

# IMPACT OF MUNICIPAL POLITICAL DECISION MAKERS' TURNOVER ON THE DEGREE OF BUILDING AND LAND USE IN CHINA: AN EMPIRICAL STUDY BASED ON THE PROFILES OF THE SECRETARIES OF MUNICIPAL PARTY COMMITTEES\*

Chengzhi YIN  
Hao SUN

## Chengzhi YIN

Associate professor, PhD & Dr.-Ing.,  
School of Public Policy and Management,  
Tsinghua University, Qing Hua Yuan 1,  
Haidian District, Beijing, China  
Tel.: 0086-10-62.79.27.64  
E-mail: yincz@tsinghua.edu.cn

## Hao SUN (Corresponding author)

PhD candidate, School of Public Policy and Management,  
Tsinghua University, Qing Hua Yuan 1,  
Haidian District, Beijing, China  
Tel.: 0086-10-18.81.03.06.513  
E-mail: sunh16@mails.tsinghua.edu.cn

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## Abstract

China's rapid urbanisation in the past 30 years has been a prominent issue all over the world. Few studies have elaborated the urbanisation in China, especially the overly speedy building intensity growth in contemporary China from the perspective of local decision makers. This study aims to explain the local decision-making driving force of the rapid growth of the degree of building and land use by analysing the interaction between local decision makers' turnover and the degree of building and land use. The Secretaries of Municipal Party Committees (SMPCs) have been selected as the representatives of the decision makers of Chinese local governments while the newly increased floor area has been selected as an indicator of the degree of building and land use. On the basis of the panel data of 35 large- and medium-sized Chinese cities from 2000 to 2014, Stata 14.0 has been applied to implement a regression analysis. The research findings show that any turnover of the Secretaries of Municipal Party Committees (SMPCs) may create new floor area. The causal mechanisms hypotheses have also been proven. Generally, the SMPCs are motivated by a need to promote urban growth, and especially, when the SMPCs hold power by the same-ranking lateral transferring or same-ranking vertical dispatch in the municipality, its floor area is more likely to increase. Furthermore, the more the floor area increases, the greater the possibility of promotion will get. These findings could be an explanation for China's high-speed spatial urbanization from a public administration point of view and a practical understanding of the Chinese decision-making mechanism in urban development.

**Keywords:** urbanisation, floor area ratio (FAR), floor areas, degree of building and land use, local government, Secretaries of Municipal Party Committees (SMPCs).

## 1. Introduction

In some developing countries, urban development within a certain period is deemed as the economic engine (Bertinelli and Black, 2004). The rapid urbanisation in China has had profound effects on the nation's economy, society and the environment in the past 30 years; however, it is still a controversial academic issue to discuss the driving forces embedded in both the endogenesis and the exogenesis. For decades, studies have investigated the measurement standards and the calculation methods of the floor area ratio (FAR) (Zou, 1994; Brueckner *et al.*, 2017), primarily, focusing on the impacts of the rapid growth and the transfer modes of the FAR on land prices, housing prices, accessibility to transportation, human settlement and so on (Chen, 2005; Zhang and He, 2009; Bao and Li, 2010; Qin and Sun, 2010; Jiang *et al.*, 2014; Zhao, Liu and Long, 2014). On the other hand, the market cannot adjust the FAR on its own (Yang, 2009). Therefore, the FAR is related closely to the political system arrangement of the governments. In this way, a very important question is raised: what determines the rapid increase of the FAR? Starting from the theoretical dialogue, this paper designs a rigorous experimental study to answer the question.

