

# Big Data Financial Analysis of Vanke's Solvency Based on Power BI Software

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**Keywords:** Big Data, Solvency, Power BI.

**Abstract:** Big data financial analysis is the specific application of big data information technology in financial analysis. Power BI software can be used for visualization of the company's big data financial analysis. Solvency analysis allows firm managers, investors, creditors to understand the financial status and financial risk of the firm. The paper uses Power BI software to conduct big data financial analysis on Vanke's solvency. The paper adopts the industry analysis method and trend analysis method, and takes the real estate industry and the industry's leading Greenfields as the reference objects, and conducts an in-depth analysis of Vanke. From 2016 to 2020, Vanke's short-term solvency index was lower than the industry average and empirical value, and the short-term financial risk was relatively large; the long-term solvency gradually improved, but it was still lower than the overall level of the industry.

## 1 INTRODUCTION

Big data financial analysis is the application of big data information technology in financial analysis. Big data technology enables the availability of data and enables real-time financial reporting (George, 2014). Big data financial analysis comprehensively analyzes relevant data information available, including non-financial information that is not available in traditional financial analysis. Big data financial analysis can make a more comprehensive evaluation of corporate finance than traditional financial analysis. It is a combination of accounting and information engineering (Koop, 2006). Through specialized techniques and methods, it collects, prepares and analyzes financial and non-financial data inside and outside the company to better meet the needs of accounting information users.

Power BI software can be used for visualization of the company's big data financial analysis (McAfee, 2012). It can easily realize horizontal analysis, structural analysis and trend analysis of enterprise balance sheet and income statement; provide powerful multi-dimensional analysis of accounting projects; budget analysis; DuPont analysis and other functions. Through the mouse, you can drill down to the sub-ledgers and vouchers at will, and you do not need to master the

complicated operations of financial software. It breaks through many defects such as cumbersome, rigid, and no charts in the setting of fixed report forms, and helps enterprises transform from book-keeping financial management to analytical financial management.

This paper uses Power BI software to conduct big data financial analysis on Vanke's solvency. It uses the industry analysis method and the trend diagram method to analyze the short-term solvency of Vanke's ability to pay current liabilities and the long-term solvency of non-current liabilities. Solvency analysis can not only allow firm operators, investors, creditors, etc. to understand the firm's financial status and the level of financial risks that the firm takes, but also predict the firm's prospects and provide an important reference for the firm to carry out various financial activities.

## 2 SHORT-TERM SOLVENCY

The indicators that reflect the short-term solvency of the firm are based on the analysis of the relationship between the firm's current assets and current liabilities. Short-term solvency is analyzed by the current ratio, quick ratio and cash ratio. Vanke belongs to the real estate industry, and the industry

leader is Greenland Firm. This article uses Greenland as the benchmark to conduct industry analysis by comparing Vanke with the real estate

industry and Greenland Firm, and conduct trend analysis by comparing the firm's data from 2016 to 2020.

Table 1: Short-term solvency indicators.

Short-term solvency	2020			Average 2016-2020		
	Vanke	Real estate	Greenland	Vanke	Real estate	Greenland
Current ratio	1.17	1.39	1.19	1.18	1.47	1.28
Quick ratio	0.41	0.48	0.49	0.45	0.50	0.43
Cash ratio	0.14	0.18	0.1	0.16	0.21	0.12

### 2.1 Current Ratio

Current ratio equals current assets divided by current liabilities. It is generally believed that this indicator should reach 2 or more (Koop, 2006). As shown in Figure 1, the current ratios of Vanke, Real Estate and Greenland are all lower than 2, indicating that the overall short-term solvency of the real estate industry is weak. Vanke's current ratio changed little from 2016 to 2020. The firm's current ratio was 1.24 in 2016 and 1.13 in 2018. Vanke's current ratio fluctuated between 1.13 and 1.24 over the years.

From 2019 to 2020, the current ratio was fine-tuned from 1.13 to 1.17. The average current ratio of Vanke over the years is less than the average current ratio of the industry and benchmark Greenland companies over the years. The industry to which Vanke belongs is the real estate industry. The change in the current ratio of the real estate industry was relatively small from 2016 to 2020. The average current ratio of the real estate industry over the years is 1.28.

