A Study on the influence of China's green finance development on real estate prices

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Abstract: At present, the importance of green finance in the world market is becoming increasingly prominent. Various kinds of green products have emerged, and auxiliary policies have also come into being. China is one of the world's largest carbon dioxide emissions and the world's largest investor in new energy. In the face of severe environmental problems and challenges of sustainable development, the Chinese government attaches great importance to the development of green finance, and has adopted a series of positive policy documents and guidance, including the establishment of special funds, providing preferential fiscal and tax policies, and the establishment of a green bond market to promote its role in the financial system. In addition, China has set up a set of green financial standards and evaluation system to guide financial institutions and enterprises to be more transparent and sustainable in environmental risk management and green investment.

The emergence of green finance has brought a certain impact on the real estate industry, a pillar industry of China's economy. At present, many people in China, especially in some central cities, have speculated on housing prices. This behavior has led to a speculative increase in the real estate market, a rapid rise in housing prices, an excessive consumption of resources, and the aggravation of social inequality. This conflicts the concept of sustainable development and environmental friendliness advocated by green finance. At the same time, the investment in green finance will squeeze out a part of the real estate market share. By directing investment in real estate to the flow of green buildings and energy conservation technologies, green finance can also promote the efficient use of resources and sustainable environmental development.

Therefore, it is of great significance to deeply study the impact of green finance on real estate. By discussing the application of green finance in the real estate field, effective ways can be found to reduce the consumption of resources in the real estate industry, improve the energy efficiency of buildings, promote the development of green buildings, and guide China's real estate market towards the direction of sustainable development in practice. This is of great practical significance for realizing the dual goal of economic growth and environmental protection.

Previous scholars have discussed a wide range of factors affecting real estate, including the monetary system, consumption level and so on. The related discussion on green finance also focuses on the impact of the ecological environment and some green products on the financial market. No scholar has specifically discussed the impact of green finance on real estate as a whole.

Therefore, in order to ensure that the regression results are not affected by the economic turbulence during the epidemic period, this paper selects the relevant data of provinces and cities from 2008 to 2020 to regression the fixed effect model panel, conducts a study on the real estate price, and draws the following basic conclusions: green finance has a negative impact on the real estate price.

The marginal contribution of this paper is the use of various green coefficient to build green financial index, to explore the influence of green finance as a whole, and make up the green finance influence the lack of the real estate research, to solve the current real estate investment market proportion and rising prices put forward new slow problems.

The chapters of this paper are arranged as follows: the second part is the literature review, the third part is the experimental design and data, the fourth part is the empirical results, the fifth part is the robustness test, and the sixth part is the conclusion and policy suggestions.
1. Literature review and research hypotheses

1.1 Definition and measurement of green finance

1.1.1 Definition of green finance

In 2016, the International Financial Organization (IFC) proposed the broad definition of green finance at the G20 Summit, which is all investment and financing activities that can bring environmental benefits. It includes not only environmental financing, but also the broader sustainable development goals, such as reducing environmental pollution, improving resource utilization efficiency, and protecting biodiversity. It also includes the management of environmental risks in the financial system (Green Finance Research Group, 2016). Green finance covers a lot of things, including sustainable development projects and products, or financial investment for the sustainable economy. Green finance includes climate finance, but is not limited to climate finance. It can also refer to other environmental targets, such as industrial pollution control, water sanitation, or biodiversity conservation. When it comes to capital flows related to environmental protection, investment behavior can be summarized as green finance (Hohne et al, 2012). From the perspective of finance, green finance is usually limited to green investment. In practice, however, green finance is a broader perspective, which includes costs, profitability, and financial support under policy promotion. In addition, according to the existing research of developed countries, the influence mechanism on green finance is often from the perspective of the market, and it pays more attention to the market forces. Zadek and Flynn (2013) also said that green finance is a kind of financial innovative product aiming to achieve win-win economic development and environmental quality improvement. According to the definition of international finance companies, green finance is to provide financing for investment with environmental benefits. This new financial innovation product has attracted more and more attention (Zhang et al. 2019). When we focus on green finance in developing countries such as China, we need to pay attention to the impact of policy orientation on the whole definition. As the world's largest emitter of greenhouse gases, China is vigorously promoting the development of a sustainable energy industry (Wang et al, 2020). In 2016, China issued the Guiding Opinions on Building a Green Financial System, which defined that it includes financial service activities in support of resource conservation, environmental improvement and climate response, as well as investment, financing and risk management for projects in the field of green environmental protection. It is mentioned in the World Economic Forum that green finance is any structured financial activity to ensure better environmental results. The most important financial instruments in green finance are bonds and stocks, and the three major issuers of green bonds are the United States, China and France. Chinese scholars have also defined green finance to varying degrees. It is generally believed that green finance refers to financial activities that support environmental improvement and address climate change. Green Finance and Sustainable Development emphasizes that green finance is an important part of modern economy and a new product of theory and practice in financial development. Emphasize the restructuring of the business philosophy, management policies and business processes of the financial industry to achieve better environmental sustainability. Green finance is an organic combination of sustainable development and finance. This is a major innovation of the financial industry, in realizing the global economic development while protecting the environment, in order to achieve a balance between economic and environmental development.

