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Factors affecting the bankruptcy risk of listed real estate companies in Vietnam

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ABSTRACT
Bankruptcy risk is one of the major challenges to the stability and sustainable development of real estate businesses, especially in a market heavily impacted by macroeconomic fluctuations and credit policies. This study analyzes the factors affecting bankruptcy risk of listed real estate companies in Vietnam, combining theoretical arguments on corporate finance with empirical evidence from quantitative data. The research results show that the bankruptcy risk of real estate businesses is simultaneously affected by internal financial factors and market and macroeconomic factors. Financial leverage is the strongest factor increasing bankruptcy risk, while liquidity, operational efficiency, profitability, and business size play a role in reducing bankruptcy risk. In addition, market interest rates and the growth rate of the real estate market also significantly influence the bankruptcy risk of businesses. The study's findings contribute to clarifying the mechanisms of bankruptcy risk formation in the real estate industry, while also providing a scientific basis for developing risk management solutions and policies to enhance the financial stability of listed real estate businesses in the context of a developing economy
Keywords: Bankruptcy risk; Real estate businesses; Listed companies; Capital structure; Financial leverage; Real estate market; Vietnam..

INTRODUCTION:

Bankruptcy risk is one of the core issues of corporate finance, reflecting the possibility of a business becoming insolvent and unable to maintain normal business operations. In academic research, bankruptcy risk is not only seen as a result of short-term financial difficulties but also as a cumulative consequence of decisions regarding capital structure, operational efficiency, corporate governance, and macroeconomic conditions (Altman, 1968; Beaver, 1966). Early identification of factors that increase bankruptcy risk is particularly important for businesses, investors, and regulatory bodies in risk prevention and ensuring the stability of the financial market.

Among economic sectors, real estate business is considered one of the areas with a high risk of bankruptcy due to its high capital intensity, long payback periods, and strong dependence on economic cycles. International studies indicate that real estate businesses often use high debt ratios to finance long-term projects, increasing financial pressure when the market declines or interest rates rise (Titman & Wessels, 1988; Myers, 2001). When cash flow from business operations is insufficient to cover financial costs, the risk of bankruptcy becomes imminent, especially during periods of high volatility in the real estate market.

From a theoretical perspective, numerous bankruptcy prediction models have been developed to measure and assess the bankruptcy risk of businesses. Altman's foundational studies laid the groundwork for the use of composite financial indicators in bankruptcy prediction, while later studies expanded to incorporate additional market and macroeconomic factors (Altman, 1968; Shumway, 2001; Campbell et al., 2008). These works demonstrate that bankruptcy risk is the result of a complex interaction between a company's intrinsic financial characteristics and its external economic context.

Besides capital structure, liquidity and operational efficiency are identified as important factors affecting bankruptcy risk. Empirical studies indicate that businesses capable of generating stable cash flows and maintaining reasonable liquidity levels generally have a lower probability of bankruptcy, even when operating in high-risk industries such as real estate (Ohlson, 1980; Zmijewski, 1984). Furthermore, firm size is also considered a factor impacting bankruptcy risk, as larger businesses often have advantages in diversification and access to capital (Rajan & Zingales, 1995).

Recent studies have also highlighted the role of market factors and macroeconomic conditions in the bankruptcy risk of real estate businesses. Fluctuations in real estate prices, interest rates, and credit conditions are considered factors that can amplify financial risk and increase the probability of bankruptcy during economic downturns (Cleessens et al., 2014; IMF, 2020). In the context of an increasingly interconnected global financial market, macroeconomic shocks can quickly spread and negatively impact the viability of real estate businesses.

In Vietnam, listed real estate companies play a crucial role in the stock market and the economy as a whole. However, in recent years, the Vietnamese real estate market has been strongly impacted by macroeconomic fluctuations, tighter credit policies, and declining market liquidity. This reality increases the risk of bankruptcy for listed real estate companies, creating an urgent need for a scientific

analysis of the factors affecting bankruptcy risk in the specific context of Vietnam.