In the second section, first, we refer clearly to other studies which try to explain rapid urbanisation and over speed building intensity growth in China and, then, carry on with the theoretical dialogue and, finally, posit the theoretical hypothesis. Local governments have been widely regarded as a powerful motor of the economic miracle (Montinola and Qian, 1995; Li and Zhou, 2005; Xu, 2011; Liu, Wu and Ma, 2012). Urban China has been reshaped by multiple complex institutional drivers to the rapid growth of building and land use. Moreover, in accordance with relevant acts and regulations on urban planning and construction permission, local governments are authorised to determine the size of land leasing and the relevant degree of building and land use. However, few studies have focused on the municipal top-down decision-making mechanism and its driving effect on the rapid growth of building and land use. The assumption that can be put forward is that local municipal governors, especially the Secretaries of Municipal Party Committees (SMPCs), are always willing to be promoted as they are in a competitive bureaucratic hierarchy. The distinctive and dynamic local decision-making driving force should be considered with an emphasis on decision weight. With the greatest decision making power in urban governance in theory and practice, the SMPCs have been selected as the representatives of the decision makers of local governments. The newly increased floor area could work as a fair indicator of the degree of building and land use. We posit three research hypotheses after the literature review and the theoretical dialogue. In the third section, a rigorous quantitative research design is conducted in accordance with the preconditions of the research hypotheses. First, a recursive statistical model is given. Then, the variables are defined and sampling work is done. Finally, the variable selection is explained.

In the fourth section, on the basis of the panel data of 35 large- and medium-sized Chinese cities from 2000 to 2014, Stata 14.0 has been applied to implement a regres-

sion analysis. This panel data cover all the relevant available data publicised. It is encouraging that the statistical results verify the hypotheses posited in the article. In the fifth part, the important findings of the article are given, and further discussions and conclusions are made in the sixth part. In short, the study could be an explanation for China's high-speed spatial urbanization from a public administration point of view and a practical understanding of the Chinese decision-making mechanism in urban development.

## **2. Literature review, theoretical framework and hypothesis**

In the past 20 years, Chinese literature on urban studies has focused on the urbanisation, physical development, spatial scale, as well as the degree of building and land use. The concept of space and spatial utilisation has been embedded in the concept of urbanisation (Yew, 2012). The degree of building and land use reflects and affects urbanisation. Urbanisation is a necessary stage for the development of productive forces to a certain extent, which promotes productivity to continue to show explosive growth (Sovani, 1964; Coffey and Polese, 1984; Harloe, 1988; Henderson, 2002; Smith, 2010, p. 121). It took only decades for the Chinese to achieve the level of urbanisation that western countries have managed to achieve in centuries. Why is China's urbanisation so fast? What is the driving force behind this rapid transition in such a large country? It is not hard to find out. By combing almost all the literature that answers this question, China's rapid urbanisation is a combination of multiple complex institutional drivers and people's increasing consumer demand. Below, we will analyse carefully the institutional impetus of this complex state, market and social interaction logic, and further find new authoritative explanatory variables in the analysis.

Institutional momentum is a defensible interpretation. The complex system is embedded in the hands of local government (Zhang and Xie, 2006). A volume of theoretical models has disclosed the impacts of municipal governments on local urban development under the bureaucratic assessment of political performance, such as the Chinese federalism (Montinola and Qian, 1995), the promotion tournament model (Li and Zhou, 2005) and the central-local, political centralisation and economic decentralisation model (Xu, 2011). In short, the nesting of these systems includes several aspects. First, the local government formulates the urbanisation strategy and urban plans that can have a definite impact on the rates of urbanisation and trends in urban growth (Todaro, 1980; Ichimura, 2003; Wu, 2007). Driven by market-oriented development and globalisation, the local government attempts to overcome the constraints of conventional statutory planning to promote a visionary city plan, which reflects the overall shift of city planning towards being an important instrument for enhancing a city's competitive ability (Wu and Zhang, 2007). Second, local government has the power to allocate land and to determine the land use type (Ho and Lin, 2003; Lichtenberg and Ding, 2009; Tao *et al.*, 2010). It is not difficult to understand that local governments can easily change rural land into urban development land with the institutional power, which will ensure the spread of the city. Because of the land price,

the land acquired for construction can be used to build high-rise buildings only. Third, the Chinese household registration system or Hukou is in the hands of local governments, which can determine the size of urban population, the mode of population movement and the speed of population movement (Chan and Zhang, 1999; Chan and Buckingham, 2008; Wu and Zheng, 2018). The most reasonable excuse for urbanisation is provided by population mobility. Fourth, local governments are responsible for attracting investment and for leading urban development (Yeh and Wu, 1996; Xu and Yeh, 2005; Shen, 2007; Zhu and Tang, 2018). Because of local governments' partnership with banks, developers dominated by local governments can easily get funding, thereby accelerating the speed of urban development.