1.1.2 Measurement of green finance.

On the construction of green finance index, many scholars have made research on this. Due to the short development time of green finance in China, the academic circle has not yet formed a unified measurement method. At present, the development level of green finance is mainly measured by the construction of index system. Wuxi center sub-branch of the People's Bank of China group (2019) from the green financing, green investment and green society three dimensions evaluated the sustainability of green finance development, through the construction of green
financial sustainable development comprehensive evaluation system, the comprehensive level of the sustainable development of green financial in China for the calculation and evaluation. For measuring green financial development level, many scholars choose to use macro variables, Zeng et al. (2014) combined with the composition of the existing green financial services in China, from five dimensions, respectively, green credit, green securities, green insurance, green investment and carbon finance, to evaluate green finance, and the subjective method and the objective method of the financial assets to determine the index weight, the subsequent research mostly on the basis of the method. In order to pay more attention to the dynamic impact of green finance, Ge et al. (2022) constructed the green finance index from four aspects of green credit, green securities, green investment and green insurance by using the data of 30 provinces and cities in China. This paper combines the practices of previous scholars, eliminates the green insurance with not complete and imperfect data in China, and chooses to use five dimensions: green credit, green securities, green investment, government expenditure and carbon finance to construct the index.

1.2 The impact of green finance on the financial markets

1.2.1 Theoretical mechanism of the impact of green finance on the financial market

Previous scholars have discussed the impact of green finance on economic development from different perspectives. Through a systematic study of Li Xiaoxi and Xia Guang (2014) on China's existing green finance activities, the analysis shows that green finance can provide more diversified investment and financing channels for China's economic outline and promote sustainable development. The development of green finance also means that the core content of industrial restructuring will focus on green industry. With the support of the government and the corresponding reduction, many production enterprises, especially the factories that once designed pollution, have begun to engage in green production and operation. More consumers have formed the concept of green consumption and considered investing in green industries, so as to guide social capital to resource conservation and environmental protection. Green finance increases financial support for these undertakings and is a resource for financing sustainable development (Madaleno et al., 2022; Mngumi et al., 2022). In recent years, the Chinese government has stepped up policy regulation and strengthened environmental and resource protection, and provided preferential loans with low interest rates to energy-saving and environmental protection green industries with little environmental pollution, so as to guide the adjustment of green industrial capital from "two high" industries to "two low" industries. This policy orientation makes the green industry develop very fast, because compared with the general investment, the relative investment level of similar renewable energy enterprises is highly sensitive to relevant policies, and the change of policy orientation will directly affect the attitude of investors and financing channels (Brunnschweiler, 2010; Reuter et al., 2012). Under the promotion of green finance, various resources flow to green industry, realizing the scale economy effect of green industry. Therefore, the introduction of green credit increases the proportion of enterprise green financing in the green financial loans of commercial banks, and guides financing to green development more effectively. In 2018, China issued 144 green bonds, with a total value of 267.593 billion yuan. China has become one of the world's largest green bond markets. In 2018, China's green loans reached 8.23 trillion yuan, accounting for 14.2 percent of the total increase in loans to enterprises and other units in the same period. The issuance of green bonds is beneficial to shareholders, so it will promote the company to enter the green-related fields (Tan and Zhang, 2018). Carbon finance started late in China, but developed rapidly. Since 2011, China has carried out pilot carbon emission rights trading in seven provinces and cities, including Guangdong, Hubei, Beijing, Shanghai, Tianjin, Chongqing and Shenzhen. By the end of 2017, the cumulative trading volume of the seven pilot carbon markets had reached 200 million tons, with a total trading volume of 4.7 billion yuan. Currently, China has become one of the largest carbon financial markets. The three policy banks take advantage of the different characteristics of their businesses to support the green environmental protection industry and ecological environment construction in different fields. Insurance companies have also
launched a number of insurance products for different environmental issues. Private equity and venture capital funds are gradually increasing their investment in sustainable industries such as renewable energy and clean technology as they return to value investment. Stiglitz and Weiss (1981) argue that companies cannot obtain long-term debt financing when the information asymmetry is very serious and the default risk is very high. Therefore, in the era that the government attaches so much importance to green finance, banks have been restricting loans to heavily polluting companies, especially long-term loans, driving funds to the environmental protection sector. Green projects that focus on sustainable development can bring more benefits to investors than traditional projects (Kudratova et al., 2018), so more investment funds flow to non-traditional green projects. The government's proactive green finance policy is likely to increase investment in the renewable energy sectors (Romano et al., 2017).

