Accounting and Corporate Management (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/acccm.2024.060501
ISSN 2523-5788 Vol. 6 Num. 5

Financial Early Warning Analysis of BYD

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Keywords: BYD, Financial Analysis, Financial Early Warning

Abstract: With the development of technology, new energy is widely used in different industries. Presently, China's new energy vehicle (NEV) sector is still at the preliminary stage of development with companies involved in this sector facing potential financial risks. In early 2024, the Chinese government introduced a new policy of reducing subsidies for NEVs. This policy has inflicted considerable damage on most NEV companies including BYD. To reduce the damages due to financial risks, BYD should analyze and predict possible financial risks and implement prevention measures based on its current financial conditions. Centering on the disclosed financial information of BYD, this study discusses the main sources and manifestations of BYD's financial risks using contemporary financial management theory and information technology tools. Furthermore, through the establishment of a Z-score model for financial early warning, it comprehensively monitors and evaluates the financial risks of BYD in multiple dimensions following the reduction of subsidies.

1. Introduction

In the context of a complex and ever-changing business environment, the competition and challenges faced by enterprises intensify as globalization and information technology advance. The transparency and accuracy of companies' disclosures, a means of connecting companies with external stakeholders, are directly associated with the market's assessment of the company's value and investment decision-making. Meanwhile, it is crucial to effectively identify, assess, prevent and control financial risk, which is one of the key assessing indicators of business health. A thorough and in-time financial report and other non-financial information allow investors, creditors, and regulatory agencies to gain insights into the financial status, operation achievements, and development trends in the future, thereby assessing companies' financial risk levels. The long-term subsidies in China's NEV sector have led to a reckless expansion of relevant companies and overcapacity. Therefore, the subsidy reduction policy was introduced in 2024. Substantial subsidies for NEVs are no longer provided, meaning that the prices of NEVs cease to benefit from previous subsidies and customers have to pay a higher amount [1]. This has delivered a heavy hit to most NEV companies including BYD. Based on BYD's financial condition, this paper will analyze the financial risks faced by the company and propose coping strategies and reasonable solutions for company management, providing insights for similar companies facing similar situations. Meanwhile, this study will discuss how to flexibly adjust operation strategies, optimize resource allocation, and strengthen internal control according to the warnings, thereby effectively preventing

and addressing financial risks. This will prove the anti-risk capability of companies.

2. Concept Analysis and Theoretical Overview

2.1. Overview of Financial Risks

Financial risks refer to the possibility of suffering losses in multiple financial activities due to various unpredictable, uncontrollable factors and subsequent influences, as well as financial uncertainty [2, 3]. Financial risks can be categorized into liquidity risk, credit risk, financing risk, and investment risk based on key components of financial activities. Besides, they can be classified by controllability into controllable and uncontrollable risks. The external factors causing financial risks consist of the macroeconomic environment, policy impacts, and industry background. Financial risks cannot be eliminated due to their objectivity. Instead, companies can take measures to minimize their negative consequences. To fully understand the causes of financial risks is a prerequisite for effective measures.

2.2. Overview of Financial Early Warning

Financial early warning, also known as financial failure warning, refers to the analysis and prediction of corporate operational and financial activities by applying theories from accounting, statistics, finance, business management, and marketing and using multiple analytical methods such as ratio analysis, comparative analysis, and factor analysis. Based on financial statements, operational plans, and other relevant accounting information provided by a company, it aims to identify the underlying operational and financial risks in the management and operation activities of a company, and issue warnings to operators prior to a crisis arising. It also urges them to adopt effective measures to prevent potential risks from evolving into losses, functioning as a precautionary approach. Meanwhile, as an important sub-system of the business operation warning system, it provides a reliable basis, allowing companies to correct business direction, improve operation decision-making, and effectively allocate resources. Financial early warning analysis and model establishment have become one of the important aspects of modern corporate financial management. The financial information of listed companies is of great significance for stakeholders. Hence, it is essential to establish a financial early warning system and enhance financial management, preventing financial failures and bankruptcy.

2.3. Theoretical Overview

The Z-score model was proposed by American scholar Edward Altman in 1968. In this model, five variables are selected to reflect corporate financial status in terms of the company's asset scale, discounting ability, profitability, financial structure, debt repayment capacity, asset utilization efficiency, and other aspects.

$$Z = 0.12X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5 \quad (1)$$

In the equation above, X_1 refers to working capital/total assets; X_2 refers to retained earnings/total assets; X_3 refers to earnings before interest and tax/total assets; X_4 refers to market value of equity/total liabilities; X_5 refers to total sales/total assets.

According to the empirical studies by Altman, if the Z-score is below 1.81, it means that the company has a high possibility of bankruptcy. If the Z-score is above 2.99, it means that the company has an extremely low possibility of bankruptcy. A Z-score between 1.81 to 2.99 refers to a grey zone where companies have a lower likelihood of bankruptcy compared to those companies

with a Z-score below 1.81 [4, 5]. Using the Z-score model and its criterion, Altman selected samples and identified 31 out of 33 bankrupt companies and 32 out of 33 non-bankrupt companies one year before they filed for bankruptcy. It scores an accuracy rate of 95.45%.

3. Current Financial Status of BYD

3.1. Background Information

BYD Auto Co., Ltd. is a private enterprise headquartered in Shenzhen, China. Founded in 1995 by Wang Chuanfu, its main businesses include NEV-related automobile manufacturing, mobile phone components and assembly, charging batteries and photovoltaic business, and urban rail transit.