Complex institutional nesting seems to be successful because it caters to people's needs. People yearn for the modernisation, convenience and civilisation of cities, they want to create a fair competition platform for the next generation (Hu and Su, 2013; Wang, 2017; Chen and Liu, 2018). Mills (2010) studied whether the market can create optimal urban density, and found that population transfer is often forced in America. However, the transfer of population is voluntary in China in most cases. It can be concluded that people's willingness to move into cities is compatible with the local government's system design.

The analysis unit of all the above literature is local government, and the incentive mode is economic incentive. If so, how to ensure that local government operations are efficient or that government will not fail? The real reason is the decision-making responsibility of the municipal party committee that is firmly in the hands of the SMPCs, and the incentive method for them is not an economic incentive but a political incentive. Decision-making responsibility of SMPCs' avoids the complexity of local government decision-making, which accelerates the physical urbanisation. From the perspective of political competition in the Chinese bureaucratic system, we can put forward the assumption that local municipal governors, especially the SMPCs, are always willing to be promoted as they are in a competitive bureaucratic hierarchy. As the reform and opening-up policy has been introduced in China, marketisation has become the focus of economic development, and the growth of the gross domestic product (GDP) is considered a core index in the assessment of the local government performance. In this context, to gain more political capital for a higher official position in a short time, municipal governors tend to make fixed-asset investments to enhance economic development, which tends to be a reflection of urban spatial expansion and rapid growth of the floor area. Converting land to urban uses is a typical concomitant of economic growth (Lichtenberg and Ding, 2009). Through the market transaction process, an increase of the degree of building and land use may create more products and increase the GDP.

Thus, it is the emulative behavior of governors that accelerates China's excessive physical urbanisation. It is plausible to place cadres under party supervision that allows the central government to politically control and stimulate municipal governors to facilitate local economic development, through which local economic dynamics can

remain. With each city trying to advance its relative competitive position, the competition among cities is increasingly intense now (Ni, Kresl and Li, 2014). In fact, the competition among the local governments of China turns to be rival among municipal officials. After all, the combination of new market elements and a decentralised state apparatus has given rise to the entrepreneurial endeavour of China's urban governance (Wu, 2002). By examining cadres under party supervision, the promotion to local official posts can be logically defined as a kind of evaluation mechanism for political performance. In this way, local governors will likely be transferred to higher governmental positions once they have made prominent economic achievements. Currently, the so-called new-type urbanisation and industrialisation are a state strategy of China, and the GDP growth as well as the urbanisation level based on the construction speed and construction intensity are deemed as crucial indexes to assess the political performance of officials. This competitive assessment system objectively requires local governors to prioritise economic enhancement, and in the meanwhile to boost fixed-asset investment in urbanisation for more political gain within their territorial scope.

Through the above analysis, we can clearly find the most important integration variables, namely the party committee secretary; this variable can perfectly restore the whole process of rapid urbanisation.

A study by Lin and Zhang (2015) revealed the political and financial motives of local governments to engage in urbanism. On behalf of the mighty policy makers in Chinese prefectural cities, the SMPCs, are enclosed in our research objection to represent municipal governors.

Regarding urban development, floor area ratio (FAR) or plot ratio is the most important indicator of the degree of building and land use (Zou, 1994). Stipulated by the administrative authorities of local governments, the FAR is a powerful policy tool for regulating the volume of buildings. During the term of the respective Secretaries of Municipal Party Committees, his or her decision-making on urban development should be reflected by the actual city size, which would be indicated and elaborated by the growth of the FAR.

The causal logic chain of the article shows which position the SMPCs were from and were more inclined to promote the urban land-use and development intensity, and whether or not those SMPCs who actually promoted the urban land-use and development intensity had been promoted.

The cadre system is a general term for a series of institutional arrangements adopted by the Chinese government for the selection, appointment, transfer and withdrawal of officials (Manion, 1985; Wang, 2006, p. 131). The political transfer of officials is an important aspect of China's cadre system. Focusing on enhancing the capacity of cadres and anti-corruption, China's central or higher authorities often enable local officials to serve at different departments or places. There are three ways in the relocation of Chinese prefectural officials in terms of the sources of the SMPCs in the sub-provincial cities (Chen and Li, 2012).