1.1.2 Empirical Study on the impact of green finance on financial markets

In fact, before the introduction of green finance, scholars had noted that climate change-related risks were reflected in the prices of financial assets (Bansal et al, 2016) Empirical research has found that global warming produces a positive risk premium on the investment return rate, and the risk premium increases with the rise of temperature. Stock prices in global markets are significantly less resilient to temperature risk, and this resilience increases as temperatures rise. Later, Gimeno and Gonzalez (2022) reduced the climate factor by reducing the yield of the asset portfolio of the green enterprises and the polluting enterprises, and used the Fama-French factor model to find that the climate change factor had a significant impact on the stock yield. The proliferation of green products has led scholars to study the impact of these products on traditional markets. Roslen et al. (2017) A study in six countries found that the first day after the issuance of green bonds will have a significant positive impact on the company's share price. Glavas (2020) studied 302 green bonds and 478 traditional bonds of 780 companies from 22 countries from 2013 to 2018. The event study based on market model found that green bonds and traditional bonds had a significant positive impact on the company stock price. By distinguishing green bonds from traditional bonds and the double difference model after the signing of the Paris Agreement in December 2015, the Paris Agreement made the positive impact of green bonds significantly higher traditional bonds.

1.3 Literature review

It can be seen that most previous scholars have discussed the impact of green finance on industrial transformation. The previous studies have mainly focused on the impact of government subsidies, policy environment and other factors on the investment of renewable energy enterprises (Yu, Guo, Le-Nguyen, Barnes, & Zhang, 2016). For example, Yang, He, Xia, and Chen (2019) explored the impact of government subsidies on investment in renewable energy companies. The results show that the government subsidies have a positive impact on the investment of renewable energy enterprises. But there is a lack of specific research on the specific plate of the investment market. For traditional financial markets, the impact of asset prices is mainly concentrated on a single green product, rather than on green finance as a whole, such as Roslen et al. (2017) and Glavas (2020) studies have both focused on green bonds. At present, the diversification of green products has gradually become the theme. Green credit, green bonds, carbon finance and so on are constantly developing. Therefore, it is necessary to take green finance as a whole as an influencing factor including various green measures. And it should be noted that although the financial market as a whole, but due to China's national conditions, the real estate finance in the financial proportion of higher and higher, real estate loans reached 3.07 trillion yuan, accounting for 14.84% of the loan balance financial institutions, accounting for GDP ratio of 16.75%, 2021 real estate development investment accounted for the proportion of total investment is 27.1%, is the largest part of China's financial market. The development of green finance is a good way to diversify investment channels. Compared with traditional finance, green finance emphasizes environmental interests and takes environmental protection and effective use of resources as important to measure the effectiveness of its activities (Dai et al, 2021). However, the research on green finance on real estate is still lacking.
Therefore, this paper takes the core variable of green finance and explores the influence of green finance on the real estate price.

