

Research on the Influence of Financial Status of Benxi Steel Sheet Material on Stock Price Under the Perspective of Big Data

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Abstract: Based on the financial data and stock price information of Bengang Steel Plates Co. Ltd. from 2004 to 2023, this paper uses SPSS 26 software, combined with DuPont Analysis and Wall Score Method, to explore the correlation between stock price and nine key financial indicators selected from three dimensions: profitability, development capability, and operating capability, including fixed asset growth rate, price-to-book ratio (P/B ratio), and gross profit margin. Through correlation analysis, multiple regression analysis, and curve fitting, the study finds that: fixed asset growth rate, P/B ratio, and gross profit margin show a significant positive correlation with stock price; return on equity (ROE), operating income, and accounts receivable turnover days show a significant negative correlation with stock price; earnings per share (EPS) and net profit growth rate do not show a significant correlation with stock price. The research results indicate that the stock price of Bengang Steel Plates Co. Ltd. is greatly affected by its asset scale and market valuation, while some profitability indicators have not been effectively transmitted to the stock price. Finally, countermeasures and suggestions are put forward from the aspects of cost control, technological innovation, market expansion, and financial structure optimization, so as to provide references for corporate operation and investment decisions.

Keywords: Bengang Steel Plates Co. Ltd.; Financial indicators; Stock price impact

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1. Introduction

The steel industry occupies a pivotal position in China's industrial sector. Studying the relationship between Bengang Steel Plates Co. Ltd.'s (hereinafter referred to as "Bengang Steel Plates") stock price and its financial information, conducting an in-depth analysis of key financial indicators, understanding the underlying economic implications and market logic, and revealing the enterprise's operational status, profitability, solvency, and future development potential, all while using financial analysis tools to predict fluctuations in the company's stock price,

can help investors seize investment opportunities amid stock market volatility.

This research also provides references for enterprises to gain insights and make precise decisions in the complex and ever-changing market environment, thereby contributing to the development of the hometown.

2. Methodology

2.1. Data selection

The sample data in this paper are obtained from the financial indicators and closing price information of Bengang Steel Plates on the Sina Finance platform. For the case analysis, financial indicators within the time span from 2004 to 2023 are selected as the research objects, and all data are summarized on an annual basis. Since the adopted data are entirely derived from the annual reports publicly disclosed by the listed company, the consistency of statistical standards is ensured, thereby enhancing the comparability of the data. In the data processing stage, this paper mainly relies on SPSS 26 software to conduct scientific and standardized processing of the above indicator data.

With fundamental analysis as the core, a comprehensive evaluation is systematically carried out from three dimensions: profitability, development capability, and operating capability.

To ensure the comprehensiveness and accuracy of the analysis, the DuPont Analysis and Wall Score Method are selected as the analytical methods. Combined with the research results of relevant scholars, nine key financial indicators are further identified, including fixed asset growth rate, price-to-earnings ratio (P/E ratio), net profit margin on sales, EPS, gross profit margin, operating income, net profit growth rate, inventory turnover rate, and accounts receivable turnover days.

Through a comprehensive analysis of these indicators, this paper strives to fully and objectively reveal the enterprise's financial status and operating performance.

2.2. Research hypotheses

Through literature research, this paper finds that with the continuous maturity of the market and the increasing improvement of the securities regulatory system, the role of financial information in stock returns has become increasingly prominent^[1]. In this context, if there are no significant differences in control variables such as policy factors and macroeconomic environment, the financial status of listed companies will have a significant impact on their stock returns^[2,3].

To further explore the intrinsic connection and degree of influence between different financial indicators of listed companies and stock price trends, this paper proposes the following nine hypotheses based on the implications of the indicators and existing research on the relationship between relevant indicators and corporate performance:

- (1) H10: There is no positive impact relationship between the fixed asset growth rate (financial indicator) and stock price;
H11: The fixed asset growth rate (financial indicator) has a positive impact on stock price.
- (2) H20: There is no positive impact relationship between the price-to-book ratio (P/B ratio, financial indicator) and stock price;
H21: The price-to-book ratio (P/B ratio, financial indicator) has a positive impact on stock price;
- (3) H30: There is no positive impact relationship between the return on equity (ROE, financial indicator) and

