Impact of Urbanization Based on Per Capita Income on Real Estate Investment in Guangdong Province

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Abstract

This paper chooses Guangdong province 1986-2015 years of urbanization rate, per capita income, real estate development investment data, combining qualitative research with quantitative research, based on the theory of mutual relationship between real estate development investment and urbanization, economic development, and combining qualitative and quantitative perspectives, establishes lag model, The following conclusions were drawn: the increase in urbanization and per capita income contributed to the investment in real estate, but both had a different short-term and long-term impact. The increase of per capita income tends to promote the increase of real estate development investment in the long run, and the increase of urbanization rate is stable in both short and long term. The urbanization only has the remarkable positive influence to the real estate development investment under the situation of the per capita income growth, the per capita income increase is the precondition that enhances the urbanization, impels the real estate investment growth.

Keywords

Urbanization, real estate investment, per capita income, lag model.

1. INTRODUCTION

The report on the work of the 19th National Congress of the Communist Party of China reviewed the work and historical changes in the past five years. China has made great achievements in economic construction. The urbanization rate has increased by 1.2 percentage points per year. In terms of people's livelihood, the people's living standards have been continuously improved, a social security system covering urban and rural residents has been basically established, and the construction of affordable housing has been progressing steadily. The report of the Nineteenth National Congress of the CPC emphasized that houses should be used for living rather than speculation, and the establishment of a multi-subject supply, multi-channel guarantee, and rent-purchase housing system was accelerated.

The development of the real estate industry is closely related to the development of the national economy and has become a "barometer" of the national economy, affecting the sustainable and healthy development of the national economy. The development of real estate is related to the national economy and people's livelihood. The healthy development of real estate can promote the development of the national economy. Real estate has a continuously strong market demand and has a high degree of correlation with other enterprises, which can promote the development of relevant upstream and downstream enterprises and promote production investment of upstream and downstream enterprises. With the development of China's industrialization and urbanization, the proportion of China's real estate investment in GDP has increased year by year. Urbanization is a historical process of transition from a

traditional agricultural society to a modern society. It is the unity of population urbanization and urban modernization. It is a manifestation of the fundamental changes in social and economic structure and the space for huge development. It is an important symbol for measuring a country's development level. The process of urbanization has accelerated the transfer and concentration of population to cities and towns, which has led to increasing pressure on cities and towns, and the demand for various types of real estate products has greatly increased, prompting an increase in real estate investment. In a broad sense, urbanization is no longer simply the expansion of urban areas and the increase in population. It is a new urbanization of the five-in-one industry, population, land, society, and rural areas, and it contains the continuous change of residents' own quality and life concept. Cities and towns provide the real estate industry with the necessary conditions for its survival and development. Urbanization not only promotes the rapid development of the real estate industry, but also stimulates the development of real estate-related industries.

By studying the relationship between urbanization and real estate investment, real estate investment can maintain a harmonious development in the process of urbanization, so that the scale of real estate investment not only conforms to the general laws of the real estate economic operation, but also provides a relatively sufficient Settlement security. Therefore, it has great practical value to study and explore the relationship between real estate investment and urbanization.

2. LITERATURE REVIEW

2.1. Research on Urbanization and Real Estate Investment

The qualitative analysis of the literature mainly includes: Dunlong Wu (2007) qualitative analysis of urbanization and real estate industry has the same development trend, both through several of the same stages and one-to-one correspondence, and concluded that: due to the corresponding development trend of the two, the real estate The scale of investment must be coordinated with the real estate industry [1]. Guocai Hao (2011) conducted multiple linear regression based on data related to urbanization and real estate investment in Shandong Province, confirming that the proportion of non-agricultural population and GDP has the most significant impact on real estate investment in Shandong Province[2]. Helsley,Robert W (2008) analyzed and concluded that the commercial real estate industry in the real estate industry had an internal driving role in the development of the urban economy [3]. Yongzheng Sun conducted a qualitative analysis on the relationship between urbanization and the real estate industry. On the one hand, it illustrates that the real estate industry can promote the development of urbanization, and on the other hand, confirms that the promotion of urbanization can promote the development of the real estate industry [4].