First, the mobilisation among the SMPCs in the sub-provincial cities. In this situation, because the governors prefer to inherit the experience gained from their original prefectures, they were more inclined to promote the urban land-use and development intensity.

Second, the deputy provincial (ministerial) officials were dispatched from the central or provincial government to a municipal government to hold the post of the SMPCs. Similarly, since the urban land-use and development intensity is a relatively prominent and simple indicator of performance, officials in this situation were more inclined also to promote the urban land-use and development intensity because the high-ranking officials are more willing to use simple ways to improve their performance.

Third, department officials were promoted to the SMPCs of the sub-provincial cities. In this situation, due to the lack of political experiences as vice provincial party secretaries, they are usually not able to apply iron fist means to promote the urban land-use and development intensity in large- and medium- sized cities.

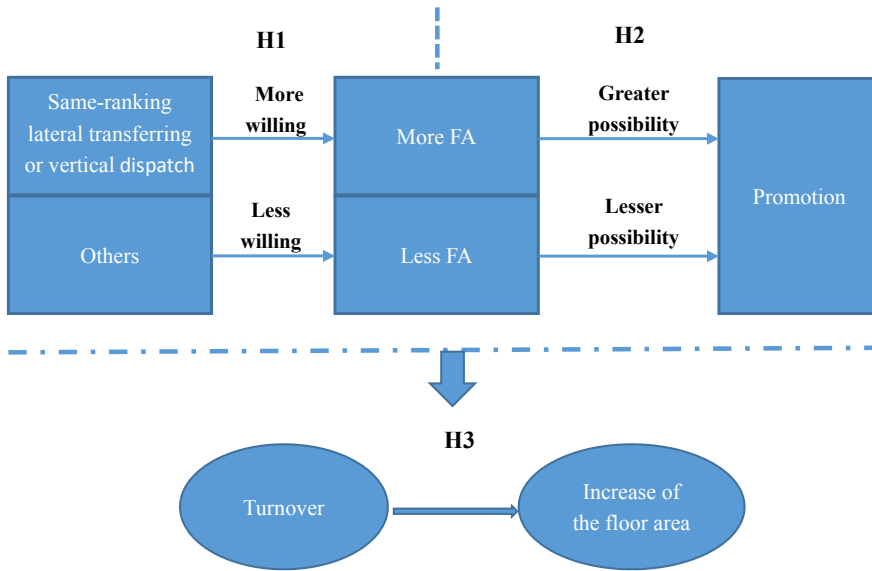
Hereby, the **hypothesis 1** is posited: When an SMPC holds power by the same-ranking lateral transferring or the same-ranking vertical dispatch in the municipality, its floor area is more likely to increase.

As described above, the growth of the gross domestic product (GDP) is considered a core index in the assessment of local governmental performance. Converting land to urban uses is a typical concomitant of economic growth (Lichtenberg and Ding, 2009). Through the market transaction process, an increase of the degree of building and land use may create more products and increase the GDP. The SMPCs keep in mind the motto that to promote the urban land-use and development intensity will increase urban GDP; the promotion of urban GDP growth will increase the possibility of promotion.

The **hypothesis 2** is posited: The more the floor area increase, the greater the possibility of that promotion will get.

Hypothesis 1 and Hypothesis 2 revealed a causal chain that the SMPCs who prefer to promote the construction of urban areas are more likely to get promoted. In the minds of the SMPCs, successors must do better than their predecessors. The SMPCs tend to pursue a higher growth of GDP with projects, in return for higher political position. Consequently, the intervention of the SMPCs in urban policy making is more often deemed as a routine (Li, 2014). Xue Lan argued that the high turnover of governors in Chinese prefectural municipalities may bring about an unstable environment for urban development and probably engender changeable policies on urban planning (Xue, 2013).

Hence, the **hypothesis 3** is posited: The turnover of Secretaries of Municipal Party Committees will lead to an increase in the floor area. Figure 1 shows the research framework.