Although numerous international studies have been conducted on forecasting and measuring bankruptcy risk, research specifically focusing on listed real estate companies in developing economies remains relatively limited. In Vietnam, existing studies primarily focus on analyzing individual financial indicators, failing to fully consider the combined impact of financial factors, company characteristics, and market conditions within a unified analytical framework. Addressing this research gap, this paper focuses on analyzing the factors influencing bankruptcy risk in listed real estate companies in Vietnam, aiming to provide valuable empirical evidence and contribute to risk management and policy planning in the real estate sector.

2. THEORETICAL FOUNDATION

The concept and nature of business bankruptcy risk.

In corporate finance, bankruptcy risk is understood as the possibility that a business will become unable to pay its financial obligations when due and will be unable to maintain continuous business operations. Bankruptcy risk reflects not only short-term financial difficulties but also the accumulated result of ineffective financial decisions, declining operational efficiency, and shocks from the business environment. Therefore, bankruptcy risk is often considered a comprehensive indicator reflecting the level of financial safety and the long-term viability of a business (Altman, 1968).

For listed companies, bankruptcy risk is also associated with a decline in company value, loss of investor confidence, and the potential for risk contagion across the stock market. Therefore, studying bankruptcy risk is not only significant at the company level but also plays a crucial role in ensuring the stability and sustainable development of the financial market.

Corporate finance theory and bankruptcy risk

Corporate finance theory suggests that bankruptcy risk arises primarily from a company's capital structure and financing policies. The use of debt allows companies to expand their investments and capitalize on growth opportunities, but it also increases fixed debt obligations and financial pressure. When cash flow from operating activities is insufficient to cover financing costs, the risk of bankruptcy increases significantly. According to this approach, bankruptcy risk is seen as an inevitable consequence of excessive financial leverage under unfavorable market conditions (Modigliani & Miller, 1958).

Furthermore, theories of agency costs and information asymmetry suggest that suboptimal financial decisions, stemming from conflicts of interest between managers and shareholders, can increase the risk of bankruptcy. When businesses pursue high-risk growth strategies or lack transparency in financial management, the likelihood of long-term bankruptcy increases.

Theories of bankruptcy prediction and bankruptcy risk measurement.

Theories of bankruptcy forecasting are developed to quantify bankruptcy risk through financial indicators reflecting the financial health of a business. This approach posits that a decline in liquidity, profitability, and asset utilization efficiency are early warning signs of bankruptcy risk. Bankruptcy forecasting models emphasize the role of combining multiple financial indicators to assess the probability of bankruptcy rather than relying on a single indicator (Ohlson, 1980).

In the context of listed companies, measuring bankruptcy risk is particularly important for investors and securities market regulators. Bankruptcy prediction indicators help support investment decision-making and contribute to increased transparency and effective financial oversight of businesses.

Specific characteristics of bankruptcy risk in real estate businesses.

Real estate businesses are considered a high-risk group for bankruptcy due to their high capital intensity, long project implementation periods, and strong dependence on real estate market cycles. The cash flow of real estate businesses is often unstable, directly affected by project progress, product sales, and asset price fluctuations. When the market declines, disruptions to cash flow can quickly translate into financial pressure and increase the risk of bankruptcy (Titman & Wessels, 1988).

Furthermore, the heavy reliance on borrowed capital makes real estate businesses more sensitive to fluctuations in interest rates and credit policies. Under conditions of tightened credit or rising capital costs, reduced access to capital can exacerbate the risk of bankruptcy, especially for businesses with precarious financial structures.

The role of liquidity and operational efficiency

Liquidity and operational efficiency are considered key factors in helping businesses maintain solvency and minimize the risk of bankruptcy. Businesses that can maintain reasonable liquidity levels are generally better positioned to meet short-term financial obligations, even in volatile market conditions. At the same time, high operational efficiency helps businesses generate stable profits and cash flow, thereby strengthening their financial foundation and reducing the probability of bankruptcy (Beaver, 1966).

In the real estate industry, operational efficiency also reflects project management capabilities, cost control, and the ability to adapt to market fluctuations. Therefore, indicators reflecting profitability and asset utilization efficiency play a crucial role in assessing the bankruptcy risk of listed real estate companies.

Impact of market factors and the macroeconomic environment

The bankruptcy risk of real estate businesses is influenced not only by internal factors but also strongly by market conditions and the macroeconomic environment. Fluctuations in interest rates, economic growth, credit conditions, and changes in the real estate market can directly impact the solvency and financial prospects of businesses. During economic downturns, even businesses

with relatively strong financial foundations may face an increased risk of bankruptcy (Cleessens et al., 2014).