- stock price;
- H31: The return on equity (ROE, financial indicator) has a positive impact on stock price;
- (4) H40: There is no positive impact relationship between earnings per share (EPS, financial indicator) and stock price;
- H41: Earnings per share (EPS, financial indicator) has a positive impact on stock price;
- (5) H50: There is no positive impact relationship between the gross profit margin (financial indicator) and stock price;
- H51: The gross profit margin (financial indicator) has a positive impact on stock price;
- (6) H60: There is no positive impact relationship between operating income (financial indicator) and stock price;
- H61: Operating income (financial indicator) has a positive impact on stock price;
- (7) H70: There is no positive impact relationship between the net profit growth rate (financial indicator) and stock price;
- H71: The net profit growth rate (financial indicator) has a positive impact on stock price;
- (8) H80: There is no positive impact relationship between the inventory turnover rate (financial indicator) and stock price;
- H81: The inventory turnover rate (financial indicator) has a positive impact on stock price;
- (9) H90: There is no positive impact relationship between accounts receivable turnover days (financial indicator) and stock price;
- H91: Accounts receivable turnover days (financial indicator) has a positive impact on stock price.

2.3. Data analysis process

2.3.1. Correlation analysis

This study uses SPSS 26 software to conduct an in-depth analysis of the data and explores the correlation between various indicators and stock price through the Pearson test.

The test and analysis show that three indicators of Bengang Steel Plates: fixed asset growth rate, P/B ratio, and gross profit margin exhibit a significant positive correlation with stock price. At the same time, three other indicators: ROE, operating income, and accounts receivable turnover days show a significant negative correlation with stock price.

However, it is worth noting that the significance levels of net profit growth rate and EPS are higher than 0.05, so they do not show an obvious correlation with stock price. Finally, the inventory turnover rate is correlated with stock price, but the degree of correlation is relatively low, resulting in a minimal impact on stock price.

2.3.2. Multiple regression analysis

The goodness of fit of the model is 0.872, indicating that the sample representativeness is generally good. The adjusted R^2 value is 0.867, which also shows that the model has a good goodness of fit. The Durbin-Watson value is 1.917, which is close to 2. This usually means that the residuals are randomly distributed and do not show obvious autocorrelation. Therefore, the model residuals follow a normal distribution, and the explanatory power of the model is strong.

Five out of the seven financial indicators are included in the multiple regression model. Among these five indicators, fixed asset growth rate, ROE, inventory turnover rate, operating income, and accounts receivable

turnover days show a significant correlation with stock price. The formula is as follows:

$$Y \text{ (Closing Price)} = 3.423X \text{ (Fixed Asset Growth Rate)} - 3.352X \text{ (ROE)} - 3.325X \text{ (Operating Income)} + 0.921X \text{ (Inventory Turnover Rate)} - 2.669X \text{ (Accounts Receivable Turnover Days)} \quad (3-6)$$

Specifically, there is a significant positive correlation between fixed asset growth rate and stock price. This means that as the fixed assets of Bengang Steel Plates continue to appreciate, positive signals are released, and the stock price is driven by scale. Thus, the stock price will show a synchronous upward trend. This finding reflects the positive impact of fixed asset growth on the company's stock price and demonstrates the market's recognition of the company's asset appreciation.

However, three indicators: ROE, operating income, and accounts receivable turnover days exhibit a significant negative correlation with stock price. This indicates that as these indicators change, the stock price will show an opposite trend. These negative correlations reflect that the enterprise drives its stock price not through its core strength but through scale expansion, reminding investors to consider multiple factors comprehensively when paying attention to the company's financial status.

2.3.3. Curve analysis

In the regression analysis, in addition to the variables already included in the model, there are two variables that are significant but not included. These two variables are the P/B ratio and gross profit margin, which reflect Bengang Steel Plates' market performance and operating efficiency. The P/B ratio represents the relationship between the market value and book value of the company's stock, and it is one of the important indicators for investors to judge whether a company is undervalued or overvalued. The gross profit margin, on the other hand, reflects the company's profitability in the production or sales process and indicates the effectiveness of the company's cost control and pricing strategies.

The P/B ratio curve of Bengang Steel Plates shows different influence trends in different ranges. Specifically, when the P/B ratio is in the range of 0.5 to 1.5, its impact on the company is relatively significant. This means that within this range, small changes in the P/B ratio will significantly affect the company's stock price. However, when the P/B ratio enters the range of 1.5 to 2.5, its impact becomes moderate. Within this range, the increase or decrease in the P/B ratio will have a relatively small impact on the company's performance.