1.4 research hypothesis

Based on the above literature research, this paper believes that there are several mechanisms for green finance to affect the real estate market:

1. Industrial restructuring. The development of green finance means that the core content of industrial restructuring will revolve around the green industry. With the support of the government and the corresponding reduction, many production enterprises, especially the factories that once designed pollution, have begun to engage in green production and operation. More consumers have formed the concept of green consumption and considered investing in green industries, so as to guide social capital to resource conservation and environmental protection. Under the promotion of green finance, various resources flow to green industry, realizing the scale economy effect of green industry. Compared with the heavily polluting construction industry, the real estate enterprises with high pollution index lack capital investment.

2. Portfolio optimization. In terms of investment field, green finance also provides a new track for investors. At present, the financial system can effectively evaluate and screen investment projects, and has professional advantages and scale benefits that a single investor cannot match. In addition, the government attaches great importance to the information disclosure of green finance. Information disclosure can help investors find the industries and enterprises with the most investment value, optimize capital allocation and diversify investment portfolios. Real estate has always been a hot investment, accounting for half of China's investment market. The development of green finance can change in the investment field and the direction of financial institutions, which will alleviate the excess problem in the real estate market and seize part of the capital.

Therefore, the following research hypotheses are proposed:

H: Green finance has a negative impact on real estate prices.

2. Experimental design and data

2.1 Experimental design

To test the hypothesis that H: Green finance has a negative impact on the real estate market. The panel regression model is designed as follows:

$$L_{houseprice} = \alpha + \beta \text{Greenfinance} + \gamma \text{Controls} + \sum_i \theta_{istockdummy}y_i + \varepsilon_{l_t}$$

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$$L_{houseprice} = \alpha + \beta \text{Greenfinance} + \gamma \text{Controls} + \sum_i \theta_{istockdummy}y_i + \varepsilon_{l_t}$$

Among them, the explained variable is L houseprice, which represents the average housing price level of each province and city. In this paper, the ln value of commercial housing (yuan / square meter) is taken. The larger the index is, the higher the housing price level in this region is. The core explanatory variable is greenfinance greenfinance index. This paper uses five dimensions of green credit, green securities, green investment, government expenditure and carbon finance to construct the corresponding index of each province and city. 

Exrate_{l_t} Selection of control variables include: the nominal effective exchange rate index, the total import and export of foreign investment enterprises ($ one thousand), at the end of the permanent population (ten thousand), the third industry, and not smooth inspection control variables, thus take the ln, including: location entropy, real estate investment, patent authorization number, resident savings rate. fi_{l_t}, pl_{l_t}, Tli_{l_t}, Lloc_{l_t}, lres_{l_t}, lpat_{l_t}, lres_{l_t}. The location entropy is used to describe the level of industrial aggregation, and the number of patent applications is used to describe the level of innovation in the region.
### 2.2 Index Construction

#### 2.2.1 Construction of Green Finance Index

Referring to the indicators selected in the previous literature, this paper combines the former literature and the availability of data on the original basis, and comprehensively constructs the green finance index of each region from the five perspectives of green credit, green investment, green securities, government investment and carbon finance. The data used include China Statistical Yearbook, Urban Statistical Yearbook, Industrial Statistical Yearbook, and wind database. After obtaining the data, the entropy method is used to calculate the provincial green financial index. The specific calculation is shown in Table 1.