The quantitative research literature mainly includes: Zhenggui Cheng (2006) first conducted a qualitative analysis of the relationship between urbanization and real estate investment, and then selected the real estate investment amount, urbanization rate, and disposable income of urban residents in 13 cities in Jiangsu Province in 2000. The empirical analysis method draws the conclusion that there is a close relationship between urbanization and real estate investment: in the initial stage, the real estate investment has increased rapidly with the acceleration of urbanization; after a certain stage, the real estate investment has increased with the urbanization process Accelerated and stabilized [5]. Zhao Peng (2006) theoretically demonstrated the impact of internal and external effects of real estate investment on the process of urbanization, and established a balanced model of urbanization and real estate investment, verifying that there is a positive relationship between real estate investment and urbanization. The relationship between urbanization and the real estate industry in different lag periods is an empirical result of one-way reasons [6]. Weimin Xiang, Li Jiao et al. (2007) used

national statistical data from 1986 to 2003, and used regression analysis and Granger causality test to confirm that the current level of urbanization and real estate investment in China have shown rapid growth, and the latter has increased. The growth rate of urbanization is much lower than the fluctuation of real estate investment growth, which is less affected by other factors. There is a weak correlation between the growth rates of the two, but they develop in coordination with each other [7]. Shuyun Chen and Zhenqi Fu used the data of urbanization, real estate investment, and economic growth in Hubei Province from 1990 to 2009 to analyze the long-term and short-term relationship between the three using analysis methods such as cointegration test, error correction model, and impulse response function. Inspection and analysis have drawn the conclusion that urbanization has promoted the increase in real estate investment, but the increase in real estate investment has not resulted in a corresponding increase in the level of urbanization [8].Jianghui Zeng (2010) used the national statistical data from 1990 to 2009 to establish an empirical analysis model between the urbanization rate and the price of the real estate industry. He believed that in the long run, there is a stable relationship between urbanization and real estate prices, and it is a one-way reason for the real estate prices [9].

2.2. Research on Economic Growth and Real Estate Investment

WeiDa Kuang(2011) studied the relationship between real estate credit, real estate investment and economic growth, and believed that fluctuations in economic growth would cause large fluctuations in real estate investment. On the contrary, fluctuations in real estate investment could only cause small fluctuations in economic growth. The relationship between the two is not symmetrical [10]. Yue Shen and Hongyu Liu (2004) found that Granger causality test, generalized impulse response, and variance decomposition revealed that economic growth has a one-way causal relationship to real estate investment. The fluctuation of real estate investment will be affected by changes in GDP fluctuations [11].

Regarding the research on urbanization and real estate investment, from the perspective of research methods, some scholars use qualitative methods to analyze the characteristics of urbanization development in the region, and to study the negative impact caused by the inconsistency between the scale of real estate investment and urbanization development. Most scholars use econometric software to analyze the short-term or long-term relationship between urbanization and real estate investment through empirical research. According to the existing literature, the most commonly used research method is to use the EVIEWS software to perform Granger causality tests on urbanization rates and real estate investment growth, or to use ADF tests to establish regression models. Regarding the research on economic growth and real estate investment, the current research is based on economic theory from the perspective of qualitative analysis. Based on a large number of facts, it analyzes the relationship between the national economy and real estate investment. Most quantitative analysis uses Granger causality test or input-output model to calculate the interaction between the two. These studies have certain reference significance for the writing of this article, but the existing literature rarely considers the impact on the real estate industry from the perspective of per capita income. In view of this, this article selects Guangdong's urbanization rate, per capita income, and real estate development investment data from 1986 to 2015, combines qualitative research with quantitative research, and collects a large amount of existing data and absorbs existing research results. Based on the theory of the relationship between investment, urbanization, and economic development, this paper studies and analyzes the real estate development investment and urbanization in China, combines qualitative and quantitative perspectives, establishes a lag model, and proposes corresponding policy inspiration based on the research.

3. ANALYSIS OF THE LEVEL OF URBANIZATION AND REAL ESTATE INVESTMENT IN GUANGDONG PROVINCE

3.1. Urbanization in Guangdong Province

According to Northam's research, the process of urbanization shows a flattened inverted S shape and is divided into three stages: the primary stage of urbanization, the level of urbanization is below 30%, and the urban population is increasing slowly. When the urbanization rate exceeds 10%, the process will gradually accelerate; at the intermediate stage of urbanization, the level of urbanization is 30 to 70%, and the trend of gradual acceleration of urbanization will continue until the level of urbanization exceeds 70%. ; In the advanced stage of urbanization, the level of urbanization is above 70%, and the process of urbanization is stagnant or slightly decreased. As shown in Figure 1, Guangdong Province has begun to enter the "intermediate stage of urbanization" since 1995. At the same time, it has also shown a trend of accelerated urbanization, but it has not yet entered the advanced stage of urbanization.