The gross profit margin curve of Bengang Steel Plates shows different influence characteristics in different ranges. Specifically, when the gross profit margin is in the range of 0% to 60%, its impact on the stock price is relatively moderate. However, when the gross profit margin rises from 60% to 105%, its impact begins to become significant. This means that the increase in the gross profit margin has a more positive driving effect on the overall stock price of Bengang Steel Plates.

2.3.4 Analysis of research results

Table 1. Verification results of assumed relationships for this steel plate

Hypothesis	Result
H11: The fixed asset growth rate (financial indicator) has a positive impact on stock price	Supported
H21: The price-to-book ratio (P/B ratio, financial indicator) has a positive impact on stock price	Supported
H30: There is no positive impact relationship between the return on equity (ROE, financial indicator) and stock price	Supported
H40: There is no positive impact relationship between earnings per share (EPS, financial indicator) and stock price	Supported
H51: The gross profit margin (financial indicator) has a positive impact on stock price	Supported
H60: There is no positive impact relationship between operating income (financial indicator) and stock price	Supported
H70: There is no positive impact relationship between the net profit growth rate and stock price	Supported
H80: There is no positive impact relationship between the inventory turnover rate and stock price	Supported
H90: There is no positive impact relationship between accounts receivable turnover days and stock price	Supported

The verification results of H11 clearly reveal a positive correlation between stock price and the fixed asset growth rate of Benxi Iron and Steel Plate Co. Ltd.

Similarly, the verification results of H21 also indicate a positive correlation between stock price and the P/B ratio of the company. Furthermore, the verification results of H51 demonstrate a positive correlation between the gross profit margin of Benxi Iron and Steel Plate Co. Ltd. and its stock price.

This finding suggests that when investors pay attention to the fundamentals of Benxi Iron and Steel Plate Co. Ltd., they are placing increasing emphasis on the impact of the company's profitability on its stock price. As a crucial indicator for measuring a company's profitability, an increase in gross profit margin is often capable of attracting more investors' attention, thereby driving up the stock price. Therefore, for investors, closely monitoring changes in the gross profit margin of Benxi Iron and Steel Plate Co. Ltd. will help them better seize investment opportunities.

3. Conclusion: Policy recommendations

Investors base their decisions on in-depth analysis and rational investment, aiming to pursue steady returns. In their considerations, a company's profitability has always been a key focus. It not only serves as a critical indicator for evaluating a company's comprehensive competitiveness but also constitutes an important factor determining investment value. Therefore, for enterprises like Benxi Iron and Steel Plate Co. Ltd., continuously enhancing their own profitability is undoubtedly a core mission in daily operations.

Benxi Iron and Steel Plate Co. Ltd. should improve its profitability through refined cost control. By implementing a series of measures such as optimizing production processes, reducing raw material procurement costs, and enhancing equipment utilization efficiency, the enterprise can effectively reduce production costs, thereby expanding profit margins. In addition, the enterprise should also attach importance to technological innovation, increase R&D investment, and continuously launch new high-value-added products to further strengthen its profitability.

In terms of market expansion, Benxi Iron and Steel Plate Co. Ltd. also has the potential to improve profitability. The enterprise should actively explore overseas markets and establish long-term and stable strategic cooperative relationships with well-known international iron and steel enterprises. Through diversified marketing

activities such as participating in international exhibitions and holding product promotion conferences, it can continuously enhance brand awareness and market influence, thus laying a solid foundation for improving profitability.

In terms of financial management, Benxi Iron and Steel Plate Co. Ltd. can take measures to strengthen internal controls to achieve an appropriate P/B ratio. This not only helps ensure the accuracy and reliability of financial information but also provides investors with a clearer financial perspective, thereby guiding them to make more informed investment decisions.

The rational allocation of debt and equity financing is an important means to reduce financial risks and improve a company's debt-servicing capacity and credit rating. Benxi Iron and Steel Plate Co. Ltd. can formulate a reasonable financing strategy based on the company's operating conditions and market environment. In terms of debt financing, the company can raise funds by issuing bonds, obtaining bank loans, and other methods; however, it should pay attention to controlling the scale of debt and debt costs to avoid excessive borrowing that may increase financial risks. In terms of equity financing, the company can attract investors by issuing new shares, implementing equity incentives, and other approaches to enhance its capital strength.

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Disclosure statement

The authors declare no conflict of interest.

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