<table>
<thead>
<tr>
<th>Level 1 indicators</th>
<th>Characterization method</th>
<th>Calculation instructions</th>
<th>Effect positive / negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green credit policy</td>
<td>The proportion of interest expenditure in the six major energy-intensive industries</td>
<td>Interest expenditure of six energy-intensive industries / total industrial interest expenditure</td>
<td>burden</td>
</tr>
<tr>
<td>Green investment</td>
<td>Investment in industrial pollution control in GDP</td>
<td>Industrial pollution control completed investment / GDP</td>
<td>the first month of the lunar year</td>
</tr>
<tr>
<td>Green securities</td>
<td>The market capitalization ratio of energy-intensive industries</td>
<td>The A-share market value of the six energy-intensive industries / the total market value of A-shares</td>
<td>burden</td>
</tr>
<tr>
<td>Government investment</td>
<td>Proportion of local fiscal expenditure on environmental protection</td>
<td>Local fiscal and environmental protection expenditure / the general fiscal budget zhiachu</td>
<td>the first month of the lunar year</td>
</tr>
<tr>
<td>Carbon finance</td>
<td>Carbon intensity</td>
<td>CO 2 emissions / GDP</td>
<td>burden</td>
</tr>
</tbody>
</table>

#### 2.2.2 Industrial Agglomeration

The method of location entropy is used to describe the level of industrial agglomeration, and the proportion of manufacturing in the employment population is calculated according to the practice of the secondary industry.

The formula of location entropy is: \( H = (-1/q) \sum_{i,j} q_{ij} \log q_{ij} \)

\( LQ_{ij} \)In this formula, the location entropy of the manufacturing industry in region j is the number of employment of the manufacturing industry in region j, the number of employment of the secondary industry in region j, the number of employment of the manufacturing industry, and q is the number of employment of the secondary industry in China. \( q_{ij} = q_i / q_j \)

#### 2.3 Data Sources and Descriptive Statistics

This paper takes the annual data of various provinces and cities across the country as the research sample, because of the need to avoid the overall impact of the epidemic on the economy, the sample range from 2008 to 2020. From the perspective of data availability, this paper excluded the relevant data of Tibet region, and the situation of 30 provinces and cities was counted.
The data are obtained from China Statistical Yearbook, Urban Statistical Yearbook, Industrial Statistical Yearbook and wind database, and the descriptive statistics are shown in Table 2.

<table>
<thead>
<tr>
<th>variable</th>
<th>observed quantity</th>
<th>mean</th>
<th>standard deviation</th>
<th>least value</th>
<th>crest value</th>
</tr>
</thead>
<tbody>
<tr>
<td>lhouseprice</td>
<td>390</td>
<td>8.704154</td>
<td>0.561193</td>
<td>7.579679</td>
<td>12.14713</td>
</tr>
<tr>
<td>greenfinance</td>
<td>390</td>
<td>1</td>
<td>0.690317</td>
<td>0.188113</td>
<td>4.540044</td>
</tr>
<tr>
<td>Exrate_{it}</td>
<td>390</td>
<td>100.5838</td>
<td>3.720379</td>
<td>94.96</td>
<td>105.52</td>
</tr>
<tr>
<td>f_{it}</td>
<td>390</td>
<td>58549964</td>
<td>114000000</td>
<td>4147</td>
<td>592000000</td>
</tr>
<tr>
<td>p_{lt}</td>
<td>390</td>
<td>4554.638</td>
<td>2795.745</td>
<td>554</td>
<td>12624</td>
</tr>
<tr>
<td>Th_{lt}</td>
<td>390</td>
<td>0.472617</td>
<td>0.095646</td>
<td>0.265856</td>
<td>0.837316</td>
</tr>
<tr>
<td>Lloc_{lt}</td>
<td>390</td>
<td>-0.061513</td>
<td>0.283957</td>
<td>-1.096911</td>
<td>0.722095</td>
</tr>
<tr>
<td>les_{lt}</td>
<td>390</td>
<td>7.568565</td>
<td>0.980585</td>
<td>3.935544</td>
<td>9.759198</td>
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<tr>
<td>lpat_{lt}</td>
<td>390</td>
<td>9.797721</td>
<td>1.544304</td>
<td>5.429346</td>
<td>13.47263</td>
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<tr>
<td>lres_{lt}</td>
<td>390</td>
<td>-1.359069</td>
<td>0.236323</td>
<td>-2.359077</td>
<td>-0.249127</td>
</tr>
</tbody>
</table>

2.4 Data

According to the availability of data, 30 provinces (municipalities directly under the Central Government and autonomous regions) except Hong Kong, Macao, Taiwan and Tibet were used as study samples. Due to the impact of the epidemic on real estate prices, the sample range of the standard selection is from 2008 to 2020. Among them, real estate prices and control variables come from China Statistical Yearbook, Urban Statistical Yearbook, Industrial Statistical Yearbook, etc. The teaching of green credit, green investment and carbon finance comes from EPS database, and green securities teaching comes from Wind teaching database.

