

Research on the Financial Performance Evaluation of Listed Companies in the Real Estate Industry Based on Factor Analysis Method

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Abstract: This paper selects the 2023 financial data of 100 listed real estate companies and uses factor analysis to construct a multi-dimensional financial performance evaluation index system that includes profitability, solvency, growth potential, and financial risk. Three main common factors are extracted: profitability factor, solvency factor, and operational development capacity factor. The study finds that the financial performance of listed real estate companies in China shows significant differentiation, with some companies performing poorly in solvency and operational development capacity, facing debt risks. Therefore, this paper proposes to strengthen profitability and operational development capacity, pay attention to debt risks, and improve the level of financial performance management to promote the healthy and stable development of the real estate market.

Keywords: Real Estate Enterprises; Factor Analysis Method; Financial Performance

1. Introduction

Real estate carries the beautiful vision of residents' settling down and living happily, and is an indispensable important driver for national economic growth and stable social development ^[1]. The real estate industry is intimately linked to the shelter needs of hundreds of millions of families. It constitutes a vital component of the national economy and plays an irreplaceable role in fostering employment and driving the development of related industries.

The real estate industry in China has always been an important economic driver ^[2]. However, since the Evergrande Group incident in 2021 and the outbreak of the pandemic in 2022, China's real estate industry has been facing severe adjustments, and the world is watching how this will negatively impact China's macroeconomy. The market began to shrink dramatically, and many real estate companies successively faced financial risks such as broken capital chains ^[3]. This sudden turn of events not only placed immense pressure on the real estate companies themselves but also posed a severe challenge to the stability of the entire industry and even the national economy.

With the continuous development and changes in the real estate market, its financial performance has also become the focus of attention from all sectors of society. However, it is worth noting that real estate companies are capital-intensive enterprises, and their financial operations have certain particularities and complexities. The overall enterprise faces multiple internal and external pressures from market fluctuations, capital turnover, cost control, regulatory policies, etc., and the probability of risks such as misappropriation of funds and abnormal financial data is relatively high ^[4]. These intertwined factors cause the financial performance of real estate enterprises to be affected by a combination of factors, and traditional financial risk analysis methods are difficult to fully reveal their potential risks ^[5].

Currently, it is crucial to scientifically evaluate the financial performance and key influencing factors of listed real estate companies. This helps corporate managers formulate strategies, enhance competitiveness, and provides investors with valuable references. This is of great significance for stabilizing the real estate market and promoting economic development. Factor analysis can effectively process complex financial data, extract core factors, and reveal key influencing factors, providing support for decision-making and investment.

Based on the above analysis, this paper uses factor analysis to study the influencing factors of

financial performance of listed real estate companies in China, which has important theoretical and practical significance. Through data analysis, it is expected to provide new ideas for the development of real estate enterprises, provide a scientific basis for the decision-making of investors, and provide a reference for policy makers, jointly promoting the sustainable and healthy development of the real estate market^[6].

2. Research Design

2.1 Sample Selection

This study uses a sample of 100 listed real estate companies. Companies labeled ST and those with incomplete data were strictly excluded to ensure the integrity of the sample. Data were sourced from authoritative databases such as CSMAR and Wind, as well as financial reports published by the listed companies, ensuring accuracy and reliability. The sampled companies are widely distributed across different regions of China, encompassing various sizes and development stages. This strong representation allows for a better reflection of the overall situation and regional differences within the Chinese real estate market.

The study employs advanced statistical software, SPSS and Stata, to conduct an in-depth factor analysis of 100 real estate companies. These software packages possess powerful functions, enabling efficient processing of large-scale datasets and providing precise analytical results. This facilitates a deeper exploration of the data, revealing key factors influencing the financial performance of real estate enterprises.

In terms of indicator selection, this paper meticulously designed eight positive indicators and one negative indicator, covering various aspects such as profitability, operational efficiency, growth potential, financial risk, and debt pressure. To facilitate comparison and analysis, the negative indicator was transformed by taking its reciprocal, aligning its directionality with the other positive indicators. This approach not only simplified the analysis process but also enhanced the intuitiveness and comparability of the analysis results.

