

# The Application of EVA in the Performance Appraisal of Ningde Times

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**Abstract:** *Most of the traditional performance appraisal indexes, due to their own shortcomings, lead to investors' capital investment but fail to obtain good performance feedback. Therefore, traditional performance appraisal is gradually shifting to EVA model as a new appraisal standard. Based on the EVA model proposed by Stensted in the 1980s, this paper applies the model to the performance evaluation of new energy industry companies, and takes Ningde Times, a leading company in the new energy industry, as an example to carry out EVA model analysis and achieve a reasonable evaluation of its performance. Based on the analysis results of EVA model of Ningde Times, this paper puts forward some feasible suggestions on introducing EVA model, improving innovation ability and strengthening internal management control of Ningde Times Company.*

**Keywords:** *EVA model, New energy industry, Ningde Times, Economic value added, Performance Evaluation*

## 1. Introduction

### 1.1 Effective performance evaluation indicators

It is true that with the development of economic globalization, corporate performance has become a key factor in measuring corporate performance management. As a result, many companies and investors are looking for better performance evaluation indicators to measure a company's performance. Traditional indicators such as MBO goal management [1], BSC balanced scorecard [2], KPIs, 360-degree performance evaluation, and OKR goals have been used extensively for corporate performance evaluation, but they may not always provide a complete and accurate picture of a company's performance. Innovative indicators such as EVA (Economic Value Added) can provide a more value-oriented approach to performance evaluation compared to traditional financial indicators. For example, in the case of Yutong Bus, Hou Minghui [3] applied EVA indicators to its financial appraisal and concluded that it could better achieve performance evaluation by shifting from a profit-oriented to a value-oriented approach. Similarly, in the case of Huadong Medicine, Hou Jianwen [4] applied the EVA index to the study of its strategic transformation strategy and found that it could better identify the deficiencies in the company's financial performance and realize transformation and upgrading.

### 1.2 Our work

This paper explores the feasibility of adopting the EVA performance evaluation model for Ningde Times [5]. Secondly, we use data from Ningde Times between 2018 and 2021 to calculate its EVA value and compare the traditional corporate performance evaluation model with the EVA performance evaluation model. We also explore the corporate benefits based on the application of the EVA model in the performance evaluation of Ningde Times [6]. Finally, this paper proposes corporate feasibility recommendations based on the results of the EVA performance evaluation of Ningde Times.

### 1.3 The arrangement

Section 1, we introduce the EVA index, and explains the application of EVA in the performance evaluation of mainstream large-scale enterprises. Section 2, analyzes the feasibility of using EVA index in the performance evaluation of Ningde era. Section 3, here we use the annual report data of Ningde era EVA indicators, and compared with other traditional indicators. Section 4, we study how EVA indicators

make up for the defects of traditional indicators and obtain more accurate assessment results. Section 5, we start from the assessment indicators, cost reduction and efficiency, innovation, and give feasible suggestions. Conclusion, the introduction of EVA index is helpful to enhance the value of the company, protect shareholders' rights and interests, and promote the development of the enterprise.

## **2. Economic Value Added (EVA)**

EVA is a popular financial performance measure that aims to capture the true economic profit generated by a company [7]. It takes into account the cost of capital invested by both creditors and shareholders, and subtracts this from the net profit after tax to arrive at the EVA value. The EVA model encourages managers to make decisions that are aligned with the long-term interests of the company and its shareholders by focusing on the creation of economic value for shareholders. This can help prevent the pursuit of short-term gains.

## **3. Feasibility analysis**

### ***3.1 Feasibility analysis of the EVA model for Ningde Times***

As a prominent player in the global new energy industry, Ningde Times must carefully weigh multiple factors when making critical business decisions. To reduce financial risk, encourage management to set long-term and efficient goals, and lower capital costs, the company has introduced the EVA evaluation system [8]. However, the performance evaluation system must also consider the relationship between liabilities and earnings to prevent management from using high financial leverage for short-term gains.

In this paper, we examine the high boom, valuation, and growth of the new energy industry with a focus on protecting shareholder rights. Although the industry has high potential for speculation, it also comes with high risk. We introduce the EVA performance appraisal index as a way to protect shareholders' interests using Ningde Era as a case study. The indicators in the EVA model emphasize that operators must align with shareholders' interests to make decisions that benefit everyone involved.

