

20 Years of Real Estate Investment Research in China: Hot Topic and Development Trend Analysis

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Abstract

As an important engine of economic growth, real estate investment is of great significance to explore its research law from the theoretical level. This paper uses the bibliometric method and CiteSpace to analyze the real estate investment related papers collected in the core journals and CSSCI source journals in the CNKI database in 1999-2018, which provides a reference for grasping the research hotspots and development trends. The results show that domestic real estate investment research can be divided into three stages: rapid development period, exploration deepening period and reflection down period. The research hotspots in this field mainly focus on three aspects: real estate investment and financing, real estate investment management, and real estate investment effects. In the current development of the new era, promoting high-quality transformation and development of the real estate industry, real estate investment and higher economic development will be the key research directions in the future.

Keywords

Real estate investment, bibliometrics, CiteSpace, China.

1. Introduction

Since the reform of China's commercial housing in 1998, the real estate industry has rapidly developed into a pillar industry, which has played a huge role in promoting the development of the national economy and improving the housing conditions of residents. According to the statistics of the National Bureau of Statistics of China, the investment in real estate development in 2018 is 12026.4 billion yuan, the annual gross domestic product (GDP) is 90030.9 billion yuan, and the proportion of real estate investment in GDP is 13.36%, compared with 4.97% in 2000. While the amount of real estate investment is increasing to promote economic and social development, there are also real problems that affect the healthy development of the real estate market, such as excessive housing price increases and real estate bubble risks. The 19th National Congress of the Communist Party pointed out that China's economy has entered a stage of high-quality development. The real estate industry has placed more emphasis on the positioning of "staying and not speculating". How to achieve high-quality development of real estate investment has become an important issue facing the new era.

In the past 20 years, China's real estate investment research has formed rich research results. It is necessary to further summarize the real estate investment research, and summarize its research status, hotspots and development trends. However, for the moment, there are few articles on the review of real estate investment research, and most of them are qualitative review and analysis from a certain aspect of real estate investment research in the early years, such as wang (2010) and Yang (2012) respectively reviewed the effects of real estate investment and risk management of real estate investment projects, but the qualitative review of individual topics is difficult to fully demonstrate the research landscape of real estate investment.

To this end, this paper uses 404 papers related to real estate investment in core journals and CSSCI source journals from 1999 to 2018 as data to conduct a bibliometric analysis of the current status of

real estate investment research in China over the past 20 years, using literature measurement methods to reveal real estate in different periods. The hot topics and evolution of investment research, in order to more intuitively and comprehensively outline the panorama of China's real estate investment research results, in order to provide reference for the follow-up research of real estate investment, and lay a theoretical research foundation for the high-quality transformation and development of real estate industry.

2. Data Sources and Research Methods

2.1 Data Source

This paper uses the China National Knowledge Infrastructure (CNKI) database as the basis of the literature data source, with “real estate investment” as the key word, and “core journal, CSSCI” as the source of the literature for the title “accurate” search. The search period was set from 1999 to 2018, a total of 410 journal articles were retrieved. In order to reduce the research error and enhance the relevance of the literature research content, the sample literature was manually cleaned up, and 6 conference notices, comments and conference review documents were eliminated. Finally, 404 literature data were obtained as the object of analysis.

2.2 Research Methods

(1) Bibliometric method. Bibliometrics is a quantitative research method that uses mathematical and statistical methods to objectively evaluate the development status of a research field (Haiqi Z, 1994). In the analysis of the literature characteristics of real estate investment research, Bicom, which uses Excel and bibliographic co-occurrence analysis system, conducts quantitative analysis on the time distribution of real estate investment, source journals, authors, scientific research institutions and high-impact papers. Comment on the development status of research on real estate investment in China.

(2) Visual analysis. In the analysis of the hotspots and trends of real estate investment research, in order to visually and vividly display the core issues and development of domestic real estate investment research, the CiteSpace knowledge map visualization software is used to visualize the authors, research institutions and keywords (Chen C, 2006). Now analyze to identify hot topics and research trends in this area of research.