This study employs a scientific sample selection, authoritative data sources, and advanced methods to thoroughly analyze the influencing factors of financial performance of Chinese listed real estate companies. The research enriches relevant theories and provides valuable references and guidance for the development of the industry. In the future, it will continue to monitor market dynamics, study more factors, and contribute to the healthy and stable development of the real estate market..

2.2 Sample Selection

Table 1: Variable Definition

Type	Variable	Name	Calculation Formula
Operational Capability	X1	Inventory Turnover Ratio	Cost of Goods Sold / Ending Inventory
	X2	Accounts Receivable Turnover Ratio	Operating Revenue / Ending Accounts Receivable
Debt-paying Ability	X3	Current Ratio	Current Assets / Current Liabilities
	X4	Quick Ratio	Quick Ratio / Current Liabilities
	X5	Reciprocal of Debt-to-Asset Ratio	Total Assets / Total Liabilities
Profitability	X6	Asset Return Ratio	(Total Profit + Financial Expenses) / Total Assets
	X7	Return on Assets	Net Profit / Total Assets
	X8	EBIT Margin	(Net Profit + Income Tax Expense + Financial Expenses) / Operating Revenue
Development Capability	X9	Revenue Growth Rate	(Current Period Operating Revenue - Previous Period Operating Revenue) / Previous Period Operating Revenue

This paper comprehensively considers four core dimensions: operational capacity, debt-paying ability, profitability, and development capacity. Based on this, as shown in Table 1, through a rigorous screening process, it has identified nine key indicators that are both representative and operable,

thereby constructing a scientific and systematic evaluation index system for the financial performance of real estate companies. This system aims to provide a more accurate and comprehensive tool and method for evaluating the financial performance of real estate enterprises.

3. Financial Performance Evaluation Based on Factor Analysis

3.1 Validity Analysis

Before conducting factor analysis, it is necessary to perform the KMO and Bartlett's test. When the KMO statistic is close to 1 and the result of Bartlett's spherical test is $P < 0.05$, it indicates that the factor analysis is effective^[7]. According to the data in Table 2, the KMO test result for each indicator is 0.706, and the approximate chi-square for Bartlett's test is 573.599, with a significance level almost equal to 0, proving that the data indicators are not mutually independent.

Overall, the data in this paper are suitable for factor analysis. It can be seen from the correlation data matrix that there is a correlation between the data in this paper.

Table2: KMO Test and Bartlett's Sphericity Test Results

Suitability Test		calculated value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.706
Bartlett's Test of Sphericity	Approximate Chi-Square	573.599
	Degrees of Freedom	36
	Significance	.000

3.2 Calculation of Eigenvalues and Variance Contribution Rates

This paper adopts principal component analysis where the indicators exhibit strong correlations. Three common factors are extracted based on the criterion of eigenvalue greater than 1^[8]. The total variance explained by the factor analysis is presented in Table 3, with the cumulative variance contribution rate of the first three factors reaching 73.550%. This indicates that these three factors effectively cover most of the information from the original nine financial performance evaluation indicators. Therefore, they can be regarded as the three main common factors for assessing the financial performance management level of real estate enterprises.

Table 3: Total Variance of Factor Analysis

Component	Before rotation			After rotation		
	Total	Variance percentage	Cumulative Variance Contribution Rate(%)	Total	Variance percentage	Cumulative Variance Contribution Rate(%)
1	3.262	36.248	36.248	2.733	30.369	30.369
2	2.057	22.852	59.101	2.522	28.025	58.395
3	1.300	14.449	73.550	1.364	15.155	73.550

3.3 Factor Loading Matrix and Factor Naming

After rotation using the varimax method, the factor loading matrix in Table 4 was obtained. Common factor 1 has larger loadings on current ratio, quick ratio, and the inverse of asset-liability ratio, reflecting the solvency of enterprises, and is therefore defined as the solvency factor. Common factor 2 has larger loadings on asset-liability ratio, net profit margin on total assets, and EBIT margin, embodying the long-term profitability of real estate enterprises, and is defined as the profitability factor. Common factor 3 has larger loadings on inventory turnover ratio, accounts receivable turnover ratio, and revenue growth rate, reflecting the long-term development and operational capabilities of real

estate companies, and is summarized as the operational development capability factor.

