The impact of the real estate market on labor productivity

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Abstract. This paper studies the impact mechanism of the real estate market on labor productivity through China's urban data in recent ten years, and tests the two-way effect of its impact and further robustness test. The results indicate that on the one hand, the increase in per capita real estate investment and transaction volume has a promoting effect on the growth of labor productivity, but the expansion of market size will cause resource mismatch and thus have a inhibitory effect on labor productivity; For cities with higher productivity, the positive effect is relatively small, and the inhibitory effect is also higher than cities with lower productivity.

Keywords: Real estate; Labor productivity; Crowding out effect.

1. Introduction

The impact of the real estate market on the economy has long been a focus of academic attention. Previously, many scholars have studied the impact and mechanism of the real estate industry on the economy from both theoretical and empirical perspectives, but there has been little research on its impact on labor productivity. The productivity of this industry is relatively low compared to other real economies, so the key to improving labor productivity lies in the real economy.

The first type of impact is to explore the market's role in promoting the economy from the perspective of the relationship between economic aggregate investment and consumption. Due to the characteristics of the real estate industry chain, the industry can also drive upstream and downstream development. As the main subject matter of mortgage loans, it can also alleviate the financial constraints of enterprises.

For the second type of impact, the study focuses on the excessive development of real estate, which in turn inhibits economic development. First, the industry is low in technology and difficult to innovate, and its productivity is also lower than the social average, which is indicated by the foam of real estate and the continuous rise of industrial prices, so it has a relatively inhibitory effect on the economy. The foam of real estate will restrain the output of other sectors , and excessive housing prices will have a crowding out effect on the secondary industry . Due to the ratchet effect, industry wages have further increased, leading to a vicious cycle of resource mismatch and a further decline in productivity.

2. Theoretical Analysis and Research Design

According to the traditional economy, capital stock, effective labor force, and technological progress play a major role in productivity. With the development of the economy, the virtual economy is gradually separating from the real economy. In the real estate industry, it is manifested as housing prices deviating from production costs, new resources are constantly being incorporated, and the disposable resources of the real economy are relatively reduced. Existing research further divides capital into entity capital and Fictitious capital. Considering the situation of constant returns to scale, the following economic growth model is established by referring to the study of Kuan Da :

$$Y_t = A_t H_t^{\beta_1} K_t^{\varphi} L_t^{1-\beta_1-\varphi} \quad 0 < \beta_1, \quad \varphi < 1 \tag{1}$$

In this formula, t represents the year, Yt represents the total economic output, at represents total factor productivity, Ht represents the level of real estate investment, Kt represents the non-real estate capital stock, and Lt represents the number of jobs, β1, φ and 1-β1-φ Represent the output elasticity of real estate investment, non-real estate capital stock, and labor, respectively.

By organizing formula (1) and dividing it by Lt for algebraic substitution, then taking the logarithm, we can obtain

$$\ln lp_t = \ln A_t + \beta_1 \ln h_t + \varphi \ln k_t$$

Among them, lpt, ht and kt respectively represent labor productivity, per capita real estate investment, and per capita non-real estate capital stock.

From this formula, it can be seen that not only total factor productivity and per capita capital stock will affect the level of labor productivity, but also the level of per capita real estate investment. This can also explain the positive relationship between the real estate market and labor productivity.

Hypothesis 1: An increase in per capita real estate investment has a promoting effect on labor productivity.

Resource allocation is another factor that plays an important role in total factor productivity, in addition to technology, human capital, and other factors. Based on the dual attributes of real estate, we distinguish investments into real estate and non real estate investments. On the one hand, real estate is a necessity for production and daily life. For a region, the higher the transaction volume of its real estate market, the higher the degree of credit revitalization and the more capital available, which is conducive to economic development. The larger the relative size, the farther away it is from the real economy, that is, the higher the housing price and transaction volume, the larger the relative size of the real estate market. We can express total factor productivity through the following equation:

$$A(sales_t, hp_t, alloca_t, c_t) = A_0 e^{\lambda_t} sales_t^{\beta_2} hp_t^{\beta_3} alloca_t^{\beta_4} c_t^{\gamma}$$

After taking the logarithm, it is expressed as:

$$\ln A_t = \ln A_0 + \lambda_t + \beta_2 \ln sales_t + \beta_3 \ln hp_t + \beta_4 \ln alloca_t + \gamma \ln c_t$$

Among them, salest, hpt, allocat and ct respectively represent the per capita real estate transaction volume, real estate price, relative size of the real estate market, and other variables in period t. A0 represents the initial total factor productivity, λ For exogenous productivity changes, β2, β3, β4, γ The impact parameters of per capita real estate transaction volume, housing price, relative size of real estate, and other variables on total factor productivity are respectively included.