### ***3.2 EVA-related adjustment items***

In this study, we focus on the EVA model, which is a popular method for evaluating company performance. The model includes many items that require adjustment, and our research aims to highlight the importance and universality of this model. Specifically, we examine the financial characteristics of Ningde era and the company's future development trends.

We have selected the following adjustments for our study to identify the items with the greatest impact on EVA calculations:

(1) Deferred income tax: When a company completes a project, any deferred tax assets associated with it no longer generate value and should be deducted from total assets. Deferred income tax liabilities, which represent future tax obligations, should be considered part of investments and included in total assets.

(2) Finance costs: Interest on debt, which represents the cost of capital, cannot be included in the calculation of net profit after tax. Otherwise, the EVA value will decrease [9].

(3) R&D expenses: In accounting, all expenses incurred during the R&D stage are typically capitalized, provided that they meet R&D requirements.

(4) Provisions: To accurately calculate the net operating profit after tax and total invested capital, it's essential to account for certain factors, such as the provision for bad debts and the reserve for inventory depreciation. This reserve is commonly known as the asset impairment reserve.

(5) Non-recurring gains and losses: Non-operating income can be volatile and subject to daily trading. To accurately reflect corporate profits, it is essential to exclude the impact of non-operating income.

#### 4. Ningde Times 2018-2021 EVA index calculation

##### 4.1 Calculation of net operating profit after tax

This study analyzes the annual report data of Ningde Times from 2018 to 2021. Specifically, we investigate how the adjustments of interest expenses, non-operating income, research and development expenses, and the increase in deferred tax credit balance impact the company's net profit, ultimately resulting in NOPAT. Its accounting treatment is shown in Table 1.

Table 1: Ningde Times 2018-2021 after-tax net operating profit calculation table

(Unit: ten thousand yuan)

Analysis of financial indicators	2021Y	2020Y	2019Y	2018Y
operating profit	1982372.92	695948.96	575879.33	416847.63
Add: income tax expense	202639.90	87863.54	74809.07	46891.68
Interest expense	116110.04	64043.43	28925.45	20443.53
EBIT	2301122.86	847855.93	679613.84	484182.84
× (1 - average income tax rate)	0.85	0.85	0.85	0.85
profit after interest and taxes	1955954.43	720677.54	577671.76	411555.42
Add: R&D expenditure	769142.76	356937.77	299210.75	199100.04
Increase in deferred tax liabilities	21544.99	-567.31	5020.75	-2800.76
Operating expenses	11963.98	7125.42	6045.68	2596.63
Asset impairment provision increased	87826.75	-50053.36	69509.34	73016.81
Less: Increase in deferred tax assets	237544.45	108789.94	83847.28	73069.25
Non-operating income	18303.97	9431.81	6242.81	6230.33
Operating net profit after tax	2590584.49	915898.30	867368.19	604168.56
Less: Increase in deferred tax assets	237544.45	108789.94	83847.28	73069.25
Non-operating income	18303.97	9431.81	6242.81	6230.33
Operating net profit after tax	2590584.49	915898.30	867368.19	604168.56

##### 4.2 Calculation of total capital (TC)

The historical total capital analysis table and the specific calculation process for 2018-2021 of Ningde Times are shown in Table 2.

Table 2: Total capital calculation table of Ningde Times 2018-2021

(Unit: ten thousand yuan)

Analysis of indicators	2021Y	2020Y	2019 Y	2018 Y
Short-term borrowings	1212305.69	633508.02	212564.67	118009.21
Bonds Payable	1585505.20	1438225.60	150833.92	0.00
Non-current liabilities due within 1 year	354853.28	134903.87	107746.85	92902.40
Long-term borrowings	2211907.88	606816.33	498056.32	349076.78
Debt Capital	5364572.05	2813453.82	969201.76	559988.39
Common stock interests	8451327.13	6420729.94	3813498.39	3293828.09
Minority interests	810890.32	498741.71	405289.13	226188.97
Add: Current value of provision for asset impairment	204773.94	116947.19	167000.55	97491.22
R&D expenses	769142.76	356937.77	299210.75	199100.04
Balance of deferred income tax liabilities	103857.69	8551.88	9119.19	4098.45
Non-operating expenses	11963.98	7125.42	6045.68	2596.63
Less: Balance of deferred income tax assets	554255.44	316710.99	207921.05	124073.77
Non-operating income	18303.97	9431.81	6242.81	6230.33
Total Capital	15143968.46	9896344.93	5455201.59	4252987.69
Short-term borrowings	1212305.69	633508.02	212564.67	118009.21
Bonds Payable	1585505.20	1438225.60	150833.92	0.00

4.3 Calculation of weighted cost of capital (WACC)

The cost of capital is the cost of debt capital and the cost of equity capital. Proportion of total capital, cost of debt capital, cost of equity capital, etc. It is shown in Table 3.