**Figure 1:** Research framework

**Source:** Authors' research model

### 3. Research design

#### 3.1. Statistical model

FA stands for the newly increased floor area. In model (1), anticipating  $\beta_1 > 0$ , when an SMPC holds power by same-ranking lateral transferring or same-ranking vertical dispatch in the municipality, its floor area is more likely to increase. In model (2), anticipating  $\beta_1 > 0$ , the more floor area increase, the greater possibility that promotion will happen. In model (3), anticipating  $\beta_1 > 0$ , the turnover of Secretaries of Municipal Party Committees will lead to an increase of the floor area.

$$FA = \beta_0 + \beta_1 \text{TYPE} + \Sigma \text{CONTROL} + \varepsilon \quad (1)$$

$$\text{PRO} = \beta_0 + \beta_1 \text{FA} + \Sigma \text{CONTROL} + \varepsilon \quad (2)$$

$$\text{FA} = \beta_0 + \beta_1 \text{CHANGE} + \Sigma \text{CONTROL} + \varepsilon \quad (3)$$

#### 3.2. Data collection

Considering the accessibility and reliability of the raw data, the primary collection stemmed from the China Real Estate Statistical Yearbook (CRESY), and was based on the annual newly increased floor area in 35 large- and medium- sized cities. This article selected the year 2000 as the starting point of the research, since 2000 and onwards, China's urbanisation entered into the fourth rapid growth wave with new characteristics and trends (Yeh, Xu and Yi, 2006).

Based on CRESY 2001-2015 (normally, the annual yearbook only collects data of the previous year, thus the range of data is from 2000 to 2014), the dependent variable

is set as the size of the newly increased floor area, while the controlled variables comprise urban population, GDP, urban road network per capita and the urban economic increment in service industries supplemented by the Urban Statistical Yearbook of China 2001-2015 (as mentioned above, the range of data is from 2000 to 2014). Therefore, the sample covers the balance panel data from 35 large- and medium-sized cities from 2000 to 2014. It is a complete coverage of Chinese cities with public and authoritative data regarding the newly increased floor area.

The data on SMPCs (2000-2014) stems from the Book of Officials of P.R.C, xinhuanet.com, local yearbooks and partial data published (Chen, 2016), which include the time of tenure starting, age and type, and other relevant details. Table 1 gives a detailed definition of the above variables.

**Table 1:** Definition of variables

<b>Variables</b>	<b>Definition</b>
FA	Urban newly increased floor area
CHANGE	Turnover of SMPCs. Sample from 2000 to 2014 marks 1 for the first time of change, 2 for second time, 3 for third and so forth.
TYPE	TYPE marks 1 represents a dummy variable symbolizing SMPCs promoted by same-ranking lateral transferring or same-ranking vertical dispatch in the municipality; TYPE marks 0 represents a dummy variable symbolizing SMPCs promoted from department officials.
PRO	PRO marks 1 represents a dummy variable symbolizing SMPCs promoted to positive provincial (ministerial) level cadres; otherwise marks 0.
GDP	Urban GDP
POP	Urban population
SER	Urban Economic increment in service industries
TRAN	Urban road networks per capita

**Source:** Authors' definition

### **3.3. Illustration of variables in model (3)**

#### **3.3.1. Independent variables**

In Chinese prefectural governments, political party leaders are responsible for strategic planning, while administrative leaders in governmental departments are in charge of the implementation of policy (Hu, 2009). The head of the party committee, namely the Secretary of Municipal Party Committee, is empowered with the core leadership in the decision-making mechanism of municipal governments (Yu, 2010). The SMPCs tend to pursue a high growth of GDP with vanity projects, in return for higher political positions. Consequently, the intervention of the SMPCs in urban policy making is more often deemed as a routine (Li, 2014), which pushes them to shift their concerns from welfare policy to urban economic policy. Under the bureaucratic assessment of political performance, the SMPCs have to face the mounting pressure for promotion (Gallego and Pitchik, 2004); otherwise, they risk being replaced. This assessment system has largely exacerbated the governor's competitive behaviours (Melo, Pereira and Figueiredo, 2009; Liu, Wu and Ma, 2012), reflecting radical urban



economic construction, which obviously manifests spatial expansion in urban China. Therefore, on the basis of a significant connection between urban extension and the policy orientation of the SMPCs, we sampled the turnover of the SMPCs as the independent variable to be inserted into the statistical model.

