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Risk Analysis of the Real Estate Financial Market Based on Risk Energy Theory

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ABSTRACT

Beginning with real estate financial risk and risk energy theory, combined with empirical research, this article analyzes real estate financial markets in different stages and calculates the profit and loss (the ratio of the release of risk energy to the risk energy) in order to judge whether the risk energy has exceeded the system tolerance and to play a warning role. First, this article analyzes uncertain factors in the real estate market, builds a real estate supply and demand network, determines system risk characteristics, corresponding profit and loss categories, quantitative and qualitative factors, and the risk of energy release and the collapse of boundary conditions. The real estate market is approached using both univariate and multivariate analyses, dividing the real estate market into three stages and probing mergers and transformation conditions for different levels of risk. Finally, the authors analyze whether the financial risk energy released by real estate market exceeds the capacity of the system by calculating probability, risk, which play a warning role.

KEYWORDS

Real Estate Market, Risk Energy Analysis, Risk Energy Theory, Supply and Demand Network

INTRODUCTION

Since 1998, China has carried out housing system reforms and has abolished the welfare housing distribution system, creating a real estate industry that is the pillar of the national economy. It is obvious that the real estate industry requires support from the financial industry. After years of development, the industry now obtains finance from debt and equity sources. With these growing opportunities, however, risks exist (Feng and Cao 2011).

Given the cyclical nature of financial markets, the world's economies need to learn how to manage financial crises (Zhu *et al*. 2004). With serious international financial turmoil and financial crises in the early 2000s, financial scholars began to consider how to strengthen and improve financial risk controls (Zhou 2008).

China's real estate industry faces financing challenges. Real estate developers have had to develop relations with banks and also self-finance. China's deposit reserve ratio continues to rise. On February 24, 2011, the RMB deposit reserve ratio for large financial institutions reached 19.5%. This indicates that credit will be further tightened, making it more difficult for the real estate industry to borrow money. In recent years, usury loans and civil loans have coexisted, but now the real estate market

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risks collapse and consumers are burdened by high prices and large mortgages, which harm China's economic development (Jia 2007).

In summary, with the rapid development of China's real estate industry, real estate finance bears a correspondingly high risk. This risk may spread to China's entire financial system and even affect the overall development and stability of the national economy. Therefore, research on real estate financial risk is highly necessary.

Financial Risk Research in the Real Estate Market

Real estate financial risks mainly refer to the financial institutions that manage the real estate market financial business. Due to various factors such as the market and the environment, the assets, benefits and reputation may suffer losses. From a system perspective, real estate financial risk refers to financial risks borne by financial systems, real estate developers, real estate investors, consumers, land reserve agencies, and other systems that make up and interact with each other (Zhang and Liu, 2005).

Financial Risk Identification in Real Estate Market

Real estate financial risk refers to the financial services activities such as raising, financing, liquidation and other financial services provided by financial institutions to the real estate industry. Because of various unpredictable (uncertain) factors, the actual income of financial institutions deviates from expected returns, thus suffering the possibility of economic loss(Yuan and Jia, 2009). It is mainly the systemic financial risk caused by the real estate credit risk of the banking system(Liu *et al*. 2014). The research of systemic financial risk focuses more on real economy risk, bank risk, government debt risk, virtual economic risk, etc. The theoretical study of real estate financial risk has not attracted enough attention from scholars(Hu, 2017). Financial risk is an essential element in the real estate market risk management process(Sitek, M. 2013). Real estate financial risk is highly correlated with the banking industry(Martins A, and Serra A,2018). China's current real estate financial risks include development risks, land market loan financial risks and personal loan risks(Mao and Hu, 2004). (1)Lack of own funds and monotonous financing channels (2)information asymmetry (3)risks of collateral (4)changes in national macroeconomic policies(5)changes in the international economy and changes in domestic exchange rates are the main factors causing real estate financial risks(Huang, 2018). With the development of financial services, credit business has gradually expanded, and personal home loan business has grown along with the growth of commercial banks, and there has been a phenomenon of false mortgages. In the process of implementing the real estate credit policy, the deviation of practitioners is quite large, and the phenomenon of illegal operation appears in some banks(Lu, 2004).

Financial Risk Models in Real Estate Market

Internationally, the credit risk quantification model, such as the credit risk model proposed by Boston Investment Bank, the KMV model developed by KMV Company, the Credit Metrics developed by the Morgan Construction Company and the credit portfolio view model of the McKinsey & Company, has been formed and played a great role. One of the most important developments in risk management in the past 10 years has been the Value at Risk (VaR) model. There are many forms of risk value models, including DaR (dollars-at-risk) and CaR (capital-at-risk).(Garbade Kenneth D, 1986), IaR (income-at-risk), EaR (earnings-at-risk), and VaR (value-at-risk) (Glyn A., 2002). Meng Zhiqing, Jiang Min, and Yu Xiaofen(2008) defines a CVaR model based on multi-objective management of weights. The results show that there are some real estate financial investments in the country that are low-risk, but real estate finance in most cities has obvious risks, indicating that the real estate industry in China is gradually entering the period of venture investment. Li Shi and Lu Zudi (2008) used the Copula function to characterize the interrelationship between multiple financial assets, and combined asymmetric Laplace distribution techniques to better characterize the risk of the portfolio. The result is a good measure of portfolio. The VaR of risk value helps to better measure and evade

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