3. Literature Characteristics of Domestic Real Estate Investment Research

3.1 Publishing Trend Analysis

By analyzing the change of annual output published in the literature, the development trend of domestic real estate investment can be understood to a certain extent. According to the trend graph of the published volume of real estate investment research literature (figure 1), from the time point of view, the change in the number of literatures presents a change law that increases rapidly and then slowly decreases. In general, it can be divided into three stages. The first stage is the rapid development phase of 1999-2006. This stage is in the deepening period of China's housing system reform, implementing the monetization of housing distribution and entering the commodity housing market. Especially after the establishment of real estate pillar industry in 2003, China has set off a wave of real estate investment construction. The number of research papers on real estate investment has gradually increased from 4 articles in 1999 to 50 peaks in 2006, an increase of 11.5 times compared with 1999. The average annual number of published papers was about 17.63, and the cumulative number of published papers reached 141, accounting for 34.90% of the total number of literature samples; the second phase is the exploration deepening period of 2007-2011. At this stage, scholars have carried out a lot of research on different aspects of real estate investment from different perspectives, reflecting the concern and response to social reality issues. The change in the amount of literature showed an increase or decrease in wave-like changes, with an average annual volume of 32.2 articles, which increased from the rapid development stage. The third stage is the reflection period of 2012-2018. At this stage, real estate investment research shows the characteristics of “the

literature is declining year by year”, and the average annual publication volume is about 14.57, indicating that the real estate investment research has entered a stage of reflection and decline since the 18th National Congress of the Communist Party of China.

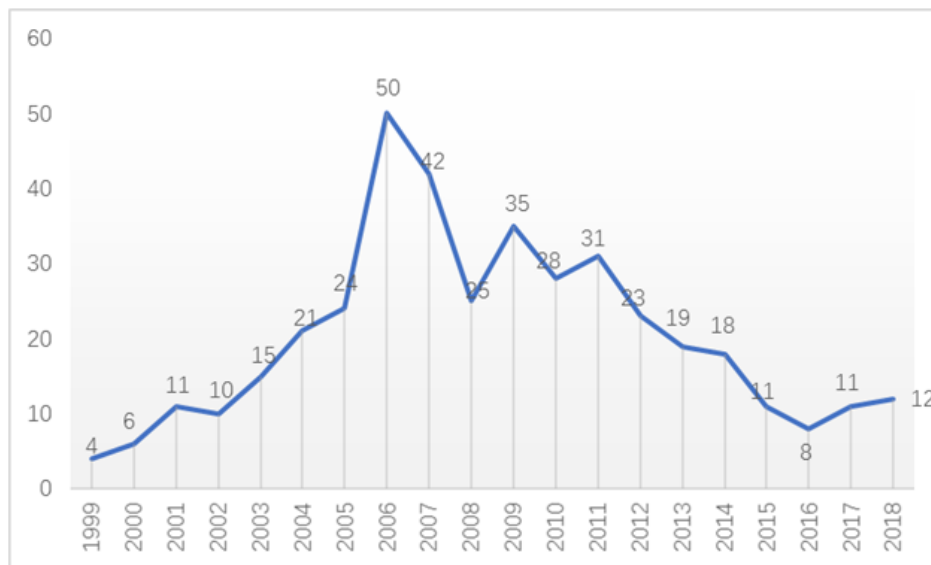


Figure. 1 The trend of literature volume of real estate investment research

3.2 Journal Situation

As a carrier of literature publication, the journals are used to explore the core journals in the real estate investment field and provide researchers with the efficiency of literature reading. According to Bradford's law, the journals are divided into core areas, related areas and non-related areas. The calculation formula of the number of core areas of the journal: $R_0 = 2\ln(e^E \cdot Y)$, where E is the Euler coefficient of 0.5772, and Y is the amount of papers in the largest issue journal (Yang et al., 2017). In this study, the largest number of journals published in the journal was 22, and $R_0 = 2\ln(1.7818 \times 22) \approx 7.34$ was determined. It is determined that the journals with more than or equal to 8 journals are in the core area (Table 1).

Table 1 Number of core journals and publications (number of literatures ≥ 8)

the name of the journal	amount of literature	organizer	frequency of publication	location
Statistics and Decision	22	Institute of Statistical Science, Hubei Provincial Bureau of Statistics	semimonthly	Wuhan
Business Era (Commercial Economic Research)	18	China Business Economics Association	semimonthly	Beijing
Construction Economics	17	China Architecture Society, China Architecture Design and Research Institute, Asia-Pacific Construction Science and Technology Information Institute	monthly	Beijing
Market Modernization	16	China Business Science and Technology Information Institute	semimonthly	Beijing
Special Economic Zone	15	Shenzhen Manager Training Institute	monthly	Shenzhen
Business Economy	9	Jiangxi Academy of Social Sciences	monthly	Nanchang

Business Research	8	Harbin University of Commerce	monthly	Harbin
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Source: according to CNKI search data.