Let F represent the three proposed common factors, denoted as F1, F2, and F3, respectively.

Table 4: Rotated Component Matrix

Variable	Component		
	F1	F2	F3
X1	.001	.264	-.479
X2	-.067	.070	.732
X3	.956	.086	-.020
X4	.929	.128	-.154
X5	.945	.116	-.034
X6	.010	.955	-.065
X7	.144	.940	-.071
X8	.181	.778	.103
X9	-.082	.097	.744

3.4 Factor Variable Scoring Equations and Comprehensive Evaluation Model

Table5: Component Score Coefficient Matrix

Variable	Component		
	F1	F2	F3
X1	-.062	.108	-.358
X2	.026	.038	.544
X3	.367	-.049	.062
X4	.342	-.029	-.040
X5	.359	-.036	.051
X6	-.086	.397	-.044
X7	-.033	.379	-.038
X8	.010	.309	.096
X9	.019	.051	.553

From Table 5, it can be observed that the score coefficient matrix for each common factor is derived using the regression method, and the weights of the common factors are determined based on the factor score coefficients provided in Table 5.

$$F1 = -0.062X1 + 0.026X2 + 0.367X3 + 0.342X4 + 0.359X5 - 0.086X6 - 0.033X7 + 0.01X8 + 0.019X9$$

$$F2 = 0.108X1 + 0.038X2 - 0.049X3 - 0.029X4 - 0.36X5 + 0.397X6 + 0.379X7 + 0.309X8 + 0.051X9$$

$$F3 = -0.358X1 + 0.544X2 + 0.062X3 - 0.040X4 + 0.051X5 - 0.044X6 - 0.038X7 + 0.096X8 + 0.553X9$$

To comprehensively evaluate the financial performance level of real estate enterprises, it is necessary to calculate their comprehensive factor scores. The comprehensive evaluation score is represented by F, and the weights are determined by the contribution rates corresponding to the common factors listed in Table 5.

The comprehensive evaluation score model can be derived as follows:

$$F = \frac{30.369}{73.550} F1 + \frac{28.025}{73.550} F2 + \frac{15.155}{73.550} F3$$

4. Factor Results Analysis

Through factor analysis of the financial data of 100 real estate enterprises, the scores for each enterprise on the debt-paying ability factor, profitability factor, and operational development capacity factor were obtained. The comprehensive assessment of factor scores reveals their impact on corporate financial risk, as shown in Table 6.

The data in the table shows significant differences in the debt repayment capacity of enterprises. The lowest score of -24.85 indicates that some enterprises are facing debt repayment pressure and may have issues with liabilities and cash flow, while the highest score of 46.09 suggests that some

enterprises have excellent debt repayment capacity and sound financial conditions. The scores for profitability range from -0.32 to 66.24. Although the lowest score is close to zero, it still implies that the profitability of some individual enterprises is slightly negatively affected. In contrast, the highest score indicates that some enterprises have strong profitability and outstanding market competitiveness. The scores for operational and development capacity fluctuate greatly, ranging from -156.91 to 947.95. This highlights that some enterprises have serious operational and development issues, but most enterprises have exceptional operational and development capabilities, with strong potential for growth and market expansion.

Table 6: Data Results

Company Code	F1	F2	F3	F
Company 1	46.09	66.24	947.95	239.59
Company 2	34.08	48.55	692.25	175.21
Company 3	12.78	16.36	235.94	60.12
Company 4	12.73	15.23	216.83	55.74
Company 5	11.68	13.84	199.84	51.27
Company 6	5.54	6.84	97.62	25.01
...	...	...	...	...
Company 98	-8.15	17.69	-56.49	-8.26
Company 99	-13.69	27.94	-89.91	-13.53
Company 100	-24.85	48.35	-156.91	-24.17

After in-depth analysis of the data from 100 real estate enterprises and the application of a comprehensive evaluation score model, the study conducted a comprehensive assessment of their financial performance levels. In this evaluation system, the F-value serves as a core indicator, whose level directly reflects the capability and level of the enterprise's financial performance management. Specifically, a higher F-value indicates stronger financial performance management and a more stable financial condition; conversely, it suggests management deficiencies that need further improvement.