Since the reform and opening up, Guangdong Province, driven by the rapid development of industrialization, has made remarkable achievements in urbanization, and the urban spatial area has continued to expand. Under the influence of factors such as factors gathering, infrastructure investment, industrial upgrading, and transportation information networking, a large number of rural people go out to work and gradually gather in cities and towns, which promotes urbanization investment and consumption demand. According to the 2014 Statistical Bulletin of Guangdong's National Economic and Social Development, Guangdong's urbanization rate reached 68% in 2014, which is about 15% higher than the national average, and lags behind Shanghai, Beijing and Tianjin. With the development of an export-oriented economy and industrialization, the development of urbanization in Guangdong Province has steadily advanced.
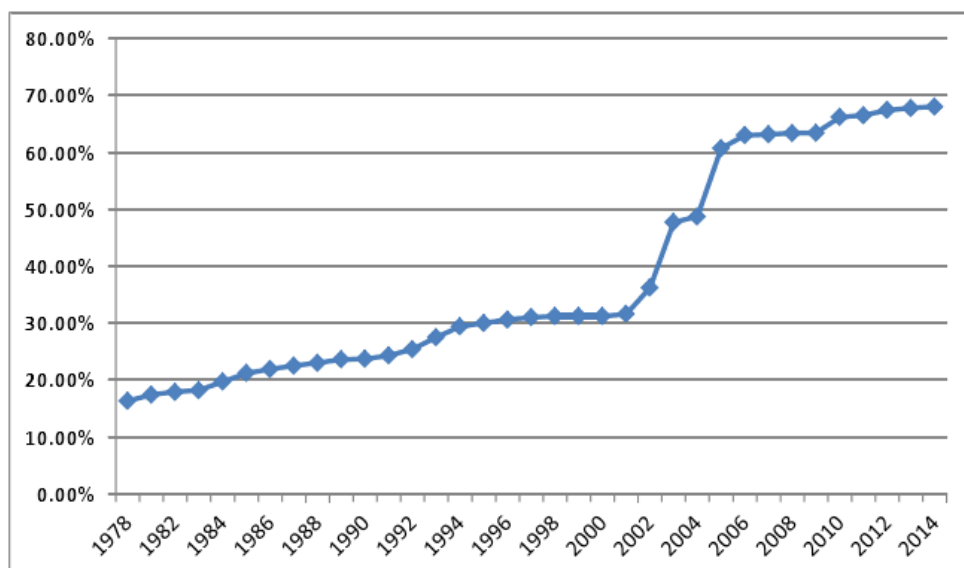

Figure 1. Urbanization rate over the years in Guangdong Province

3.2. Investment Status of Real Estate Development in Guangdong Province

After the reform and opening up, Guangdong's real estate industry has developed rapidly. As shown in Figure 2, in 1986, the real estate investment in Guangdong Province was only 1 billion yuan, but its rapid development reached 763.845 billion yuan by the end of 2014, which is more than 760 times that of 1986. The growth rate of real estate investment in Guangdong Province fluctuated greatly in the 20th century, reaching a trough in 1990 and peaking in 1992. After

undergoing sustained and rapid growth in the early stages of reform and opening up, Guangdong's real estate industry entered an adjustment period from 1992 to 1996. In the 21st century, the growth rate of real estate investment in Guangdong Province has remained relatively stable.
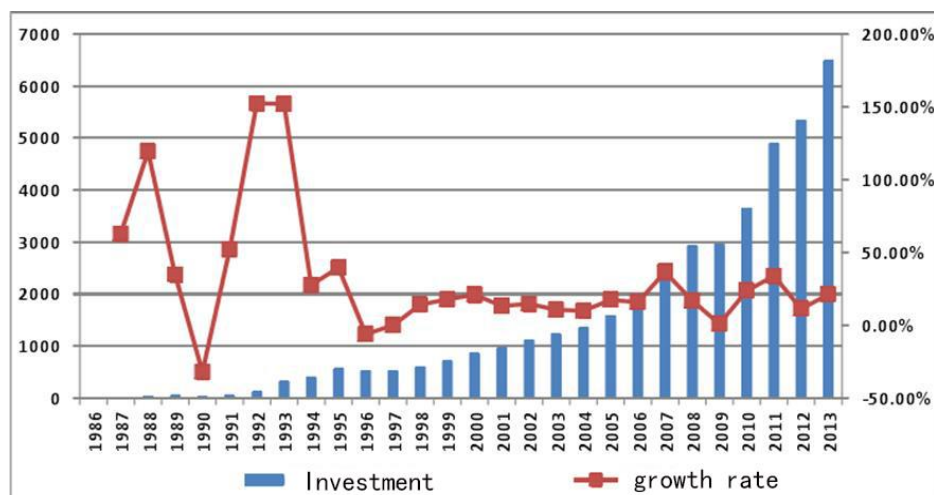