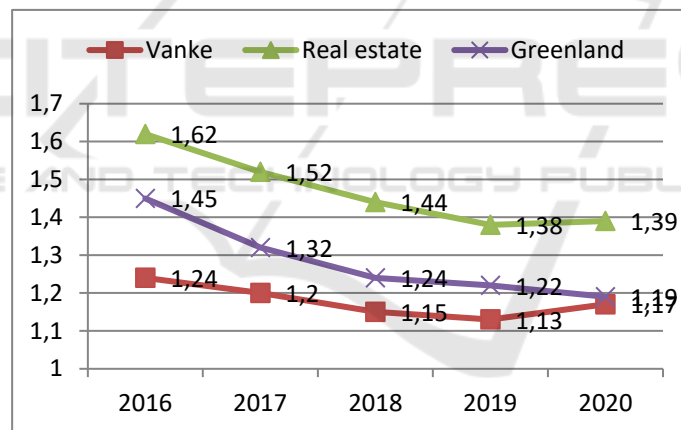


Figure 1: Current ratio from 2016 to 2019.

### 2.2 Quick Ratio

Quick ratio evaluates the short-term solvency of a firm, eliminates the influence of inventory and other current asset items with poor liquidity (Schroeder, 2019). The indicator should reach 1. If the quick ratio is less than 1, it indicates that the solvency is poor, but the analysis should be combined with other factors to evaluate. As can be seen from Figure 2, the quick ratios of the real estate industry, Vanke and Greenland are all lower than 1, indicating that the overall short-term solvency of the real estate

industry is weak and the financial risk is relatively high. From 2017 to 2020, Vanke showed a downward trend of change. The firm's quick ratio value fluctuated between 0.41 and 0.49, and the firm's average quick ratio over the years was 0.45. In the real estate industry of Vanke, the quick ratio of the real estate industry dropped from 0.53 to 0.46 from 2016 to 2019, and rose slightly to 0.48 in 2020, with little change over the years. The five-year average of the real estate quick ratio is 0.50.

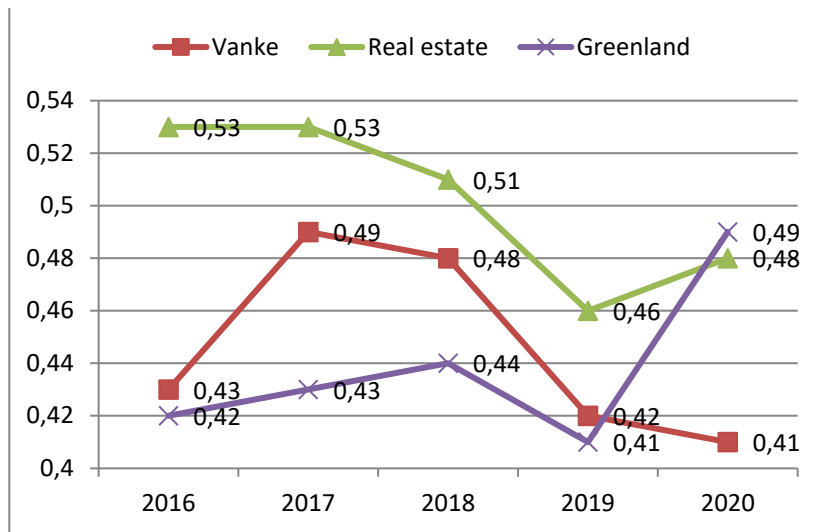


Figure 2: The change trend of quick ratio.

### 2.3 Cash Ratio

When the firm is faced with the need for a large amount of cash on the day of paying wages or the day of bulk purchase, the cash ratio can show its important role, because the cash ratio does not take into account the inventory and demand in the current assets of the firm. Therefore, this indicator is particularly important for companies that have problems with receivables and inventory realization. Due to the low profitability of the firm's cash assets, it is impossible and unnecessary for the firm to keep too many cash assets. High, indicating that the liquidity raised by the firm through debt has not

been fully utilized, so the firm is not encouraged to retain more cash assets. This ratio should be around 20%. As shown in Figure 3, the change in Vanke's cash ratio from 2016 to 2020 showed a slight increase at first, then a decrease, and a slight upward trend. The cash ratios have fluctuated between 0.13 and 0.21 over the years. The average annual cash ratio of Vanke was 0.16. In the real estate industry to which Vanke belongs, the cash ratio of the real estate industry has shown a downward trend over the years, ranging from 0.25 to 0.18. The industry average cash ratio over the years is 0.21.