Based on the analysis results, these enterprises are divided into four grades to more intuitively display their financial performance status. According to the data distribution in Table 7, it can be observed that among the 100 listed real estate companies participating in the evaluation, there is a clear differentiation in financial performance.

Table 7: Classification of Financial Performance Management Evaluation for Real Estate Enterprises

Financial performance management score	Management level	Number of enterprises
$F > 10$	High	25
$2 < F \leq 10$	Medium-High	44
$0 < F \leq 2$	Medium-Low	28
$F \leq 0$	Low	5

Twenty-five companies demonstrated a high level of financial performance management, accounting for 25%. Forty-four companies showed a relatively high level of financial performance management, making up 44%. Together, they account for over 50%, indicating that the majority of real estate enterprises perform well in financial management, possessing strong risk control and profitability.

However, there are also 28 companies at a lower management level, accounting for 28%. This situation requires attention, as these enterprises face certain issues and challenges in financial management, necessitating strengthened internal management and optimization of their financial structure. Of greater concern, only 5 companies were classified as having a low management level, representing 5%. These enterprises are facing significant financial risks and urgently need to take effective measures to enhance their financial management level.

5. Conclusion and Outlook

5.1 Conclusion

Research findings indicate that the financial performance of listed real estate companies in China exhibits significant differentiation. Some enterprises underperform in terms of debt-paying ability and operational development, facing high debt risks, while others demonstrate strong profitability and

market competitiveness. Furthermore, there is a divergence in the level of financial performance management, with the majority of companies performing well, possessing strong risk control and profitability. However, a minority of enterprises still confront financial risks, necessitating enhanced internal management and optimization of their financial structures.

5.2 Outlook

(1) Strengthening Profitability Enhancement

In order to enhance their competitive edge, real estate enterprises ought to refine their product offerings, with a particular emphasis on high-value-added innovations like smart home technology and green building solutions. This will not only cater to the evolving needs of consumers but also bolster profit margins. Concurrently, cost control should be achieved via streamlined supply chains, strategic bulk purchasing, and the adoption of innovative technologies. Moreover, diversification into rental services and property management will foster a more robust and varied revenue portfolio. Ultimately, by intensifying investments in digital marketing and customer relationship management, these companies can elevate sales efficiency and customer satisfaction, thus fueling sustained growth.

(2) Enhance operational development capabilities

To enhance their core competitiveness, real estate enterprises will focus on improving project management capabilities by introducing intelligent tools and agile methodologies to ensure efficient project execution. Regular employee training will be conducted to build a highly efficient, collaborative, and innovative team. The introduction of cutting-edge technologies such as BIM will improve the efficiency of design and construction. Strategic partnerships will be expanded to achieve win-win results. These measures will enhance the competitiveness of enterprises and promote their long-term development.

(3) Focus on debt risk.

Real estate companies should reasonably control their debt ratio, optimize the asset-liability structure, and reduce financial risks. They should adopt diversified financing channels, including bank loans, bond issuance, and attracting strategic investors, to ensure a stable source of funds. Strengthening cash flow management, optimizing the use of funds, and avoiding cash chain breaks. Regularly conduct financial risk assessments, establish an early warning mechanism, and ensure financial stability.

(4) Enhance the management level of financial performance.

Real estate enterprises should establish a comprehensive financial management system covering budgeting, cost control, and reporting to ensure the accuracy and timeliness of data, supporting decision-making. They should introduce financial software and data analysis tools to improve management efficiency and achieve financial modernization. Regular financial analysis and in-depth analysis of financial statements can help prevent risks. Strengthening internal audits ensures the authenticity and compliance of data, maintaining financial health.

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