25 )	Promotion	-0.118 (-0.31)
Previous year's logarithm economic level	6.573** ( 5.97 ) -11.92 ( -1.66 )	Previous year's logarithm economic level	6.372** (5.71) -2.445 (-0.25)
R <sup>2</sup> -Ajusted	0.402	R <sup>2</sup> -Ajusted	0.412
Individual fixed effect	exists	Individual fixed effect	exists
Annual fixed effect	exists	Annual fixed effect	exists
Sample size	126	Sample size	125

\*\*\*, \*\* and \* represent significant at the statistical level of 1%, 5% and 10%, respectively.

**3.4. Regression Results of the Growth Rate of the Output Value of the Three Industries**

Table 8 shows that  $\alpha_1$  is not significant of the mayor, and the influence of the mayor's personal characteristic variables is not significant overall.

**Table 8.** Regression results of the growth rate of industrial output value (mayor)

<b>variable name</b>	<b>(1) primary industry</b>	<b>(2) secondary industry</b>	<b>(3) tertiary industry</b>
Change of mayor	-0.191 ( -0.73 )	-2.342 (-1.96)	-0.0443 (-0.06)
Education	-0.0419 (-0.25)	-0.610 ( -0.59 )	-0.0436 (-0.08)
Age	0.0239 (0.72)	-0.164 (-0.93)	-0.0725 (-0.71)
Previous position	0.160 (1.16)	0.296 (0.43)	0.185 (0.45)
Promotion	-0.238 (-1.92)	-1.439 (-1.91)	0.168 (0.43)
Previous year's logarithm economic level	2.179*** (5.47)	16.60*** (5.13)	8.848*** (6.12)
Constant term	0.0862 (0.04)	7.811 (0.63)	0.00574 (3.20)
R <sup>2</sup> -Ajusted	0.094	0.359	0.298
Individual fixed effect	exists	exists	exists
Annual fixed effect	exists	exists	exists
Sample size	125	125	125

\*\*\*, \*\* and \* represent significant at the statistical level of 1%, 5% and 10%.

Table 9 (1) and (3) show that  $\alpha_1$  is significantly positive, and (2) is not significant, indicating that the change of the party secretary will significantly increase the growth rate of the first and third output value that

year. The personal characteristics of other municipal party committee secretaries did not have a significant impact on the whole.

**Table 9.** Regression results of the growth rate of industrial output value (party secretary)

<b>variable name</b>	<b>(1) primary industry</b>	<b>(2) secondary industry</b>	<b>(3) tertiary industry</b>
Change of Party Secretary	0.511* (1.96)	-1.422 (-1.94)	1.374* (1.91)
Education	-0.584** (-2.86)	-2.382* (-2.00)	-1.810*** (-3.21)
Age	-0.0446 (-1.15)	-0.489* (-2.18)	-0.0911 (-0.85)
Previous position	-0.290 (-1.92)	0.308 (0.32)	0.101 (0.24)
Promotion	0.120 (1.00)	-0.0815 (-0.13)	0.226 (0.68)
previous year's economic level logarithm	1.802*** (4.77)	14.92*** (4.68)	8.552*** (6.41)
Constant term	7.698* (2.42)	37.23 (1.97)	11.94 (1.36)
R <sup>2</sup> -Ajusted	0.205	0.306	0.401
Individual fixed effect	exists	exists	exists
Annual fixed effect	exists	exists	exists
Sample size	126	126	126

\*\*\*, \*\* and \* represent significant at the statistical level of 1%, 5% and 10%.

## 4. CONCLUSIONS

### 4.1. The Differential Impact of the Local Official Change on Economic Growth

The negative impact of the mayors' change is reflected in the GDP growth rate and GDP growth rate per capita, while the change of party secretary affects the growth rate of output values, and has no significant impact on the growth rate of urban residents' disposable income. The hypothesis of this paper is partially confirmed. The mayor leads the work of the government, focusing more on finance and other macro-economy-related policies, making it easier for the mayor to influence the regional macro-economic growth; Existing studies have also confirmed the short-term impact of the municipal Party secretary on the industrial structure of the jurisdiction<sup>[13]</sup>. Therefore, it can be speculated that such differentiated effects originate from differences in division of responsibilities.

### 4.2. The Relationship between Local Official's Personal Characteristics and Economic Growth

According to Table 4 to Table 8, only the educational background and age of Party secretaries are partially significant in the regression results of GDP growth rate and the growth rate of the output values, while the rest

regression results have no significant influence. It can be considered that there is no significant relationship between the personal characteristics of officials and the economic growth indicators selected in this paper.

According to the data, the education and age of officials are relatively concentrated, and the promotion paths are similar, which may lead to the average data, so that the overall significance of the control variables is not strong. Secondly, in the overall sample, only 1 mayor and 3 party secretaries were promoted to the provincial Party committee or the central government. The peak of official mobility comes when officials are promoted to provincial government, and promotion tournaments and other incentive mechanisms generally could not break through the "provincial" range. This is consistent with the "hierarchical diversion" model of officials proposed by Zhou Xueguang<sup>[14]</sup> and the cross-administrative flow trend presented.

## AUTHORS' CONTRIBUTIONS

The author uses the panel data of municipal cities in G province from 2005 to 2017 to test the impact of the change of officials on the economic growth by establishing a multiple regression analysis. It provides evidence at municipal level for understanding local economic development.

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