3.2. Current Financial Status

The operation performance of the first season in 2024 can be reflected in tables of key accounting data and financial indicators. As shown in Table 1, the total profit of BYD from 2021 to 2023 exhibited an upward trend with significant revenue increases.

Table 1: Data on BYD's profits and revenue (unit/CNY 100 million)

Indicators	Year of 2021	Year of 2022	Year of 2023
Revenue	2161.42	4240.60	6023.15
Total profits	41.58	210.80	372.69

4. Financial Early Warnings for BYD

An original Z-score model is established based on BYD's financial status. The results are shown in Table 2.

Table 2: Calculation process of BYD's Z-score from 2021 to 2023

Indicators	Year of 2021	Year of 2022	Year of 2023
Current assets (CNY 100 million)	1661.10	2408.03	3021.21
Current liabilities (CNY 100 million)	1713.03	3333.45	4536.67
Total assets (CNY 100 million)	2957.80	4938.61	6795.48
Total liabilities (CNY 100 million)	1915.36	3724.71	5290.86
Total profits (CNY 100 million)	45.18	210.80	372.69
Financial expenses (CNY 100 million)	178.69	-161.80	-147.49
Surplus reserve (CNY 100 million)	500.91	683.85	737.41
Undistributed profits (CNY 100 million)	264.56	409.43	671.24
Retained earnings (CNY 100 million)	765.47	1093.29	1408.65
Market value (CNY 100 million)	7768.68	7447.88	5764.06
Revenue (CNY 100 million)	2161.42	4240.61	6023.15
X_1	-0.02	-0.19	-0.22
X_2	0.26	0.22	0.21
X_3	-0.05	0.01	0.03
X_4	4.06	2.00	1.09
X_5	0.73	0.86	0.89
Z	3.36	2.18	1.67

According to the data from 2021 to 2023, BYD's financial risk has experienced some

fluctuations. In 2021, the company enjoyed a favorable financial standing with a low possibility of bankruptcy. In 2022, its financial status worsened with its Z-score falling into the grey zone, indicating a moderate risk of bankruptcy. In 2023, the company experienced its worst financial condition with a Z-score below 1.8, indicating an extremely high likelihood of bankruptcy. The Z-score of BYD has been falling from 3.36 in 2021 to 1.67 in 2023, from being far from bankruptcy to having a high likelihood of it. This presents that BYD's performance is declining while the risk of financial crisis is emerging.

5. Causes of Risk

5.1. Intensified Market Competition

As more and more traditional automakers and emerging NEV companies enter the market, the NEV sector is witnessing unprecedented competition. For example, companies like Tesla, NIO, and Xiaomi are constantly introducing new models with improved technologies [3]. Although BYD has strong performance within China's market, it still needs to continuously improve the technological standards of its products and market share facing heightened competition from Tesla and other international automakers.

5.2. Price Fluctuations in supply Chain and Raw Materials

During the period from 2021 to 2023, the global chip shortage and rising raw material prices (such as lithium, cobalt, and nickel used in batteries) imposed pressure on the supply chain of the NEV sector [6]. According to the latest research report released by Susquehanna in 2022, the time from ordering chips to delivery has increased from approximately three months in 2017 to more than half a year (26.6 weeks) by March 2023. Meanwhile, the prices of chips have been rising due to shortage, further influencing the supply chain of NEVs. Consequently, researchers are studying the recycling potential of lithium, cobalt, and nickel.

6. Suggestions for Risk Prevention and Control

6.1. Financing Risk

Financial monitoring should be enhanced to regularly assess and monitor financial status and debt levels, thereby timely adjusting financing strategies. A comprehensive warning mechanism should be established to enable prompt response in cases of fluctuations in market interest rates or an increase in funding costs. Subsidiaries and parent companies should also implement different designs for different businesses. This will effectively prevent opportunists from taking advantage, thereby reducing the financing risk [7].

6.2. Investment Risk

a) Investment should be diversified to avoid concentration in a single project or technology. A diversified investment strategy helps mitigate risks. Therefore, companies can pursue diverse investments in NEV-related sectors, such as battery technology, and intelligent driving, vehicle service [8].

b) An investment risk management committee should be established. A specialized committee, responsible for reviewing and overseeing investment projects, ensures scientific and rational investment decisions. The committee should regularly assess the implementation of investment

projects, identifying and addressing problems of the investment process [8, 9].

6.3. Fund Operation Risk

a) Cash flow management should be strengthened. A cash flow management system should be established and optimized to monitor the turnover of working capital. This will ensure sufficient cash flow for the company for daily operations and short-term debt repayment. A rolling budget and forecasting model should be used to predict and address potential fund shortages.

b) Regular audits and monitoring should be conducted. Internal control and audits should be enhanced. Through regular financial audits and monitoring, problems and defects in fund management can be identified in time, thereby promoting the implementation of improvement measures [9, 10].

7. Conclusion

In conclusion, in the context of the information age, the disclosure of corporate financial information can promote financial risk analysis, as well as the development of appropriate measures and solutions. Based on the financial statement and other financial information disclosed by BYD, this study calculates its risk level from 2021 to 2023 using the Z-score model. It is found that the risk of a financial crisis amplifies while BYD's revenue increases. The Z-score has fallen from 3.36 in 2021 to 1.67 in 2023, presenting an extremely high risk of bankruptcy.

To shift this trend, BYD should take both its conditions and market conditions into consideration, developing risk-coping strategies suited to its growth. It should strengthen financial monitoring, mitigate investment risk with a diversified investment strategy, enhance cash flow management, and establish relevant monitoring bodies to timely identify and address problems, improve financial status, and reduce financial risks.

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