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A study on the impact of China's real estate economy on regional employment development

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Abstract. This paper employs a simple linear regression model, based on provincial panel data from the National Bureau of Statistics of China spanning 2008 to 2024, to explore the impact of the real estate economy on regional employment development, and conducts a robustness check using the added value of the real estate sector, followed by a heterogeneity analysis from the perspectives of time, region, and industry. The study arrives at the following findings: 1. The real estate economy is positively correlated with regional employment. 2. Prior to 2018, when real estate regulatory policies were unprecedentedly stringent, the real estate sector exerted a stronger driving force on employment development. 3. The real estate economy drives employment development in the eastern, central, and western regions, with the strongest effect observed in the east and the weakest in the central and western regions. Conversely, it acts as a hindrance to employment in the northeastern region. 4. Regarding industrial sectors, the promotion effect is most significant in the services sector, followed by the industrial sector, whereas it exerts a negative and obstructive impact on the agricultural sector.

Keywords: real estate economy, regional employment, regional employment, robustness check, heterogeneity analysis

1. Introduction

Employment is the foundation of people's livelihood, the cornerstone of the economy, and the bedrock of social stability, holding a strategically fundamental position in the overall economic landscape. Addressing employment issues is also an essential requirement for promoting social harmony and economic growth. According to data from China's National Bureau of Statistics, from January to November 2025, 12.1 million new urban jobs were created, with the average surveyed unemployment rate at 5.2%. However, the sector still faces challenges characterized by "persistent aggregate pressure, prominent structural contradictions, and overlapping external risks". Meanwhile, with the reform of China's real estate system, in 2024, the value-added of the real estate industry accounted for 6.3% of GDP, and real estate investment accounted for approximately 19.3% of total fixed asset investment—remaining around one-fifth—and continues to provide crucial support for economic growth. However, since 2020, China's real estate prices have exhibited a downward trend for the first time, casting the entire industry into a state of recession. Against this backdrop,

this study attempts to address the following key question: Does the Chinese real estate economy, which is undergoing drastic fluctuations, have an impact on employment development?

As outlined above, this paper empirically analyzes the impact of the real estate economy on regional employment. Based on macro-level data from 2008 to 2024, it employs a simple linear regression model to gain an accurate understanding of China's current situation. The study further conducts robustness checks and heterogeneity analyses to arrive at more comprehensive conclusions.

2. Literature review

The literature most closely related to this study focuses on the relationship between the real estate sector and employment. Wei Lanning and Tang Xiaolian [1] employed causal analysis and impulse response analysis, finding that real estate investment has a significant positive impact on employment levels. Furthermore, Liu Feng and Li Yajin [2] constructed a mediation effect model to analyze the mechanism, revealing that rising housing prices primarily drive employment through increased investment.

Another strand of literature closely related to this study focuses exclusively on employment issues. Tian Xu et al. [3] find that the digital economy has a significant negative effect on the industrial employment structure, while exhibiting a "U-shaped" characteristic across industries and skill levels. Ling Long [4] primarily discusses issues concerning urban employment, non-agricultural employment, unemployment, underemployment, informal employment, and flexible employment. Hu Yesheng [5] proposes that society, the government, individuals, enterprises, and universities need to re-evaluate the alignment between employment and industrial development to tackle employment challenges.

Additionally, studies that examine only the real estate sector are also relevant. Zhu Junjun [6] analyzes internal and external factors to find that the real estate market is prone to volatility under various influences, directly impacting the industry and the broader real estate economy. Fu Yujie [7] outlines the current state of China's real estate development and proposes effective measures for optimizing policy regulation. Wang Dongxiu [8] explores both the positive and negative impacts of real estate investment on economic growth. Yu Xinsheng [9] provides insights into the stability of the real estate market, while Shao Xiaoling [10] elaborates on the impact of real estate market fluctuations on local economic development.