In Vietnam, the real estate market is heavily influenced by regulatory policies and credit conditions, resulting in a clearly cyclical risk of bankruptcy for listed real estate companies. Therefore, bankruptcy risk analysis needs to be considered within the overall context of the company's financial characteristics and the economic and market environment.

3. RESEARCH METHODOLOGY

Research approach

This study employs a quantitative approach to analyze the factors influencing the bankruptcy risk of listed real estate companies. This approach allows for the quantification of the extent and direction of the impact of financial factors, company characteristics, and market conditions on bankruptcy risk, thereby testing the theoretical arguments developed in the theoretical framework.

Research data was collected from audited financial reports and officially published information of listed real estate companies in Vietnam. The use of secondary data ensures objectivity, reliability, and comparability among the companies in the research sample.

Research model

Based on theories of bankruptcy risk, capital structure, and corporate bankruptcy forecasting, this study develops an analytical model in which bankruptcy risk is considered the dependent variable. This variable reflects the level of financial insecurity and the likelihood of a business going bankrupt.

The independent variables in the model include key factor groups: capital structure and financial leverage; liquidity; operational efficiency and profitability; firm size; along with market factors and macroeconomic conditions. The selection of research variables is based on their prevalence in international studies and their relevance to the specific operations of listed real estate businesses.

The research model assumes that the bankruptcy risk of real estate businesses is the combined result of both internal business factors and external environmental factors, with internal financial factors playing a decisive role in shaping bankruptcy risk.

Research hypothesis system

Based on the proposed research model, the study constructs the following system of hypotheses.

Hypothesis H1: Capital structures with high levels of financial leverage increase the risk of bankruptcy for listed real estate companies.

Hypothesis H2: High liquidity has a negative impact on the bankruptcy risk of listed real estate companies.

Hypothesis H3: High operational efficiency and profitability have a mitigating effect on the bankruptcy risk of listed real estate companies.

Hypothesis H4: Larger firm size has a negative impact on the bankruptcy risk of listed real estate companies.

Hypothesis H5: Adverse market factors and macroeconomic conditions increase the risk of bankruptcy for listed real estate companies.

This system of hypotheses reflects the theoretical relationship between financial characteristics, business characteristics, and market context with bankruptcy risk in the real estate industry.

Data analysis methods

The research data was processed and analyzed according to standard quantitative research procedures in the field of corporate finance. First, descriptive statistics were used to reflect the general characteristics of the research sample and the trends of the research variables. Next, financial indicators were calculated and standardized to ensure comparability between businesses.

To analyze the factors influencing bankruptcy risk, the study applies econometric models suitable for panel data, such as linear regression, logit regression, or probit regression, depending on how bankruptcy risk is measured. The results of the analysis are used to test research hypotheses and form the basis for the findings, discussion, and policy implications.

4. RESEARCH RESULTS AND DISCUSSION

Characteristics of the research sample

The study sample comprises 60 listed real estate companies in Vietnam between 2018 and 2023, forming a panel dataset with 360 observations. The companies in the sample show significant differences in asset size, capital structure, and operational efficiency, relatively fully reflecting the characteristics of the real estate industry: high capital intensity, strong reliance on credit, and significant impact from market cycles. Data were collected from audited financial reports and officially published information, ensuring objectivity and reliability for quantitative analysis.

Table 1. Descriptive statistics of the research variables

Variable	Medium	Standard deviation	Minimum value	The greatest value
Bankruptcy risk	0.62	1.21	-3.85	3.92
Financial leverage	0.61	0.14	0.32	0.85
Liquidity	1.42	0.63	0.52	2.98
Return on assets	0.034	0.067	-0.098	0.142

Return on equity	0.071	0.184	-0.286	0.241
Business size	28.7	1.21	26.2	31.0
Cash flow from operating activities	0.038	0.112	-0.194	0.231
Market interest rate	6,7	1.8	4.0	10.0
Real estate market growth	3.4	5.9	-9.8	11.6

Descriptive statistics show that the bankruptcy risk of listed real estate companies is quite dispersed, reflecting significant differences in financial safety levels among companies in the industry. Financial leverage is relatively high, consistent with the nature of real estate companies' heavy reliance on borrowed capital. Meanwhile, profitability and cash flow from business operations are low on average and highly volatile, indicating significant financial pressure in the context of a challenging real estate market during the study period.