According to statistics, 404 sample literatures were published in 183 journals, and the average number of articles published in journals was 2.21. The total number of articles published by journals in the core area is 105, accounting for 25.99% of the total number of documents. The number of articles published by each journal is 15. 《Statistics and Decision》 has the largest number of articles published, followed by 《Business Era》 and 《Construction Economics》. From the perspective of the subject nature of the journal, most of the literature on real estate investment research is published in the journal of economics and management science.

3.3 Analysis of Research Subjects

Research authors and institutions are the main body of the thesis research. According to statistics, 547 authors are included in the 404 research sample literature. According to Price's formula, the minimum author of the core author is calculated: $M=0.749\sqrt{N_{\max}}$ (where M is the minimum number of posts by the core author, and N_{\max} is the core author with the largest number of posts)(Zhang et al.,2015). According to statistical analysis, the most published scholars in the sample on real estate investment research are Li Zhi from Shanghai University Law School. The number of articles published is 7 articles, so the core authors have the lowest number of documents $M=1.98$. Therefore, authors with no less than two articles in the literature are listed as core authors, and 33 authors have two or more articles. The 33 core authors in the field of real estate investment research published a total of 74 papers, accounting for 18.32% of the total number of documents, far below the 50% standard of Price's law. Therefore, although China's real estate investment research has experienced 20 years of development, it still has not formed a core author group, and there is still a large space for research and improvement.

Using CiteSpace to conduct a co-occurrence analysis of the author's cooperation, it is found that there are 4 cooperative networks with 3 or more scholars, the number of cooperation between the two scholars is relatively small. From the perspective of the author's cooperative network map as a whole, the density of the entire cooperative network is low, and most scholars lack cooperation and the research institutions are scattered. The School of Construction Management and Real Estate of Chongqing University, the School of Law of Shanghai University, the School of Management of Tianjin University and the School of Management of Xi'an University of Architecture and Technology are the main institutions in the field of real estate investment. However, there is less contact between institutions and research institutions, and the intensity of cooperation needs to be strengthened.

3.4 Analysis of Highly Cited Literature

The number of cited times of the literature is an important evaluation index of the influence of the paper. The research dynamics of real estate investment can be studied by analyzing the high cited literature. This paper draws statistics on the number of citations of relevant literature in the field of real estate investment research, and draws high-cited papers with the highest number of citations (Table 2).

Table 2 Highly cited literature on real estate investment research (top 5)

paper name	author	the name of the journal	published time	cited times
Real Estate Investment and Economic Growth - Panel Data Analysis at the National and Regional Levels	Huang Zhonghua et al	Finance and Trade Economy	in 2008	204

Real Estate Investment, Real Estate Credit and China's Economic Growth	Kuang Weida	Economic Theory and Economic Management	in 2011	189
Application of Ahp-Fuzzy Method in the Appraisal of the Risk of Real Estate Investment	Liu Xiaojun and Meng Fanwen	Journal of Xi'an University of Architecture and Technology (Natural Science Edition)	in 2005	167
Real Estate Investment, Economic Growth and Spatial Effect—An Empirical Research Based on the Spatial Panel Data from 70 Cities in China	Zhang Hong et al	Nankai Economic Research	in 2014	93
Dynamic Economic Effects of Urban Real Estate Investment in China	Liu Hong	Economic and Management Research	in 2006	88

Source: according to CNKI search data, the search deadline is October 12, 2019.

From the perspective of time span, the first five high-cited papers were published from 2005 to 2014, and two of the high-cited papers were published in the rapid development stage of real estate investment research, indicating that the previous research literature has good reference value, laid a good foundation for the follow-up study. From the research content, the research on the relationship between real estate investment and economic growth is the main field cited in China's real estate investment research. The economic effect of real estate investment is its important research content. Secondly, the research on real estate investment risk assessment methods and the revelation of American real estate investment trusts (REITs) to China's development are also the focus of scholars' attention. For example, Liu Xiaojun et al (2005) published 《Application of Ahp-Fuzzy Method in the Appraisal of the Risk of Real Estate Investment》: designing real estate investment risk evaluation indicators and systems by using analytic hierarchy process and applying fuzzy mathematics; Chen Liuqin (2006) published 《Development and Enlightenment of American Real Estate Investment Trusts (REITs)》: this paper expounds the development history, establishment conditions, types and advantages of US real estate investment trusts, and draws on the experience of the United States to explore the development significance, mode selection and policy recommendations of China's real estate investment trust funds. From the perspective of bibliometrics, these highly cited documents constitute the knowledge base of real estate investment research in China, and have important influence in this field.

