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An Empirical Study on the Impact of Shadow Banking of Real Estate Enterprises on Debt Default Risk

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Abstract

As a pillar industry in China, the real estate industry plays a crucial role in China's economic development. Of course, there are also many potential risks. Judging from the current situation, many real estate enterprises show the trend of shadow banking, and the scale is also expanding. The financial reports of some listed enterprises show that the total amount of entrusted financial management is as high as billions of yuan, which invisibly leads to the decentralized development of cash flow of enterprises, which is already tense, and creates many unfavorable factors for the real economy. However, under such obvious impact, why do a large number of real estate enterprises choose shadow banking, and what impact will it have on the debt default risk of enterprises? Under the above research background, this paper intends to explore the impact of shadow banking on the debt default risk of real estate enterprises, and at the same time, investigate the regulatory effect of enterprise leverage on the relationship between the above variables. It is hoped that through the empirical research in this paper, we can judge whether the shadow banking of real estate enterprises has exacerbated or alleviated the risk of debt default, understand the influence relationship between various variables through a detailed analysis of its theoretical transmission mechanism, and put forward policy recommendations for the implementation of the follow-up policies of the real estate industry in China.

Keywords: Real estate enterprises; Shadow banking; Debt default risk

Introduction

The real estate industry, as a pillar sector in China, plays a critical role in our economic development, but it also faces numerous risks. The non-financial sector of our real economy has been impacted by various aspects of financial crises, leading many non-financial industries to gradually shrink, with profits decreasing year by year, and some even experiencing negative profit margins. In contrast, the financial sector has seen profits increase rapidly. The main reason for this is the rapid expansion of financial asset scales, while the real economy has faced multiple shocks and slowed down, lacking sufficient market competitiveness. Insufficient cash flow is a prominent manifestation of this issue.

To expand capacity and enhance competitiveness, non-financial enterprises have turned to arbitrage to seek cash flow, which has provided ample motivation for the emergence of shadow banking. Data indicates that many real estate companies are beginning to exhibit varying degrees of shadow banking tendencies, with the scale increasing annually. Some publicly listed companies have reported total entrusted wealth management amounts reaching billions of yuan, which inadver-

tently leads to the dispersal of already strained cash flows, creating various adverse effects on the real economy.

Against this backdrop, this paper aims to explore the impact of shadow banking on the debt default risks of real estate companies, while also examining the moderating effect of corporate leverage in this relationship. Through empirical research, we hope to determine whether the shadow banking of real estate companies exacerbates or alleviates debt default risks. By analyzing the theoretical transmission mechanisms in detail, we aim to clarify the relationships among the various variables and propose policy recommendations for the future implementation of real estate sector policies in our country.

Literature Review

In recent years, many real enterprises have evolved into forms of shadow banking, primarily by leveraging credit and creating credit chains to enhance their funding capabilities. Scholars argue that these enterprises facilitate financing for small and medium-sized enterprises (SMEs), thereby alleviating the uneven distribution of credit resources. However, some researchers caution that this practice can also introduce various credit risks among enterprises and sectors.

Cella (2009) highlights that dispersed equity in listed companies can hinder financing behaviors due to regulatory challenges. In contrast, Stein (2010) suggests that to prevent excessive investment in financial markets by enterprises, creditors often impose restrictions. Lemma (2016) emphasizes that creditors and shareholders closely monitor enterprises' financing activities, influencing their foray into shadow banking. Furthermore, as investment returns decline, the motivation for enterprises to engage in financial activities increases, with current practices in China favoring large state-owned enterprises due to their stable cash flows and surplus funds.