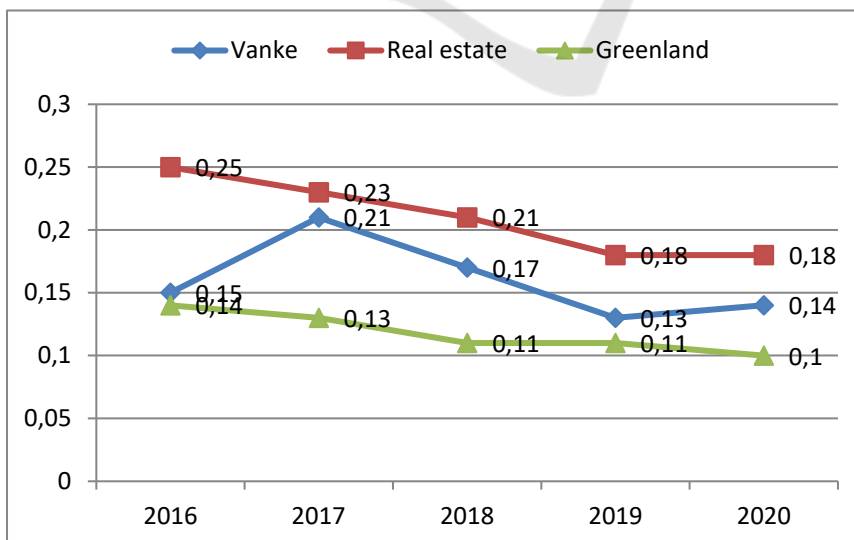


Figure 3: The change trend of cash ratio.

Vanke's short-term solvency indicators all showed a downward trend from 2017 to 2020, and the three trends changed in the same direction, and they were all lower than industry values and experience values. Vanke's short-term solvency is weak.

### 3 LONG-TERM SOLVENCY

The long-term solvency is analyzed in terms of asset-liability ratio, equity ratio, shareholders' equity ratio.

#### 3.1 Asset-Liability Ratio

Asset liability ratio is an indicator reflecting the debt

burden of a firm. The appropriate level of asset liability ratio is 40% - 60%. As shown in Figure 4, Vanke's asset liability ratio changed significantly from 2016 to 2020. Vanke's asset liability ratio ranges from 81% to 85%, with a five-year average of 83%. Vanke's asset liability ratio in 2020 is lower than that in 2018, indicating that the debt burden in 2020 is slightly lower than that in 2018. According to the empirical value, Vanke's total asset liability ratio is too large, and the risk of long-term solvency is large. The average ratio of Vanke over the years is 83%. The average ratio of Vanke over the years is 83%, and the average asset liability ratio of real estate industry and benchmark Greenland over the years are 79% and 89% respectively. The long-term financial risk of Vanke is less than Greenland firm and higher than the industry average.

Table 2: Long-term solvency indicators.

Long-term solvency	2020			Average 2016-2020		
	Vanke	Real estate	Greenland	Vanke	Real estate	Greenland
Asset-liability ratio	0.81	0.79	0.89	0.83	0.79	0.89
Equity ratio	4.34	3.74	7.99	4.92	3.68	8.16
Shareholders' equity ratio	0.19	0.21	0.11	0.17	0.21	0.11

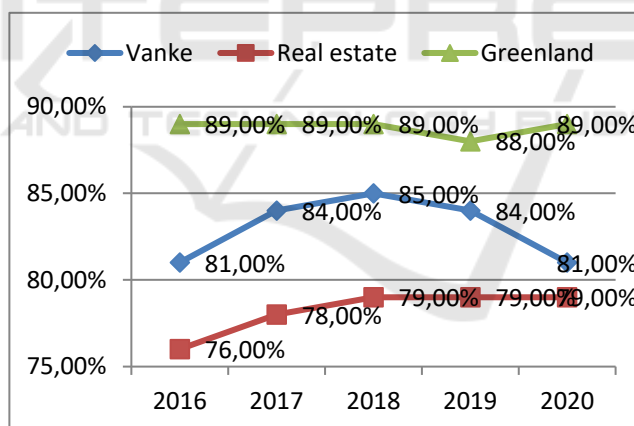


Figure 4: The change trend of asset liability ratio.

#### 3.2 Equity Ratio

Vanke's equity ratio changed significantly from 2016 to 2020. Vanke's equity ratio varies between 4.13 and 5.48. Vanke's ownership ratio over the years is 4.92. The equity ratio of the real estate industry changes gently, and the equity ratio changes from 3.29 to 3.95 over the years. Vanke's average equity ratio is higher than the industry average. Vanke and the industry's ownership ratio over the years are lower than that of Greenland firm.