4. Domestic real estate investment research hotspot analysis

4.1 Hot Keyword Analysis

The key words are the high concentration and condensing of the core content of the thesis. The frequency and centrality of the paper can reflect the hot topics of research in this field to a certain extent. In order to further explore the hot topics of real estate investment research and its changing rules, this paper uses CiteSpace software to count the frequency and centrality of high frequency keywords. After combining the keywords with the same meaning, the top 20 high frequency keywords are sorted out (Table 3).

Table 3 High-frequency keywords for real estate investment research (Top20)

keywords	frequency	centrality	keywords	frequency	centrality
real estate investment	164	0.37	trust fund	9	0.04

real estate	120	0.34	The United States	7	0
real estate investment trusts	76	0.19	real estate investment environment	7	0.05
investment	22	0.05	error correction model	7	0.03
economic growth	20	0.11	risk Analysis	6	0.02
risk	15	0.02	GDP	6	0.05
investment trust	10	0.04	trust investment	6	0.01
financial management	10	0.02	real estate industry	5	0.03
real estate investment fund	9	0.01	granger causality test	5	0.04
real option	9	0.11	tax policy	5	0.11

From the table, it can be found that hot keywords such as “real estate”, “REITs”, “economic growth”, “risk” and “real estate investment environment” appear frequently. In addition, the frequency of research keywords in the field of real estate investment is basically positively correlated with the size of its centrality, indicating that China's real estate investment research has formed a relatively obvious research hotspot.

4.2 Research Topic Analysis

According to the above analysis of high-cited papers and hot keywords, it is known that the hot topics of domestic real estate investment research focus on three aspects: real estate investment and financing research, real estate investment management and real estate investment effect research.

(1) Research on real estate investment and financing methods

Domestic scholars' research on real estate investment and financing methods mainly focuses on the research and discussion of real estate investment trusts (REITs). The research topics mainly include high-frequency keywords such as “real estate investment trust”, “REITs”, “real estate investment trust fund”, “trust fund”, “trust investment”, “investment trust” and “United States”. Scholars' research on real estate investment trust mainly focuses on the development and reference of foreign real estate investment trusts, the thinking and countermeasures of establishing real estate investment trusts in China, and the exploration of taxation issues of real estate investment trusts. Regarding the reference of foreign real estate investment trusts, Wang Gang (2005) studied the development of real estate investment trusts in four countries and regions in Asia and its enlightenment to China. Li Anmin (2005) compares Sino-US real estate investment trust products, Lu Wei and Zhong Xiaohui (2006) studied the development experience and enlightenment of US real estate investment trusts. With regard to the development of China's real estate investment trusts, scholars have mainly adopted the development approach and mode selection (Yang, 2005) (Zhang, 2007), risk prevention (Wang, 2008) (Tian, 2010), legal obstacles (Wan, 2010) (Wang, 2013) on the countermeasures for establishing real estate investment trusts in China analysis (Chen, 2008) (Feng, 2009). Scholars mainly explore the taxation problem of China's real estate investment trusts from the perspective of tax policy (Wang, 2015), and put forward the tax policy recommendations for the development of China's real estate investment trusts (Deng, 2011).

(2) Research on real estate investment management

Research on real estate investment management mainly focuses on real estate investment environment evaluation, real estate investment risk analysis and evaluation method research, and real estate investment decision-making. This topic includes high-frequency keywords such as “risk”, “investment risk”, “risk analysis”, “investment decision”, “real estate investment decision” and “real

estate investment project". Scholars mainly study the real estate investment environment evaluation from the analytic hierarchy process (Lan,2006), the comprehensive evaluation method (Zhou,2006), principal component analysis and Delphi method (Zhou,2010), factor analysis method (Wan,2016). Based on the portfolio theory, the research on real estate investment risk was carried out (Chen,2004) (Li,2004). Wang Minghe (2011) proposed a real estate investment risk assessment method based on uncertain linguistic variables. With regard to real estate investment decision-making research, scholars mainly carry out three aspects: investment decision-making methods, real estate investment decision support systems and real estate investment decision-making models. Yang Xingyue and Yan Jianren (2005) discussed real estate investment decision-making methods based on real options. Zhou Shenglu et al (2002) conducted research on development and design of real estate investment decision support system. Jian Caiyun (2010) constructed a nonlinear model of real estate investment decision making with the help of dynamic programming model theory.

(3) Research on the effect of real estate investment

Exploring the relationship between real estate investment and macroeconomic growth is the main content of the research on the positive effects of real estate investment. This topic of high-frequency keywords includes "economic growth", "GDP", "error correction model", "cointegration analysis" and so on. With regard to the relationship between the two, scholars have reached different conclusions through empirical research.