The rapid development of China's financial markets, coupled with issues like irrational asset investment structures and rising leverage ratios, has exacerbated financing difficulties for SMEs. Consequently, larger enterprises often extend loans to SMEs as a means of maximizing profits and entering the financial sector. Hachem (2018) notes that regulatory constraints on commercial banks lead to a mismatch between the financial products offered and the actual funding needs of enterprises. Sun (2019) identifies key reasons for the emergence of shadow banking in China, including credit imbalances and the disconnection between currency issuance and market demand. Wang Yongqin et al. (2015) argue that the stringent control over the financial sector has fostered an environment conducive to the transformation of real enterprises into shadow banks. Amid an economic downturn, the willingness of enterprises to invest has declined, further promoting the trend of shadow banking. Wang Cai et al. (2022) point out that low equity financing costs and existing flaws in the capital market have exacerbated the reliance on shadow banking. Some studies indicate that the financing structures of enterprises significantly influence their exposure to external regulation, thus affecting the pace of shadow banking development. The overall slowdown of the real economy has led to reduced investment effects and a vicious cycle of declining investment willingness. The trend of financialization of the real economy has intensified, as enterprises increasingly seek to enter financial markets for higher returns. Researchers like Han Qun et al. (2017) suggest that shadow banking serves as a crucial intermediary for SMEs, particularly in less developed regions.

However, there is no consensus on the negative impacts of shadow banking. While some argue that it alleviates financing imbalances and strengthens enterprise resilience, others warn of the substantial risks associated with shadow banking practices. Research from Western countries on debt default risks has laid a foundation for understanding this phenomenon in China. Key external factors include macroeconomic conditions and industry cycles, which can propagate default risks

across enterprises. Internal factors, such as management effectiveness and governance structures, also play a crucial role in shaping an enterprise's risk profile. In China, recent studies have highlighted flaws in credit rating agencies, which adversely affect the assessment of debt default risks. The government's role in economic development and the management of corporate debt also significantly impacts default risks. Current research acknowledges the internal and external motivations driving the expansion of shadow banking and the factors influencing debt default risks. However, there are notable gaps: Lack of Focus on Real Estate: Given the critical role of the real estate sector in China's economy and its frequent debt defaults, further investigation is warranted. Interrelation of Shadow Banking and Default Risks: There is a need to explore the direct relationship and mechanisms between shadow banking practices and debt default risks.

This study aims to examine the influence of shadow banking on debt default risks in the real estate sector, also considering the moderating effect of leverage levels, thereby providing policy recommendations based on the findings.

Impact of Shadow Banking on Debt Default Risk in Real Estate Enterprises

This part analyzes the theoretical mechanisms through which shadow banking affects debt default risk in real estate firms, highlighting the moderating role of leverage.

The principal-agent theory suggests potential conflicts between shareholders and managers in real estate companies. When their interests diverge, managers may prioritize personal gains, risking shareholder interests. Shadow banking can arise as managers seek to maximize their benefits by utilizing low-cost financing from banks for speculative investments, yielding short-term returns. Without proper incentives, the motivation for managers to engage in shadow banking increases.Investing in financial assets can generate higher returns but also introduces greater uncertainty and risks. According to pecking order theory, firms should prioritize internal financing, followed by debt, and lastly equity. In the high-leverage real estate sector, debt financing is crucial. If a firm has excess internal funds, using them for shadow banking may minimally impact core operations. However, if funds are scarce and debt financing is required, shadow banking can raise leverage, increasing cash flow pressure and potentially harming equity investors.

Research on shadow banking in non-financial enterprises is abundant, yet studies focusing on profitability, financing costs, and structures are limited. Many findings suggest that shadow banking positively influences liquidity by reallocating idle funds to smaller businesses, enhancing capital efficiency. Conversely, some scholars argue that the negative impacts outweigh the positives, as insufficient regulation and profit-driven motives can lead to high-risk scenarios, significantly increasing default risks.