3. Empirical results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREENFINANCE</td>
<td>-0.107032</td>
<td>0.020597</td>
<td>-5.196506</td>
<td>0.0000</td>
</tr>
<tr>
<td>LLOCATION</td>
<td>0.180972</td>
<td>0.046781</td>
<td>3.868478</td>
<td>0.0001</td>
</tr>
<tr>
<td>INFLATION</td>
<td>-0.007534</td>
<td>0.003358</td>
<td>-2.243451</td>
<td>0.0254</td>
</tr>
<tr>
<td>LSTATEINVEST</td>
<td>0.163745</td>
<td>0.028975</td>
<td>5.615122</td>
<td>0.0000</td>
</tr>
<tr>
<td>FOREIGNINVEST</td>
<td>6.50E-10</td>
<td>1.42E-10</td>
<td>4.572450</td>
<td>0.0000</td>
</tr>
<tr>
<td>LPATENTS</td>
<td>0.090896</td>
<td>0.017231</td>
<td>5.275134</td>
<td>0.0000</td>
</tr>
<tr>
<td>LRESIDENT</td>
<td>0.242821</td>
<td>0.065879</td>
<td>3.436430</td>
<td>0.0000</td>
</tr>
<tr>
<td>POPULATION</td>
<td>-7.95E-05</td>
<td>7.46E-06</td>
<td>-10.65912</td>
<td>0.0000</td>
</tr>
<tr>
<td>THIRDBUSINESS</td>
<td>2.550155</td>
<td>0.175495</td>
<td>14.44885</td>
<td>0.0000</td>
</tr>
<tr>
<td>C</td>
<td>6.899037</td>
<td>0.394501</td>
<td>17.46800</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared: 0.855096  Mean dependent var: 8.704154
Adjusted R-squared: 0.851664  S.D. dependent var: 0.581193
S.E. of regression: 0.216140  Akaike info criterion: -0.200472
Sum squared resid: 17.75232  Schwarz criterion: -0.098776
Log likelihood: 49.09196  Hennan-Guinn criterion: -0.160159
F-statistic: 249.1582  Durbin-Watson stat: 0.805306
Prob(F-statistic): 0.000000

$$L_{\text{houseprice}} = 6.899037 - 0.107032 \text{Greenfinance} + -0.007534 \text{Exrate}_{it} + 6.50E-10 \text{f}_{it} - 7.95E-5 \text{p}_{lt} + 2.550155 \text{Th}_{it} + 0.180972 \text{Lloc}_{lt} + 0.163745 \text{les}_{lt} + 0.090896 \text{lpat}_{lt} + 0.242821 \text{lres}_{lt} + \varepsilon_{it}$$
Preliminary introduction, the regression of the core variable and the control variables, the overall F statistics is 249.1582, the p value is 0, which is significant at the 1% significance level, the adjusted R 2 is 85.17%, the fit of the equation is superior. However, from the significance of the coefficients of the respective variables, the variables were significant at the 5% significance level, while the remaining variables were significant at the 1% significance level. Exrate_{it}