### 3.3.2. *Dependent variables*

Because of the clear indication of the FAR, it is an internationally universal indicator and is adopted to elaborate the degree of building and land-use on plots. The FAR has been widely applied by public authorities and organisations in China, including bureaus of land-use management, urban planning and real estate development (Zou, 1994). On the contrary, the FAR is the direct and most powerful policy tool of local governments for the stringency of land-use regulation. Therefore, it would be ideal to apply the data regarding the newly increased floor area to measure the degree of building and land use.

### 3.3.3. *Control variables*

Urban GDP, urban population and urban economic increment in the service industries and urban road networks per capita are chosen as control variables. These four variables have been proven as having a deep impact on China's urbanisation, as the above mentioned literature review of the article shows.

Regarding the economic growth, there are several empirical studies on urban spatial development's engine of economic growth. The analysis by Deng *et al.* (2008) reveals the overwhelming importance of economic growth in urban physical development. Regarding the urban population, a prevailing view is that migration and population growth cause urban expansion (Yin and Li, 2012; Chen and Ye, 2013; Pogudina, 2013). Regarding transportation infrastructure, the literature review mentioned above shows that the traffic carrying capacity or traffic accessibility may determine the degree of building and land use in certain areas (Zheng and Zhang, 2008). Regarding the urban economic increment in the service industries, existing studies have illustrated that the steadily rising tertiary industry, as well as the service sector have dramatically facilitated the process of China's urbanisation (Jiang *et al.*, 2014), and the change in employment in the tertiary industry is the most powerful driving force for urbanisation (He and He, 2013).

## 4. Empirical outcome and analysis

### 4.1. *Statistical description*

Table 2 reports the results of the statistical description. There is an obvious gap between the minimum and the maximum value of the newly increased floor area, while the mean value is small. It illustrates that the floor area in a few cities has increased dramatically during a certain period. Moreover, it shows that the increase in the floor area in different cities and in different periods has witnessed great fluctuation. As a rule of thumb, it is appropriate to use the panel data model to facilitate the analysis.

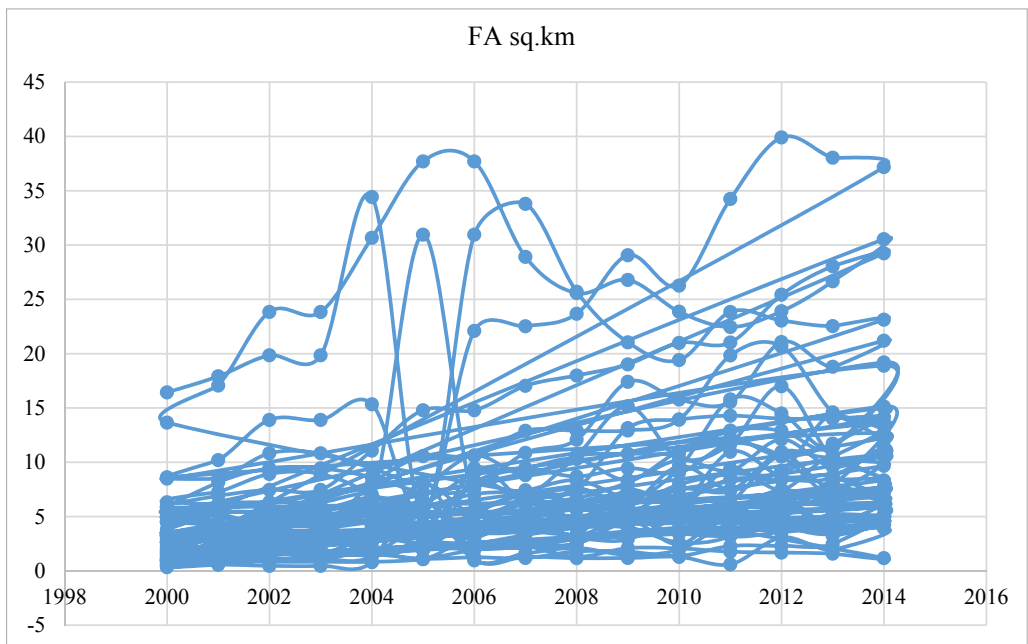
In addition, Table 2 shows that the change of the local decision makers occurs frequently. The SMPCs in large- and medium-sized cities have been changed on an average of every three years, completely demonstrating the fierce competition among these SMPCs. Furthermore, the mean value of PRO is 0.54, indicating that more than half of the SMPCs have been promoted.