In summary, while existing research on real estate and employment is extensive, few studies have integrated these two areas. Building upon the aforementioned literature, this paper makes three key contributions: First, methodologically, it employs statistical tools to empirically analyze the proposition. The study conducts a robustness check on the baseline regression results and performs heterogeneity analysis across different regions, time periods, and industries in China to deeply explore the impact of the real estate economy on regional employment. Second, the research topic is highly topical, thereby enriching the academic discourse on the real estate economy. Third, it utilizes comprehensive and novel datasets spanning a long time dimension and covering 31 provinces, municipalities, and autonomous regions in China.

3. Typical characteristics and key facts: the real estate economy and regional employment development in China

Figure 1 illustrates the development trend of China's labor force population from 1978 to 2024, using total labor force as the indicator. From the perspective of development trends, China's labor force population exhibited a significant upward trend until 2010, after which the growth plateaued. Starting from 2020, the labor force population has entered a downward trend. From the perspective of growth rate, China's labor force

population experienced rapid growth between 1978 and 2000, with the most pronounced acceleration occurring between 1988 and 1992. Since 2000, the growth rate has significantly declined, and from 2012 onward, the annual growth rate reached zero, indicating a complete stagnation in labor force expansion.

Figure 2 illustrates the development trend of China's real estate economy from 1949 to 2024, using the proportion of real estate sector value-added to GDP as the indicator. From the perspective of development trends, the proportion of value-added in the real estate industry to GDP exhibited fluctuating stability during the period from 1949 to 1982, followed by a significant upward trend from 1982 to 2020, but has since shown a pronounced downward trajectory after 2020. From the perspective of growth rate: From 1949 to 1982, the growth rate of the real estate sector's value-added as a percentage of GDP was virtually zero. In contrast, the period from 1982 to 2020 witnessed a rapid upward trend.

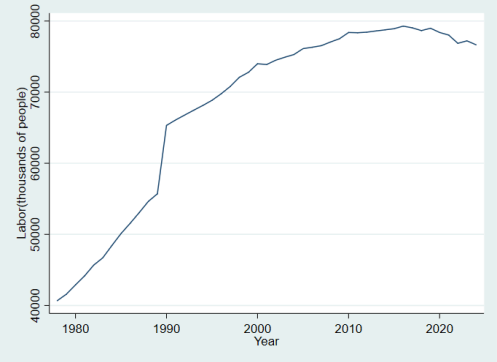

Figure 1. Development trend of China's labor force population

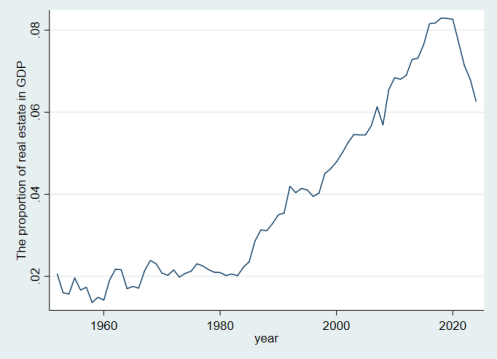

Figure 2. Development trend of the real estate sector's value-added as a percentage of GDP in China

4. Research design

4.1. Variable selection

The dependent variable in this study is regional employment, proxied by the number of urban employees. The independent variable is the real estate economy, measured by the ratio of real estate value-added to regional GDP. For the purpose of robustness checks, this paper employs the absolute value of real estate value-added. Furthermore, to conduct industrial heterogeneity analysis, this study utilizes the number of urban employees in the sectors of agriculture, forestry, animal husbandry, and fishery; industry; and services, respectively.

4.2. Data sources

The empirical analysis focuses on 31 provinces, municipalities, and autonomous regions in China, covering the period from 2008 to 2024. The sample data are sourced from the National Bureau of Statistics of China. Table 1 presents the descriptive statistics of the variables.