Based on this, this article further proposes the following assumptions:

Hypothesis 2: Other factors remain unchanged, and an increase in per capita real estate transaction volume promotes productivity improvement. However, a relative increase in the size of the real estate market will have a restraining effect on productivity, thereby reducing labor productivity.

Under certain circumstances, the larger the transaction volume of real estate, that is, the larger its relative scale compared to the real economy, has the opposite effect on labor productivity. Therefore, there must be a certain variable that causes a change in the direction of this effect in the process of expanding the scale of real estate. Based on the economic development trend in China in recent decades, low real estate prices have a promoting effect on productivity, while high prices have a opposite effect.

3. Model Setting and Variable Selection

In order to study the impact of the real estate market on labor productivity, this article designs the following model:

$$\ln lp_{it} = \alpha + \beta_1 \ln h_{it} + \beta_2 \ln sales_{it} + \beta_3 \ln hp_{it} + \beta_4 \ln alloca_{it} + \gamma \ln c_{it} + city_t + year_i + \varepsilon_{it}$$

Where i and t represent the city and year, respectively. Lpit represents the labor productivity of the corresponding year and city, εit represents the corresponding perturbation term. The specific meanings represented by explanatory variables are as follows:

1). The logarithm of labor productivity (lnlp). Divide the city's GDP by the number of employed people in the same year and take the logarithm. Due to the study of urban labor productivity in this article, social labor productivity was selected instead of individual labor productivity, which is the ratio of social added value to labor.

2). The logarithm of per capita real estate investment (lnh). The ratio of real estate investment to the employment population of the city in the same year. The higher the value, the higher the level of real estate investment, and the corresponding expected land premium.

3. The logarithm of per capita real estate transaction volume (lnsales). The logarithm of the ratio of real estate transaction volume to employment population is used to measure the market activity.

4). The logarithm of the average transaction price of real estate (lnhp). The logarithmic value of the ratio of transaction volume to transaction area, which is highly concerned by society.

5). The logarithm of the relative size of the real estate market (lnalloca). The ratio of real estate transaction volume to regional GDP is multiplied by 100 and then taken as a logarithm. The negative impact on labor productivity, from real to virtual, becomes more apparent.

6). The logarithm of per capita capital stock (lnk). The ratio of capital stock to the number of employed people. Based on the principle that the growth rate of capital stock and fixed assets investment is equal under economic stability.

7). Other control variables. The industrial structure is represented by the proportion of the tertiary and secondary industries, reflecting the degree of industrial upgrading. In the years studied, labor productivity was relatively concentrated, while various indicators in the real estate market were relatively dispersed, which is also in line with the different performance of the real estate market in different regions of China.

4. Conclusion

1). Both per capita real estate transactions and investment have a promoting effect on labor productivity. In terms of the current period, per capita real estate investment can increase demand for upstream enterprises, improve local fiscal revenue, and thus promote output. A large proportion of the transaction volume comes from financial institutions, such as banks, which directly promotes the level of liquidity in cities, thereby improving labor productivity.

2). The increase in the relative size of the real estate market will have a certain inhibitory effect on labor productivity in the opposite direction. The proportion of real estate output increases, and its growth rate is faster than GDP, leading to a relatively excessive flow of resources into the real estate market, which has a restraining effect on labor productivity. Therefore, the overall impact of real estate on labor productivity needs to be comprehensively considered based on multiple factors.

3). The rise in housing prices has a restraining effect on labor productivity. From the perspective of residents and businesses with or without houses, the increase in housing prices not only increases the wealth of homeowners, but also enhances their consumption level and financing ability. However, it has a restraining effect on homeowners in both aspects. The ultimate outcome of its effects at both the micro and macro levels is uncertain. In the years studied in this article, its negative impact is greater than its positive effect.

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