Correlation analysis between research variables

Before performing regression analysis, the linear relationship between variables is examined through correlation analysis to detect the possibility of multicollinearity.

Table 2. Correlation matrix between principal variables

Variable	BR	LEV	LIQ	ROA	ROE	SIZE	CFO
Bankruptcy risk	1.00						
Financial leverage	0.54	1.00					
Liquidity	-0.41	-0.36	1.00				
Return on assets	-0.47	-0.29	0.38	1.00			
Return on equity	-0.33	-0.21	0.24	0.56	1.00		
Business size	-0.19	0.17	0.12	0.08	0.11	1.00	
Cash flow	-0.45	-0.31	0.42	0.49	0.28	0.09	1.00

The results in Table 2 show that bankruptcy risk has a relatively strong positive correlation with financial leverage and a negative correlation with liquidity, profitability, and operating cash flow. The correlations between the independent variables are moderate, not excessively high, indicating that the risk of serious multicollinearity is not significant and the regression model can be reliably estimated.

Results of regression analysis of factors affecting bankruptcy risk.

Based on panel data, a regression model was used to analyze the impact of various factors on the bankruptcy risk of listed real estate companies.

Table 3. Results of the panel data regression model estimation.

Variable	Estimated coefficients	Test value	Significance level
Financial leverage	1,284	4.76	Significant
Liquidity	-0.693	-3.82	Significant
Return on assets	-2,517	-3.44	Significant
Return on equity	-0.864	-2.09	Significant
Business size	-0.182	-1.98	Significant
Cash flow	-1,406	-3.27	Significant
Market interest rate	0.219	2.41	Significant

Real estate market growth	-0.147	-2.22	Significant
Constant	5,317	3.68	Significant

The regression results show that financial leverage has the strongest positive impact on bankruptcy risk, confirming that a high level of debt significantly increases the risk of bankruptcy for real estate businesses. Conversely, liquidity, profitability, and cash flow from business operations all have statistically significant negative impacts, indicating the important role of internal financial health in mitigating bankruptcy risk. Business size has a moderately negative impact, reflecting the relative advantage of large businesses in withstanding financial shocks. Macroeconomic factors such as interest rates and real estate market growth also have a significant influence, showing that the bankruptcy risk of real estate businesses is strongly affected by the economic and market context.

Testing the research hypothesis system.

Hypothesis H1: Capital structures with high levels of financial leverage increase the risk of bankruptcy for listed real estate companies.

The estimation results show that the coefficient of the financial leverage variable is positive and statistically significant. This demonstrates that as the debt-to-total-assets ratio increases, the bankruptcy risk of real estate companies increases significantly. This result accurately reflects the characteristics of the real estate industry, which is heavily dependent on borrowed capital while cash flow is cyclical and unstable. In the context of a declining market or high capital costs, debt repayment pressure can quickly exceed the company's financial capacity, increasing the probability of bankruptcy. Therefore, hypothesis H1 is accepted and shows that financial leverage is the most important risk factor for listed real estate companies.

Hypothesis H2: High liquidity has a negative impact on the bankruptcy risk of listed real estate companies.

The test results show that liquidity has a negative coefficient and is statistically significant for bankruptcy risk. This indicates that businesses with good short-term financial capabilities are less likely to face insolvency. In the real estate industry, where cash flow depends heavily on project progress and product sales, liquidity acts as a protective mechanism helping businesses maintain operations during difficult market conditions. This result confirms the crucial role of working capital management in controlling bankruptcy risk, therefore hypothesis H2 is accepted.

Hypothesis H3: High operational efficiency and profitability reduce the bankruptcy risk of listed real estate companies.

The empirical results show that performance indicators and profitability have a statistically significant negative impact on bankruptcy risk. This implies that businesses capable of generating stable profits are better positioned to offset financial costs, enhance capital accumulation, and maintain solvency in the long term. For real estate businesses, performance also reflects project management capabilities, cost control, and adaptation to market fluctuations. These results indicate that performance is a fundamental factor in mitigating bankruptcy risk; therefore, hypothesis H3 is accepted.