The literature outlines three main channels through which shadow banking affects debt default risk: New Revenue Streams: Shadow banking allows real estate firms to invest in high-return sectors, improving profitability and reducing debt burden. Enhanced Liquidity: Real estate firms often face cash flow issues; engaging in shadow banking provides opportunities to invest in more liquid assets, alleviating financial stress and lowering default risk. Increased Leverage: Shadow banking may require substantial capital diversion from core operations, leading to greater external financing needs and heightened debt levels, particularly under inadequate regulatory oversight. If the first two channels dominate, shadow banking might lower default risk; if the third predominates, it could increase risk. This leads to the hypothesis of a U-shaped relationship between shadow banking and debt default risk: moderate engagement in shadow banking can reduce default risk, while excessive involvement may increase it. Shadow banking encompasses investment activities outside traditional finance. Leverage, typically expressed as the debt-to-asset ratio, is a critical risk indicator.

Generally, higher leverage increases the likelihood of default, while lower leverage decreases it. This study focuses on the leverage level of real estate firms. Leverage influences various aspects of a firm's operations, including financing capacity and repayment ability. Research indicates that rising leverage elevates financing costs, as increased debt obligations burden firms, creating a self-reinforcing cycle that exacerbates financial strain. Consequently, high leverage is a significant factor contributing to the vulnerability of real estate firms' financial structures. High leverage intensifies the financial burden on real estate firms, compelling them to boost revenues to meet debt obligations. Moreover, firms with elevated leverage face greater challenges in securing external financing, complicating operations and heightening default risk. Thus, this leads to the hypothesis that the leverage level of real estate firms positively moderates the impact of shadow banking on debt default risk. High leverage reinforces the U-shaped non-linear relationship between shadow banking and default risk.

Methodology

To clarify the mechanisms of leverage's moderating effects, this study will examine both short-term and long-term leverage in empirical analyses, proposing: Hypothesis 1: Short-term leverage positively moderates the relationship between shadow banking and debt default risk. Hypothesis 2: Long-term leverage also positively moderates this relationship. In summary, while moderate shadow banking can enhance returns and liquidity, excessive involvement may undermine core operations and increase risks, particularly under high leverage conditions.

Empirical Analysis

Research Design

Sample Selection and Data Sources

This study selects A-share listed real estate companies in China from 2008 to 2023 as the research sample, primarily due to the availability of variable data. Several data preprocessing steps were undertaken on the original samples: first, samples with significant missing values for key variables were excluded; second, outliers were trimmed at the 1st and 99th percentiles for continuous variables; third, samples of ST and ST* companies were removed. Data sources include the Guotai An Database and the Ruisi Financial Database, with data processing and empirical analysis conducted using Excel and Stata software.

Variable Selection and Definitions

Independent Variable (Shadow Banking): This study draws on the research of Han Xun (2019) and Mao Zhihong et al. (2021), defining the degree of shadow banking as the ratio of total funds used in entrusted wealth management, entrusted loans, and private lending to total assets of the company. Entrusted loans are typically reported as "other current assets," while entrusted wealth management data is sourced from the Guotai An foreign investment database, and private lending falls under accounts receivable in financial accounting.

Dependent Variable (Debt Default Risk): The Z-score model is employed to measure debt default risk. This model evaluates a company's financial condition and bankruptcy risk through a comprehensive calculation of several variables. A higher Z-score indicates lower bankruptcy and default risk. A Z-score below 1.81 suggests significant financial risk, requiring enhanced financial management for scores between 1.81 and 2.675, while scores above 2.675 indicate good operational capability and financial health. This study uses the inverse of the Z-score to measure debt default risk. Moderating Variable (Leverage): This study examines the moderating effect of leverage on the relationship between shadow banking and debt default risk in real estate firms, using the debt-to-

asset ratio to measure leverage. The influence of shadow banking on debt default risk may vary depending on the leverage levels of different firms. Additionally, both short-term and long-term leverage are assessed, with short-term leverage represented by the ratio of current liabilities to total assets, and long-term leverage by the ratio of non-current liabilities to total assets.

Control Variables: Based on relevant literature, control variables include firm size, cash flow, operating income, fixed asset turnover, return on equity, return on total assets, equity concentration, ownership structure, and firm age. The analysis also controls for individual fixed effects and year fixed effects.