Hausman’s test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed</th>
<th>Random</th>
<th>Var(Diff)</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREENFINANCE</td>
<td>-0.092896</td>
<td>-0.100479</td>
<td>0.000324</td>
<td>0.6735</td>
</tr>
<tr>
<td>LLOCATION</td>
<td>0.151469</td>
<td>0.170267</td>
<td>0.000392</td>
<td>0.3425</td>
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<tr>
<td>INFLATION</td>
<td>-0.009714</td>
<td>-0.009592</td>
<td>0.000001</td>
<td>0.9004</td>
</tr>
<tr>
<td>LESTATEINVEST</td>
<td>0.093845</td>
<td>0.120109</td>
<td>0.000231</td>
<td>0.0842</td>
</tr>
<tr>
<td>FOREIGNINVEST</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.6522</td>
</tr>
<tr>
<td>LPATENTS</td>
<td>0.198176</td>
<td>0.166840</td>
<td>0.000209</td>
<td>0.0301</td>
</tr>
<tr>
<td>LRESIDENT</td>
<td>0.201315</td>
<td>0.220690</td>
<td>0.000721</td>
<td>0.4706</td>
</tr>
<tr>
<td>POPULATION</td>
<td>-0.000021</td>
<td>-0.000086</td>
<td>0.000000</td>
<td>0.1059</td>
</tr>
<tr>
<td>THIRDINDUSTRY</td>
<td>1.972546</td>
<td>2.222325</td>
<td>0.027423</td>
<td>0.1315</td>
</tr>
</tbody>
</table>

H_0: Let the original hypothesis is: the random effect model is the correct model, the alternative hypothesis: the random effect model is not H_1

Is the correct model. According to the hausmann's test results, knowing that Prob> chi2 = 0.0000, the null hypothesis is rejected, and the fixed effect model should be selected in the random effect model and the fixed effect model.

Test using a fixed effects model, which results as follows:
Lhouseprice = 6.557503 – 0.092896Greenfinance + - 0.009714 Exrate_{it} + 1.77E – 10 f_{i,t} – 2.09E – 5pl_{i,t} + 1.972546Thi_{it} + 0.151469 Lloc_{i,t} + 0.093845 les_{i,t} + 0.198176 lpats_{i,t} + 0.201315 lres_{i,t} + \sum j 0 stockdummyj + \varepsilon_{it}

From the results of the fixed-effects model, Prob> F=0.0000, indicating that the model passed the F-test.this
Exrate_{it}, Thi_{it}, Lloc_{i,t}, les_{i,t}, lpats_{i,t}以及 lres_{i,t} 内 foreign, the core variable greenfinance was significant at the 5% significance level, and the control variables included were all significant at the 1% significance level. In all variables, the previous coefficient is positive, and the positive relationship between the house price level and the explained variable, that is, the larger the value of the explanatory variable, the higher the house price will be. While the other variables include the core variable, the green finance index, has the opposite relationship with the explained variables, that is, the larger the explanatory variable, the housing price is relatively lower.

4. Conclusion and policy recommendations

4.1 conclusion

Based on the annual data of 30 provinces and cities from 2008 to 2020, this paper establishes a fixed-effect model to analyze the impact of green finance index on real estate prices. The results show that:
The impact of the core variable green finance index on the real estate price In the economic sense, for each additional unit of green finance, the logarithmic real estate price is reduced by 0.0928 basic points on average, that is, the real estate price drops by 1.097 yuan, a small range. With other variables unchanged, the more perfect the development of green finance, the more comprehensive, the more it can slow down the situation of excessive housing prices.

4.2 Policy recommendations

1. The government should be committed to the development of a green financial system: Given the negative impact of the green financial index on real estate prices, the government should actively promote and develop green financial institutions and tools to slow down the excessive growth of housing prices. This may include supporting green finance innovation, providing relevant financial products and services, and developing the development of corresponding regulatory policies to ensure the healthy development of green finance.

2. Promoting the sustainable development of real estate projects: The government can encourage and support developers and the real estate industry to adopt green technologies and environmental standards when building real estate projects. This includes encouraging the use of renewable energy, energy conservation and emission reduction technologies, and the use of sustainable building materials. The government can provide incentives, such as tax cuts or subsidy programs, to promote sustainable real estate projects.

3. Establish a green finance policy framework: The government should formulate and improve the green finance policy framework to guide and regulate the investment and business activities of financial institutions in the field of green finance. This could include setting up green finance funds, setting up special funds to support green projects, and providing relevant lending and financing facilities. Governments can also develop environmental and social responsibility reporting requirements to encourage financial institutions to focus more on environmental sustainability.

4. Improve the awareness and education of green finance: The government can improve the public's awareness and understanding of green finance through publicity and education activities. This will help guide individuals and enterprises to pay more attention to the investment choices of green finance, and promote sustainable economic and environmental development.

Reference