Figure 2. Investment and Growth Rate of Real Estate Development in Guangdong Province

4. THEORETICAL BASIS OF REAL ESTATE INVESTMENT INFLUENCED BY URBANIZATION BASED ON PER CAPITA INCOME

4.1. Mechanism of Urbanization on Real Estate Industry

According to the connotation of urbanization and the real estate industry, urbanization is the source of the real power for the development of the real estate industry, while the development of the real estate industry is the product of the urbanization process and restricts the healthy and stable development of urbanization. At the same time that urbanization drives the increase of urban population, it will inevitably lead to a large demand for housing, which will promote rapid economic development and become the vane of the development of the real estate industry. The real estate industry provides the necessary space for production, residence, living, culture, entertainment and other activities for urbanization, laying an important material foundation for urbanization. In terms of function, the development of the real estate industry will inevitably change the urban land use pattern and land layout, and then change the physical space form of the city, and promote the development of functions and the improvement of industrial layout in each functional area of the city.

The staged characteristics of urbanization development restrict the direction and speed of real estate development. British scholar L. Vandenberg proposed the three-stage theory of world urbanization: the first stage, urbanization; the second stage, suburbanization; the third stage, anti-urbanization and the dispersion of the inner city. H.S. Geyer and T.M. Kontuly also divided urban development into three phases: the first phase is the large city phase, also known as the "urbanization" phase, large cities have the largest net migration at this stage; the second phase is the transition phase, which is the "polarization reversal phase". In this phase, the population growth rate caused by migration in medium-sized cities rapidly increases and exceeds the population growth rate caused by migration in large cities. ; The third stage is the "counter-urbanization stage". In this stage, the migration growth of medium-sized cities is less than that of small cities. The two men boldly put forward that after the "anti-urbanization phase", they entered a new round of urbanization cycle, that is, they entered the "urbanization" phase again. According to the characteristics of population transfer in the process of

urbanization, in the first stage of urbanization, a large number of people gathered in the urban areas of the existing cities. The development of the real estate industry was mainly concentrated in the existing cities, which played a significant role in driving urban development. In the second stage, with the gradual increase of the urban population, the urban population became saturated or even overloaded, so the population began to shift to the suburbs, and the real estate industry also developed to the suburbs, resulting in large cities and megacities; in the third stage, in order to seek better development conditions, people began to shift and gather to surrounding small and medium cities and towns, creating a new contiguous large city, and then forming a new urban agglomeration. The urban agglomerations have shifted and presented a continuous development trend.

Agglomeration economy mainly refers to the phenomenon of concentrated development of economic activities in a certain geographical space. In other words, within a certain space, various industries are gradually centralized, and economic activities are carried out to produce good economic effects, which in turn attracts other economic activities to continue to concentrate in this area, and towns are formed and continuously expanded into Cities, big cities, mega cities. In 1909, the economist Weber first proposed the concept of agglomeration economy, and pointed out that the agglomeration effect minimizes the cost and freight of the enterprise, which in turn helps the enterprise to maximize its benefits. Later scholars continued to study it and achieved great development, and formed a series of research results.

The main basis of this theory and its development for the development of urbanization and the real estate industry is that the agglomeration effect continuously concentrates various industries in cities, thereby providing a large number of employment opportunities, promoting a large number of people to flock to cities for production activities, and greatly speeding up the urbanization process. The concentration of enterprises and population has promoted the large-scale construction and effective utilization of urban infrastructure and public facilities, which has brought great social and economic benefits and environmental benefits to our country. The positive external effects generated by it are self-evident; on the other hand, industrial concentration Accelerating the pace of urban development, the rapid aggregation and continuous expansion of enterprises has caused a shortage of commercial housing, and the agglomeration of the population has directly promoted the demand for housing commodities, driving the development of the regional real estate market and the real estate industry, and becoming a national economic pillar.