Empirical Model Construction

Baseline Regression Model: The baseline regression model incorporates shadow banking (shadow) and its squared term (shadow2) as independent variables, with debt default risk (risk) as the dependent variable, alongside control variables, while controlling for individual fixed effects and year fixed effects.

Moderating Effect Model: To further explore the moderating effect of leverage, the model includes shadow banking (shadow), its squared term (shadow2), leverage (lev), the interaction term between shadow banking and leverage (shadowlev), and the interaction term between the squared shadow banking term and leverage (shadow2lev) as independent variables.

Results

Empirical Results

Baseline Regression Model: The results indicate a U-shaped relationship between shadow banking and debt default risk in real estate firms. Moderate levels of shadow banking help reduce debt default risk, whereas excessive engagement increases it.

Moderating Effect Model: Leverage plays a positive moderating role in the relationship between shadow banking and debt default risk, with high leverage intensifying the U-shaped nonlinear relationship, primarily through long-term leverage.

Heterogeneity Analysis

Equity Concentration Heterogeneity: For real estate firms with high equity concentration, the regression coefficient for shadow banking is significantly negative, while the squared term is significantly positive, indicating a U-shaped relationship. Conversely, for firms with low equity concentration, neither the shadow banking variable nor its squared term shows significance, suggesting that shadow banking does not affect their debt default risk.

Robustness Checks

Redefining Shadow Banking Variable: by redefining the shadow banking variable to include equity investments and non-current assets maturing within one year, a subsequent baseline regression analysis confirms the robustness of the model results. Two-Stage Least Squares to Address Endogeneity: using the two-stage least squares method to eliminate endogeneity, the results reaffirm the U-shaped relationship between shadow banking and debt default risk, demonstrating model robustness. Exclusion of Outlier Samples: after removing samples of listed real estate companies with abnormal status, the baseline regression analysis further confirms the robustness of the model results. Considering Policy Regulation Factors: taking into account regulatory factors, the results again indicate a U-shaped relationship between shadow banking and debt default risk, suggesting that policy regulation helps reduce the default risk of real estate firms.

The findings indicate a U-shaped relationship between shadow banking and debt default risk in real estate firms, where moderate shadow banking reduces default risk, while excessive shadow

banking increases it. The level of leverage positively moderates the impact of shadow banking on debt default risk, with high leverage reinforcing the U-shaped nonlinear relationship, mainly through long-term leverage. Further analysis reveals that these conclusions are primarily evident in large real estate firms, private firms, and those with high equity concentration. Finally, various methods, including redefining the shadow banking variable, employing two-stage least squares to address endogeneity, excluding outlier samples, and considering policy regulation, validate the robustness of the empirical results.

Conclusions and Recommendations

This empirical study explores the influence of shadow banking on debt default risk in real estate firms and the moderating effect of leverage. The results indicate that moderate levels of shadow banking can help reduce debt default risk, while excessive shadow banking increases it. Leverage, particularly long-term leverage, plays a positive moderating role in this process. Based on these conclusions, it is recommended that relevant authorities strengthen regulation on shadow banking in real estate firms, reasonably control leverage levels, mitigate default risks, and promote the healthy development of the real estate market.

Conclusions

The main conclusions of this study are as follows: First, there is a U-shaped relationship between shadow banking in real estate companies and their debt default risk levels. This indicates that moderate engagement in shadow banking can help reduce debt default risk, while excessive shadow banking increases it. This finding suggests that shadow banking can provide real estate firms with new revenue sources, enhance profitability, and alleviate the pressure of high debt repayments, thereby reducing the risk of default. Additionally, shadow banking activities offer opportunities to invest in relatively liquid sectors, improving the liquidity of real estate firms and easing financial pressures. However, if shadow banking becomes too extensive, it may crowd out investment in core business areas, threatening operational stability. The inherent high-risk nature of shadow banking can also become more pronounced.