Table 1. Descriptive statistics

Variable	Obs	Mean	Std.dev.	Min	Max
Urban Employees (10,000 persons)	527	522.8	385.3	20.30	2,111
Value-Added of the Real Estate Industry (100 million CNY)	527	1,891	2,050	17.60	12,627
Regional GDP (100 million CNY)	527	26,017	24,677	405.2	141,634
Proportion of Real Estate Value-Added	527	0.0671	0.0191	0.0306	0.133
Urban Employees in Agriculture, Forestry, Animal Husbandry, and Fishery (10,000 persons)	526	7.489	14.03	0.100	94.40
Urban Employees in Industry (10,000 persons)	527	227.9	221.6	2.200	1,218
Urban Employees in Services (10,000 persons)	526	287.8	188.2	17.30	1,135
Urban Employees in Mining Industry (10,000 persons)	527	15.37	18.97	0.100	103
Urban Employees in Manufacturing Industry (10,000 persons)	527	134.1	162.1	0.700	1,020
Urban Employees in Electricity, Heat, Gas, and Water Production and Supply (10,000 persons)	527	11.71	6.570	0.700	32.20
Urban Employees in Construction Industry (10,000 persons)	527	66.78	70.36	0.500	450.2

4.3. Research model

The econometric model employed in this study is a simple linear regression, specified as follows (equation (1)):

$$Y = \beta_0 + \beta_1 X + \varepsilon \tag{1}$$

Y denotes the dependent variable (Urban Employees), X represents the core explanatory variable (the ratio of real estate value-added to regional GDP), β_0, β_1 are the parameters to be estimated, andε is the stochastic error term.

5. Empirical analysis

5.1. Correlation analysis

Figure 3 illustrates the relationship between regional employment and the real estate economy. As shown in Figure 3, the number of urban employees increases alongside the rise in the share of real estate value-added, indicating a positive correlation between the two variables. However, the specific nature of this relationship needs to be further confirmed through regression analysis in study.

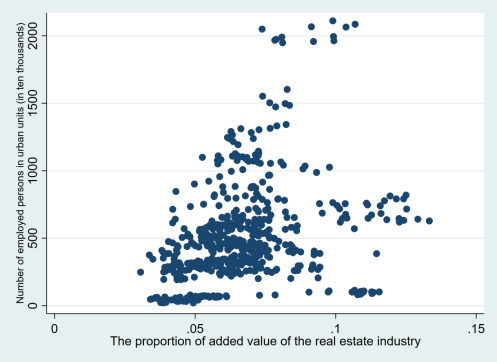

Figure 3. Correlation analysis between the real estate economy and regional employment development

5.2. Benchmark regression

Column (1) of Table 2 presents the primary regression results regarding the impact of the real estate economy on regional employment. Specifically, the estimated coefficient of the core explanatory variable is 6.5251, which is positive and statistically significant at the 1% level. These preliminary regression results indicate that, for regional employment, the current real estate economy has a positive impact overall.

Table 2. Benchmark regression, robustness check, and temporal heterogeneity analysis

	(1)	(2)	(3)	(4)
	Y	Y	Pre-2018	Post-2018
X	6.5251***	0.2128***	8.3699***	2.2243***
	(10.8189)	(18.8448)	(9.6795)	(4.6128)
_cons	5.5188***	4.4731***	5.3889***	5.8401***
	(35.1932)	(48.3167)	(32.3986)	(38.8169)
N	527	527	310	217
R^2	0.1885	0.9374	0.2477	0.1646

z statistics in parentheses $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

5.3. Robustness check

To verify the stability and reliability of the baseline regression results, this study replaces the measurement indicator of the core explanatory variable (the real estate economy). Specifically, we employ the absolute value of real estate value-added as a substitute for the previous ratio of real estate value-added to GDP. The empirical results reported in Model (2) of Table 2 show that the impact of the real estate economy on regional employment remains positive and statistically significant. This confirms that the conclusions of the baseline model are robust.