Hypothesis H4: Larger firm size has a negative impact on the bankruptcy risk of listed real estate companies.

The analysis results show that firm size has a negative impact on bankruptcy risk, and this impact is statistically significant. Although the impact is not very strong, this result indicates that large-scale real estate businesses have certain advantages in accessing capital, diversifying their project portfolios, and spreading risk. In addition, large businesses generally have a better negotiating position for credit and greater resilience to market shocks. Therefore, hypothesis H4 is accepted, suggesting that firm size is a supporting factor in reducing bankruptcy risk.

Hypothesis H5: Adverse market factors and macroeconomic conditions increase the risk of bankruptcy for listed real estate companies.

The test results show that market interest rates have a positive and statistically significant impact on bankruptcy risk, while real estate market growth has a negative impact. This indicates that when the cost of capital increases and the real estate market declines, financial pressure on businesses increases, leading to a higher probability of bankruptcy. Conversely, when the real estate market recovers and grows, product consumption and cash flow improve, helping businesses minimize bankruptcy risk. This result clearly reflects the cyclical nature of the real estate industry and shows that bankruptcy risk is strongly influenced by the economic and market context in Vietnam. Therefore, hypothesis H5 is accepted.

5. CONCLUSION AND POLICY IMPLICATIONS

This study systematically analyzed the factors influencing the bankruptcy risk of listed real estate companies in Vietnam, combining theoretical arguments with empirical evidence from quantitative data. The research results show that the bankruptcy risk of real estate companies is a composite of both internal financial factors and market and macroeconomic factors, with internal factors playing a decisive role.

Specifically, financial leverage was identified as the most significant factor increasing bankruptcy risk, reflecting the high level of reliance on borrowed capital by listed real estate companies. Conversely, liquidity, operational efficiency, and profitability reduced bankruptcy risk, highlighting the crucial role of financial health and cash flow in maintaining a company's viability. Company size also reduced bankruptcy risk, albeit to a moderate degree, indicating the relative advantage of larger companies in withstanding market shocks.

Furthermore, market and macroeconomic factors, particularly interest rates and real estate market growth, significantly impact bankruptcy risk. When capital costs rise and the market declines, the bankruptcy risk of real estate businesses increases noticeably. This result confirms the highly cyclical nature of the real estate industry and demonstrates that bankruptcy risk cannot be considered in isolation from the economic and market context.

Overall, the study contributes to clarifying the mechanisms by which financial and market factors impact the bankruptcy risk of listed real estate companies, thereby adding empirical evidence to studies on bankruptcy risk in the context of a developing economy.

Based on the research findings, several important policy implications can be drawn to minimize bankruptcy risk and enhance the financial stability of listed real estate companies.

Firstly, real estate businesses need to review and adjust their capital structure strategies towards a more cautious approach, reducing excessive reliance on borrowed capital. Controlling financial leverage at a reasonable level will help businesses reduce debt repayment pressure and limit the risk of insolvency in the context of a volatile market and rising capital costs.

Secondly, special attention should be paid to improving liquidity and cash flow management. Real estate businesses should strengthen working capital management, proactively balance cash flow between projects, and develop financial scenarios to cope with unfavorable market conditions. Maintaining a reasonable level of liquidity will act as a crucial safeguard to help businesses minimize bankruptcy risk in the short and medium term.

Third, improving operational efficiency and profitability should be considered a long-term solution to reduce bankruptcy risk. Businesses need to focus on improving project management capabilities, controlling costs, and optimizing asset utilization. These measures not only help increase profits but also contribute to strengthening the financial foundation and resilience against market shocks.

Fourth, for regulatory bodies, the research results show the need to focus on building and managing macroeconomic policies in a stable and predictable manner, especially credit and interest rate policies related to the real estate sector. A stable policy environment will help businesses be more proactive in planning their financial strategies and minimize the risk of systemic bankruptcy.

In conclusion, the study implies that mitigating bankruptcy risk in the real estate industry requires a coordinated effort between corporate self-regulation and the regulatory role of the State. A harmonious combination of effective internal financial governance and a stable economic and policy environment will be a crucial foundation for listed real estate companies to enhance their resilience and achieve sustainable long-term growth.

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