Second, the level of leverage in real estate firms positively moderates the impact of shadow banking on debt default risk. High leverage strengthens the U-shaped nonlinear relationship between shadow banking and debt default risk. This implies that higher leverage increases cost burdens, compelling firms to enhance revenue to meet debt obligations. Firms with higher leverage also face greater challenges in obtaining external financing, and if they do, they incur higher interest costs. This situation exacerbates the operational costs of shadow banking and is a significant factor amplifying default risk. The moderating effect is primarily driven by long-term leverage.

Third, a U-shaped relationship exists between shadow banking and debt default risk specifically in large real estate firms, private firms, and those with high equity concentration. In contrast, small real estate firms, state-owned enterprises, and those with low equity concentration do not show a significant impact of shadow banking on their risk levels.

Recommendations

Regulatory Measures

Enhance the Regulatory Framework for Shadow Banking in Real Estate Firms. Given the findings, it is crucial for regulatory bodies to strengthen oversight of shadow banking activities in the real estate sector. They should aim to keep the level of shadow banking within manageable limits. Specifically, regulators should establish clearer disclosure requirements for shadow banking activities, allowing for greater transparency. For example, firms could be required to publicly report

the flow of credit funds, aiding in risk communication to the market. Additionally, imposing restrictions on capital flows can ensure that funds are allocated to more liquid asset areas while limiting investments in less liquid sectors. It is also vital to clearly delineate between core business operations and shadow banking activities to prevent disruptions in financial market order and enhance capital allocation efficiency.

Eliminate Credit Discrimination in Financial Markets. The prevalence of shadow banking reflects intensified competition in the real estate sector and indicates ongoing credit discrimination within China's financial markets. Regulatory bodies should work on improving the credit rating system to unify evaluation standards across different financial intermediaries, reducing information asymmetry and ensuring that financing rates accurately reflect true risks. Policies should encourage financial institutions to offer preferential loans to real economy enterprises, possibly through tax incentives. Expanding financing channels for small and private enterprises beyond traditional intermediaries, including collaboration with fintech firms, can help alleviate credit constraints and limit the growth of shadow banking.

Implement Differentiated Regulatory Policies. Based on empirical findings, it is evident that shadow banking poses a greater risk in large, private, and highly concentrated equity firms. Therefore, regulators should focus on closely monitoring shadow banking practices in these categories. This could involve classifying real estate companies and prioritizing oversight for those with significant shadow banking activities and high default risk, while allowing for more relaxed regulations on other types of firms.

Company-Level Strategies

Establish a Risk Prevention Mechanism for Debt Default. Real estate firms often engage in shadow banking to seek new profit avenues, but this can lead to neglect of long-term risk management. Management should be aware of irrational behaviors and recognize that core business operations are essential for sustainable development. Companies can limit investments outside their main business to reasonable levels, focusing on improving capital turnover rather than prioritizing profit. Additionally, shareholders should align incentives with management goals to mitigate agency problems and enhance internal controls to lower risk levels. Keeping a close watch on macroeconomic and industry changes will allow firms to manage cash flows effectively and preemptively mitigate default risks.

Enhance Capital Chain Management. The findings indicate that higher leverage correlates with increased default risk, particularly for firms with high long-term leverage. Therefore, real estate companies should improve their capital chain management and avoid excessive long-term debt. This requires firms operating with high leverage to maximize capital efficiency, shorten project development cycles, and improve cash collection rates, thus reducing reliance on long-term debt.

Transition Shadow Banking Activities to Supply Chain Finance. The analysis suggests that the motivation behind shadow banking is primarily to expand revenue sources while supporting the development of upstream and downstream partners. Real estate firms can shift shadow banking activities towards supply chain finance, which not only helps the core businesses but also supports creditworthiness for supply chain partners. Establishing an information platform can enhance oversight of supply chain operations, allowing financial institutions to gain insights and improve credit assessments of participating companies.

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