5.4. Heterogeneity analysis

5.4.1. Temporal heterogeneity analysis

In 2018, China's real estate control policies became unprecedentedly stringent. According to statistics from the Chinese Academy of Social Sciences, there were over 400 real estate regulation instances in 2018, representing an 80% increase compared to 2017. The high frequency of these policies made 2018 the year with the most frequent housing market regulation up to that point. Therefore, based on data availability, this paper

divides the sample period into two sub-periods using 2018 as the cut-off point to conduct a temporal heterogeneity analysis.

Models (3) and (4) in Table 2 report the regression results for the periods 2008–2018 and 2018–2024, respectively, regarding the impact of the ratio of real estate value-added to GDP on urban employment. The estimated coefficients for the explanatory variable are 8.3699 and 2.2243, both of which are positive and statistically significant at the 1% level. These results indicate that the positive driving effect of the real estate economy on regional employment was greater before 2018.

5.4.2. Regional heterogeneity analysis

Following the classification method of China's National Bureau of Statistics (2011), this paper divides all Chinese provinces into four major regions: Eastern, Central, Western, and Northeastern China, in order to reveal the regional characteristics of how real estate economic development affects employment. Models (1), (2), (3), and (4) in Table 3 report the regression results regarding the impact of the ratio of real estate value-added to GDP on urban employment in these four regions, respectively. The estimated coefficients for the explanatory variable are 7.4165, 5.3774, 8.1994, and -1.5676. The first three coefficients are positive and statistically significant at the 1% level, whereas the fourth is negative and statistically significant at the 1% level. These results indicate that, for China, the real estate economy has the strongest positive driving effect on employment development in the Eastern region, followed by the Western and Central regions. In contrast, it exerts a negative impact on the Northeastern region.

5.4.3. Industrial heterogeneity analysis

Based on industrial structure, this paper categorizes urban employees in China into three groups: agricultural, industrial, and service sector employees, in order to reveal the industrial characteristics of how the real estate economy affects regional employment. Columns (5), (6), and (7) in Table 3 report the regression results regarding the impact of the real estate economy on these three groups, respectively. The estimated coefficients for the explanatory variable are -14.8920, 4.8764, and 8.3967. The latter two coefficients are positive and statistically significant at the 1% level, while the first is negative and statistically significant at the 1% level.

Table 3. Analysis of regional and industrial heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Eastern	Central	Western	Northeast	Agricultural	Industrial	Service
X	7.4165***	5.3774***	8.1994***	-1.5676	-14.8920***	4.8764***	8.3967***
	(6.5979)	(4.6944)	(8.9276)	(-0.6697)	(-5.5341)	(5.0623)	(12.2411)
cons	5.8089***	5.9688***	4.9256***	6.0528***	11.3736***	13.8279***	14.0576***
	(20.8143)	(43.4298)	(21.5256)	(21.2655)	(42.6779)	(65.1560)	(100.5063)
N	170	102	204	51	526	527	526
R^2	0.2216	0.2604	0.3951	0.0956	0.0607	0.0561	0.2285

t statistics in parentheses* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6. Conclusion

Based on the aforementioned empirical results, this study concludes that the real estate economy is positively correlated with employment. When segmented by time periods, the promotion effect of China's real estate economy on regional employment was greater prior to 2018—that is, before the implementation of unprecedentedly strict real estate control policies. From a regional perspective, the real estate economy exerts

a positive driving effect on employment in the Eastern, Western, and Central regions (in descending order of magnitude), whereas it presents a negative hindering effect in the Northeast region. Regarding different industries, the real estate economy promotes employment in both the service and industrial sectors, with a stronger effect observed in the service sector; conversely, it hinders agricultural employment. It is evident that the real estate economy positively influences China's employment development, and this positive effect is primarily concentrated in the period preceding the 2018 policy tightening, in the Eastern, Western, and Central regions, as well as in the service and industrial sectors.

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