One view is that there is only one-way causal relationship between the two, Zhang Lijun (2008) used an econometric model to empirically analyze the relationship between GDP growth and real estate investment in Nanjing. The results show that GDP growth is the reason for pulling real estate investment in the short term. Deng Qizhong et al (2011) found that the growth of real estate investment is the Granger cause of regional economic growth. Another view is that there is an interaction between real estate investment and economic growth. Real estate investment can boost economic growth, and economic growth can also promote more real estate investment. Huang Zhonghua (2008) used panel data from 31 provinces in China from 1997 to 2006 to analyze the relationship between real estate investment and economic growth at the national and regional levels. The results show that real estate investment can cause economic growth at both the national and regional levels. Growth can also cause changes in real estate investment. Wang Xianzhu (2007) analyzes the causality test and VAR model of China's real estate investment economic growth, the research results show that the two are two-way long-term Granger causality. Some scholars have studied the spatial effects of real estate investment on economic growth, and empirically analyzed the regional differences in the impact of real estate investment on economic growth (Chen,2013) (Zhang,2014) (Zhang,2018). While real estate investment promotes economic growth, it will also bring about some negative effects. The study finds that excessive real estate investment will bring suppression and negative effects to financial efficiency, resource environment (Peng,2018) (Feng,2019).

5. Analysis of the Development Trend of Domestic Real Estate Investment Research

Combined with the previous dynamic analysis, the development trend of domestic real estate investment research is divided into the following three stages.

(1)1999-2006 is a stage of rapid development. With the reform of China's housing system, research at this stage is in the ascendant, and there are many research keywords. "Real Estate", "Property Real Estate", "REITs", "Real Estate Investment Trust" and "Real Estate Investment Trust" are the main keywords. The research content is mainly based on the research of real estate investment and financing, especially the research on the enlightenment of foreign real estate investment funds to China's development.

(2)2007-2011 is the stage of exploration and deepening. Keywords at this stage are mainly keywords such as "economic growth", "cointegration analysis" and "positive research". With the contribution

of real estate investment to economic growth, scholars have made in-depth research on the relationship between the two. Therefore, this stage of research mainly focuses on the research of real estate investment effects, especially the impact of economic growth.

(3)2012-2018 is the phase of reflection and fallback. With the continuous development of China's real estate industry and the deeper contradictions in the real estate sector, the government have placed more emphasis on the housing attributes of housing. The academic research on real estate investment has entered a stage of reflection. The amount of literature published at this stage has been declining year by year, and the keyword density is low. Only "risk evaluation", "urbanization", "granger causality test", "crowding effect", Keywords such as "tax policy".

6. Conclusions and Prospects

6.1 Conclusions

This paper takes the literature related to real estate investment research in core journals and CSSCI source journals as the research object. This paper analyzes the literature characteristics, hotspots and trends of real estate investment research by means of bibliometrics, and draws the following main conclusions:

(1)From the perspective of the trend of publication, the change in the number of documents shows a rapid increase and then a slow decline. Domestic real estate investment research can be divided into three phases: rapid development (1999-2006), deepening exploration (2007-2011), reflection and fallback (2012-2018).

(2)According to the source journals published in the literature, the "Statistics and Decisions" sponsored by the Statistical Institute of Statistics of Hubei Province has the largest number of publications, 22, followed by "Business Economics Research" (formerly known as: "Business Times") and "Building Economy"; from the perspective of research subjects, China's research on real estate investment has not formed a core author group, research institutions are more dispersed, and the cooperation between authors and institutions is not close enough. From the analysis of highly cited literature, the research on the relationship between real estate investment and economic growth is the main subject of the research on high-cited papers in China's real estate investment research. These highly cited documents constitute the knowledge base of real estate investment research in China.

(3)Through analysis of keywords, it is found that the hot keywords of real estate investment research include: "real estate", "REITs", "economic growth", "risk analysis", "real estate investment environment", "Investment decision-making, etc., and summarized it as three hot research topics: real estate investment and financing research, real estate investment management research, real estate investment effect research.

6.2 Research Prospects

The report of the 19th National Congress of the Communist Party of China made an important conclusion that China's economy has shifted from a high-speed growth stage to a high-quality development stage, and is in the process of transforming the development mode, optimizing the economic structure, and transforming the growth momentum. Real estate investment research has entered a reflective summary. In this stage, this paper argues that under the background of new era, how to promote the development of real estate industry high quality transformation, how to correctly understand and grasp the real estate investment and the relationship between the economic growth quality, appropriate to the implementation of the macro-control of real estate investment, realize the coordinated development of the real estate industry and economic growth, promote economic mass effect, promote a higher quality and economic development is an important research direction in the future.

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