**Table 2:** Statistical description of variables

Variables	Obs.	Mean	Std.dev.	Min.	Max.
FA	525	7.56	7.14	0.34	39.91
TYPE	525	0.76	0.43	0.00	1.00
CHANGE	525	2.97	1.24	1.00	6.00
PRO	525	0.54	0.50	0.00	1.00
POP	525	394.28	328.25	57.34	1,943.90
GDP	525	2,776.86	3,605.17	62.62	23,292.03
SER	525	1,524.01	2,203.85	35.72	14,844.32
TRAN	525	11.07	6.46	2.00	64.00

**Source:** Authors' computations, using Stata 14.0

As Figure 2 shows, the annual mean value of the floor area in 35 cities shows an upward trend from 2000 to 2014, indicating that the growth of the degree of building and land use has been one of the themes of the fourth wave of Chinese urbanisation.



**Figure 2:** Newly increased floor area in 35 large and medium-sized cities during 2000 and 2014

**Source:** Authors' computations, using Stata 14.0

All the results of the statistical description indicate that the turnover of the SMPCs in large- and medium- sized cities has positive and continuous impacts on spatial urbanisation, especially on the three-dimensional spatial urbanisation.

#### 4.2. Regression analysis

Stata 14.0 is used to examine the balanced panel data in this article. First, it has been examined by the short panel data using the Hausman testing approach, and to observe whether it matches the fixed-effect model or the mixed-regression model. The results of model (1), model (2) and model (3) in the Hausman test simultaneously reject the hypothesis respectively, which requires us to adopt a fixed-effect model for examining these three models.

Table 3 shows the regression result of the model (1), and the result indicates a positive and significant correlation between the SMPCs holding power by the same-ranking lateral transferring or the same-ranking vertical dispatch in the municipality and the increase of relevant floor area, revealing that the SMPCs holding power by the same-ranking lateral transferring or same-ranking vertical dispatch were more inclined to promote the urban land-use and development intensity because they prefer to inherit the experience gained from their original prefectures.

Therefore, the result of the regression analysis in model (1) shows statistical evidence that verifies hypothesis 1: When an SMPC holds power by same-ranking lateral transferring or same-ranking vertical dispatch in the municipality, its floor area is more likely to increase.

**Table 3:** Regressions on model (1)

Variables	Model (1)
TYPE	0.7255* (0.3806)
POP	0.0202*** (0.0044)
GDP	0.0015** (0.0007)
SER	-0.0020* (0.0010)
TRAN	0.2644*** (0.0541)
Year fixed effect	Yes
City fixed effect	Yes
N	525
R <sup>2</sup>	0.4876
F	34.51***

Note: standard errors in parentheses are clustered at prefecture city level. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

**Source:** Authors' computations, using Stata 14.0

Table 4 shows the regression result of the model (2). It shows a positive and significant correlation between the increase in the floor area and the promotion of the SMPCs. The results indicate that the promotion of the urban land-use and develop-

ment intensity will increase urban GDP and the promotion of urban GDP growth will increase the possibility of promotion. Hence, the regression result of model (2) verifies hypothesis 2: The more the floor area increase, the greater the possibility of promotion will be.

**Table 4:** Regressions on model (2)

Variables	Model (2)
FA	0.0245 <sup>**</sup> (0.0093)
POP	-0.0004 (0.0007)
GDP	0.0001 <sup>*</sup> (0.0001)
SER	-0.0002 (0.0001)
TRAN	-0.0012 (0.0092)
Year fixed effect	Yes
City fixed effect	Yes
N	525
R <sup>2</sup>	0.0799
F	4.05 <sup>***</sup>

Note: standard errors in parentheses are clustered at prefecture city level. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

**Source:** Authors' computations, using Stata 14.0

As Table 5 shows, Column (1) is the univariate regression of the model (3), which indicates a positive correlation at the significance level of 1% between the turnover of the SMPCs in large- and medium-sized cities and the size of the newly increased floor area. Once an SMPC is changed, the relevant floor area would increase significantly. Column (2) is the regression with controlled variables. After inserting the control