#### 3.3 Shareholder Equity Ratio

The shareholders equity ratio is an indicator reflecting the guarantee degree of solvency, which indicates how many of the total assets of the firm are formed by the investment of investors. Vanke's shareholder equity ratio changed significantly over the years from 2016 to 2020.

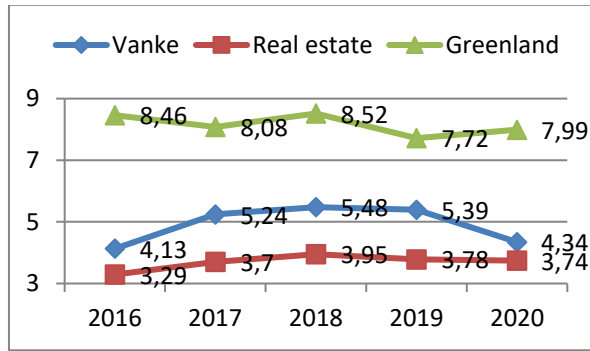


Figure 5: The change trend of equity ratio.

The shareholder equity ratio varied between 0.15 and 0.19, and the average shareholder equity ratio of Vanke industry over the years was 0.1. The smaller the equity ratio index of Vanke shareholders, the smaller the proportion of equity capital, and the greater the risk of debt repayment. The shareholder equity ratio of Vanke's real estate industry fluctuated

slightly from 2016 to 2020, ranging from 0.2 to 0.23. The average shareholder equity ratio of the real estate industry over the years is 0.21. Vanke's shareholders' equity ratio over the years is slightly lower than that of the industry, but higher than the average equity ratio of Greenland firm over the years of 0.11.

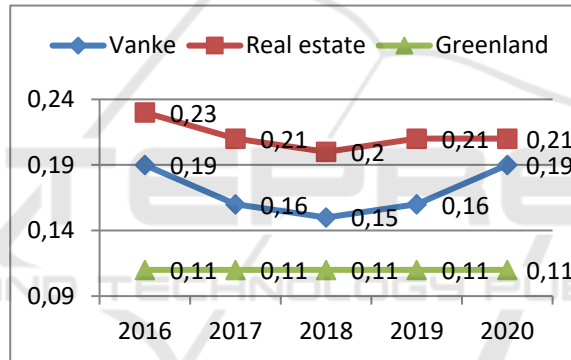


Figure 6: The change trend of shareholders' equity ratio.

The asset liability ratio is an indicator reflecting the debt burden of the firm, and the shareholder equity ratio is an indicator reflecting the degree of debt repayment guarantee. Equity ratio has the same economic significance as asset liability ratio and shareholder equity ratio, but among the three, the equity interest rate index more intuitively shows the degree of protection of liabilities from shareholder equity. Generally speaking, the equity ratio shows the degree of firm loan operation. Vanke's asset liability ratio, shareholder's equity ratio and equity ratio changed little from 2016 to 2020. From 2018 to 2020, Vanke's asset liability ratio and equity ratio showed a downward trend, and the shareholder's equity ratio showed an upward trend. The asset liability ratio and equity ratio show the same change trend, and the shareholder's equity ratio and asset liability ratio show the opposite change trend. From 2016 to 2020, Vanke's asset liability ratio has always

been higher than that of the real estate industry. The greater the asset liability ratio, the higher the degree of debt; Vanke's equity ratio has always been higher than that of the real estate industry, and Vanke's liabilities receive less protection from shareholders' equity; Vanke's shareholders' equity ratio has always been lower than that of the real estate industry, indicating that Vanke's guarantee of debt repayment is not great. From 2016 to 2020, Vanke's asset liability ratio has been lower than that of Greenland, and Vanke's debt degree is lower than that of Greenland; Vanke's equity ratio has always been lower than that of Greenland, and Vanke's liabilities have received greater protection from shareholders' equity; Vanke's shareholder equity ratio has always been higher than Greenland, indicating that Vanke's guarantee of debt repayment is relatively large.

## 4 CONCLUSIONS

This paper makes a big data financial analysis of Vanke's solvency through Power BI software. The conclusion is as follows. Using the industry analysis method and trend analysis method, taking the real estate industry and industry leading green space as the reference object, this paper makes an in-depth analysis of Vanke from the two aspects of short-term solvency and long-term solvency. From 2016 to 2020, Vanke's short-term solvency index is lower than the industry average and empirical value, and the short-term financial risk is large. The long-term solvency has gradually improved, but it is still lower than the overall level of the industry. Compared with the industry leader Greenland, Vanke has stronger short-term and long-term solvency, higher debt degree and greater financial risk.

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