4.2. Mechanism of Economic Growth on Real Estate

Real estate investment in real estate is an important part of overall social and economic activities, and its existence and development will inevitably be affected by the overall economic operation. Real estate investment plays an important role in the development and growth of the national economy. The speed of the development of the national economy will also restrict the scale and level of real estate investment. It can be said that real estate investment and economic growth complement each other and restrict each other. Under certain conditions, they can promote each other's development. At the same time, the development level of one party will also restrict the development of the other. In general, the role of economic growth in real estate investment is mainly driven by two aspects. If the economy grows rapidly and shows a steady growth trend, the national economy will generally continue to develop healthily, thereby realizing the rapid development of real estate investment. However, if social and economic growth is slow or even stagnant, and economic depression leads to a drastic reduction in various types of investment and consumer demand, the development of real estate investment will be greatly affected. After entering the 21st century, according to Figure 3, it can be seen that Guangdong's GDP, urbanization rate, real estate industry value and investment volume have all changed in a positive direction.
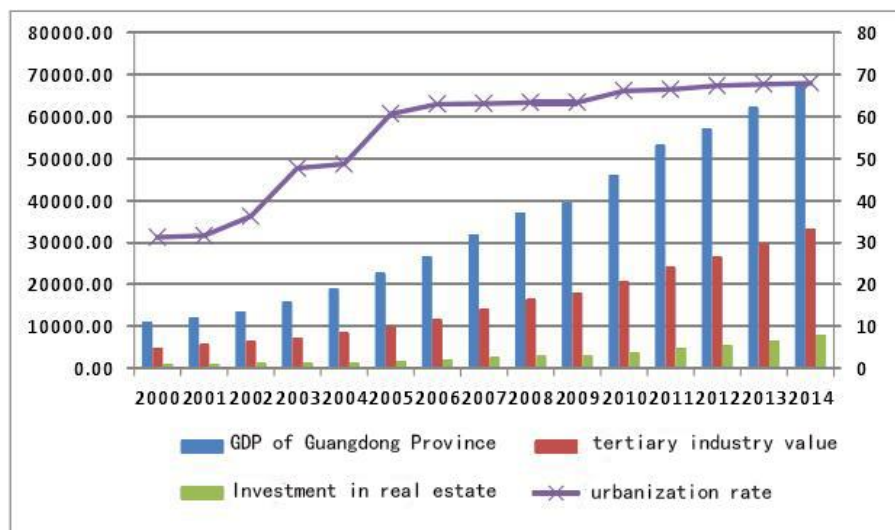
Figure 3. GDP, tertiary industry value, investment in real estate development, and urbanization rate of Guangdong Province

5. AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN URBANIZATION DEVELOPMENT AND REAL ESTATE INVESTMENT IN GUANGDONG PROVINCE

5.1. Variable Selection and Data Processing

This paper selects Guangdong's urbanization rate, per capita income, and investment in real estate development from 1986 to 2015 to establish a lagging model. The data comes from China Statistical Yearbook and Guangdong Statistical Yearbook.

Urbanization Level (UBR). "Urbanization level" is the most commonly used and convenient indicator to measure urbanization internationally. Regarding the indicators for measuring the level of urbanization, different scholars have put forward different estimation viewpoints. The comprehensive indicator method is difficult to achieve in application, and the degree of urbanization from the perspective of population has been recognized by many people. The calculation of the urbanization level in this article is reflected by "the proportion of the urban population in the total population", in which the urban population is obtained by subtracting the agricultural population from the total population. Although some scholars have pointed out that it is not accurate to measure the urbanization rate by the proportion of non-agricultural population or urban household registration population in the total population, because a large part of the agricultural population, although they do not have an urban household registration, actually live in cities for non-agricultural production activities. When calculating the urbanization rate, this part of the population should be included in the urban population. However, the statistics bureau according to the new urban population standard statistics data began after 2000. In order to maintain the consistency of the data caliber, this article uses the non-agricultural population approximation to replace the actual urban population.