**Table 5:** Regressions on the CHANGE and FA in model (3)

Variables	(1)	(2)
CHANGE	2.0551 <sup>***</sup> (0.3634)	0.5359 <sup>*</sup> (0.2760)
POP		0.0188 <sup>***</sup> (0.0044)
GDP		0.0015 <sup>*</sup> (0.0076)
SER		-0.0021 <sup>*</sup> (0.0010)
TRAN		0.1831 <sup>***</sup> (0.0544)
Year fixed effect	Yes	Yes
City fixed effect	Yes	Yes
N	525	525
R <sup>2</sup>	0.3233	0.4904
F	31.97 <sup>***</sup>	40.09 <sup>***</sup>

Note: standard errors in parentheses are clustered at prefecture city level. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

**Source:** Authors' computations, using Stata 14.0

variables in the regression, keeping the significance level at 10%, the result displays that although significance decreased, the turnover of the SMPCs still preserves a sensitive reaction to the increment of the floor area. Therefore, the result of the regression analysis in model (3) shows statistical evidence that verifies hypothesis 3: The turnover of the SMPCs will lead to an increase in the floor area.

## 5. Main findings

After the analyses of the causal mechanisms and the statistical results, the major findings of the research can be grouped as follows:

First, the FAR or the floor area reflects the degree of building and land use. The most important indicator of spatial urbanisation in China is the growth of FAR or floor area. Second, various interaction 'forces' in the complex system are focusing on the SMPCs. While the SMPCs take and react the 'forces'. This is the root cause of China's rapid physical urbanisation miracle. In addition, it is not the economic incentive but the political incentive that has a true incentive effect on the SMPCs. Third, by examining the turnover of the SMPCs in 35 large- and medium- sized Chinese cities during 2000 and 2014, this empirical study discovers that any turnover of the SMPCs may increase the floor area and lead to the rapid growth of urban land-use and development intensity.

Fourth, in general, the SMPCs are motivated to promote rapid urban development, especially, when the SMPCs have been promoted by same-ranking lateral transferring or same-ranking vertical dispatch in the municipality, its floor area is more likely to increase. The more the floor area increases, the greater the possibility of promotion will get.

Finally, the principle that all cadres should be under the supervision of the CPC (Dang guan gan bu) has been proven to be a highly effective approach for regulating municipal decision makers' behaviours. The findings of this research clarify that the personnel system of municipal decision makers should be considered carefully to understand and to explain the rapid spatial urbanisation in contemporary China. This personnel system may play a more important role in spatial urbanisation and mass urban development than internal economic engine and technology.

## 6. Further discussions and conclusions

This research has collected all the relevant and available public data of 35 large- and medium- sized Chinese cities to ensure the credibility of the results. Besides a complete coverage of data, a complete time interval of the fourth wave of urbanisation in China has been considered and integrated into the study. However, it has been discovered that the political decision makers of these large- and medium-sized Chinese cities are more senior to those of small cities. Therefore, the central government has been more cautious in appointing these SMPCs. It lessened the relocation probability of these officials among large- and medium- sized municipalities. In the future, with more data being available, research samples can cover all the prefecture level cities to make the conclusion even more convincing.

As mentioned above, existing studies have introduced the multiple complex institutional set of local governments in addressing the issue of urban physical expansion in China. However, previous studies neither discussed the reasons why institutional arrangements work, nor did they mention the role of the SMPCs. In practice, because of political incentives, an SMPC has coordinated all the positive institutional arrangements, firmly targeting the rapid urban development.

By examining the turnover of the SMPCs in 35 large- and medium- sized Chinese cities during 2000 and 2014, this empirical study finds that any turnover of the SMPCs may create the new floor area. Especially, when the SMPCs have been promoted by same-ranking lateral transferring or same-ranking vertical dispatch in the municipality, its floor area is more likely to increase. Furthermore, the more the floor area increase, the greater the possibility that promotion will be. A new explanatory variable, the turnover of the SMPCs, has been developed to analyse the spatial urbanisation phenomenon in Chinese cities. It shows that under the great pressure of government performance appraisal managed by the central government, primary decision makers in municipal governments visualise their achievements as equal to rapid urban development. The facilitation and promotion of this rapid urban development has become the main driving force of decision-making on urbanisation in contemporary China. This finding may provide a practical reference for the reform of the Chinese government performance appraisal which could optimise the mechanism of urban governance and could realise the sustainable development goals in the future.

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