Real Estate Development Investment Line (RLSI). This indicator uses the annual total of the real estate development investment quotas of each state and city in Guangdong Province as data. The unit of real estate investment quota is 100 million yuan.

Per Capita Income (INCOME). Guangdong's per capita income is replaced by per capita GDP, which is obtained by dividing the total GDP by the total population.

$INCOME_{(t-1)}$, $INCOME_{(t-2)}$, $UBR_{(t-1)}$, and $UBR_{(t-2)}$ represent the lagging period and lagging period values of per capita income and urbanization rate, respectively. Lag effects, describing long-term relationships between variables.

5.2. Empirical Research

Linear regression is a statistical analysis method that uses regression analysis in mathematical statistics to determine the quantitative relationship between two or more variables that depend on each other. Its general form is. Using RISI as the explanatory variable, using eviews to perform least square estimation on income and UBR and their lag and cross terms respectively, the results are as follows:

Table 1. Model regression analysis results

	Model 1	Model 2	Model 3	Model 4	Model5
α	-5897267**	-4541424***	-11039007***	-15963071***	6722778***
INCOME	1139.586***	-754.4798***	792.2057***	576.6804***	512.2832***
INCOME $_{(t-1)}$		342.757			
INCOME $_{(t-2)}$		1877.88***			
UBR			416668.3***	319254.4**	-472893.2***
UBR $_{(t-1)}$				43728.37	
UBR $_{(t-2)}$				409693.2***	
INCOME *UBR					15.529***
R^2	0.949043	0.965039	0.960279	0.975168	0.992172
Corrected R^2	0.947223	0.960669	0.957336	0.970849	0.991269
F-statistic	521.4864	220.8291	326.3676	225.8032	1098.474
Durbin-W	0.185332	0.601523	0.368815	0.57268	0.849699

Note: 1. *** indicates that the coefficient of variation is significant under the significance of 0.01

2. ** indicates that the coefficient of variation is significant at a significance of 0.05

3. * indicates that the coefficient of variation is significant under the significance of 0.1

Model 1 uses income per capita as the explanatory variable. The results show that per capita income has a significant promotion effect on real estate development investment RISI, which is in line with expectations. But according to Model 2, after introducing the lagging term of per capita income, income (-2) has a significant promotion effect on real estate investment, and the increase in per capita income in the current period has no positive impact on real estate investment. The effect is positive, but the increase in per capita income will not cause an increase in real estate investment in the short term, and only in the long term will there be a positive role in promoting real estate development investment. Model 3 controls the impact of per capita income and uses the urbanization rate UBR as an explanatory variable. The results show that the increase of the urbanization rate has a positive effect on real estate development investment. Model 4 shows that after introducing the lag of the urbanization rate, the role of UBR is still positive, which shows that the urbanization rate UBR can promote real estate development investment in the long and short term. Model 5 introduced the cross-effect of per capita income and urbanization rate after controlling the effects of per capita income and urbanization rate. The regression coefficient of INCOME*UBR was significantly positive, but the regression coefficient of UBR was significantly negative, indicating that the urbanization rate The positive impact of growth on the growth of investment in real estate development is based on the increase in per capita income. Only the joint increase of the urbanization rate and per capita income can significantly promote the increase in real estate investment.

6. CONCLUSION AND INSPIRATION

This article selects urbanization rate, per capita income, and real estate development investment data from 1986 to 2015 in Guangdong Province, combines qualitative and quantitative research, and uses the theory of the relationship between real estate investment, urbanization, and economic development as the basis. The status quo of development investment and urbanization, combined with qualitative and quantitative perspectives for research and analysis, and the establishment of a lag model regression analysis, the main conclusions are as follows: ①Both the increase of urbanization rate and the increase of per capita income have promoted the investment in real estate, but they have different effects in the short and long term. The increase in per capita income has a significant time lag effect on real estate investment. This effect is unstable in the short term and tends to promote the increase of real estate development investment in the long term; and the increase in urbanization rate on real estate investment It is stable both in the short and long term, and there is a certain endogenous nature of the urbanization rate, which interacts with the investment in real estate development. ② This article explores the cross-effects of urbanization and per capita income, and finds that urbanization has a significant positive impact on real estate development and investment only when per capita income increases. which is in line with the reality.③ An increase in per capita income can increase people's actual purchasing power and increase people's rigid demand for housing. Per capita income is the real exogenous factor affecting the increase in real estate investment.

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