Table 3: Calculation table of capital structure analysis of Ningde Times

(Unit: ten thousand yuan)

Capital Structure Analysis	2021Y	2020Y	2019 Y	2018 Y
Debt Capital	5364572.05	2813453.82	969201.76	559988.39
Equity capital	9779396.41	7082891.11	4485999.83	3692999.30
Total Capital	15143968.46	9896344.93	5455201.59	4252987.69
Debt capital weighting	0.35	0.28	0.18	0.13
Share of equity capital	0.65	0.72	0.82	0.87

Constraints such as risk-free interest rate, market risk premium and  $\beta$  value should be set in order to calculate the value of WACC. The following assumptions are made in this study to facilitate the development of the calculation.

- Blue: risk premium
- Red: warehouse transfer sign
- Black: Median
- Green: Opportunity Value

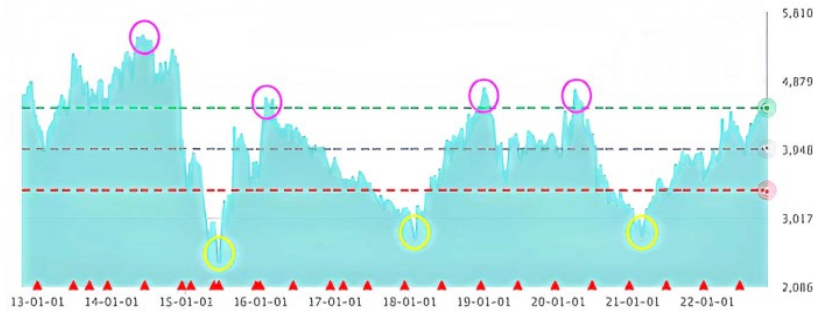


Figure 1: The degree of fit between the risk premium of CSI 300 and the relative returns of stocks and bonds in different holding periods

Within academic circles, the risk-free rate of return is often assessed using the five-year Treasury bond interest rate [10]. In our study, According to Figure 1, we chose the interest rate of the five -year bonds issued on December 31, 2021 to 3.97 %, which will be used as an alternative value of risk -free interest rates. To account for the uncertainty of market risk, we calculated income from 2018 to 2021 by taking 1/P/E (%) minus the China 10-year Treasury bond yield. Furthermore, as the cost of debt capital, we utilized the five-year loan interest rate of 4.65%, which was issued by the Bank of China on December 31, 2021. Finally, we were able to determine that the beta value of Ningde Times is 1.66.

The calculation gives the weighted average cost of capital for 2018-2021, the results of which are shown in Table 4.

Table 4: Weighted average cost of capital calculation table for 2018-2021 for Ningde Times

(Unit: ten thousand yuan)

Analysis of indicators (%)	2021 Y	2020Y	2019 Y	2018 Y
Equity capital ratio	64.58	71.57	82.23	86.83
Debt to capital ratio	35.42	28.43	17.77	13.17
Risk-free interest rate	3.97	3.97	3.97	3.97
Market risk premium	5.46	4.10	6.03	6.88
$\beta$	1.66	1.66	1.66	1.66
(Ke) Cost of equity capital	7.93	4.32	9.45	11.71
After-tax cost of debt capital	3.95	3.95	3.95	3.95
Weighted average cost of capital	6.52	4.19	7.50	8.96

The cost of equity capital  $K_e$  is calculated by the formula.

$$K_e = R_m + \beta \times (R_m - R_f) \tag{1}$$

In this study,  $R_f$  is the risk-free rate of return,  $\beta$  is a systemic market risk,  $R_m$  is the expected rate of return for investors in the market,  $(R_m - R_f)$  is the premium required by the investor due to the risk [11].

Weighted average cost of capital calculation formula.

$$WACC = \frac{E}{(E+D)} \times K_e + \frac{D}{E+D} \times K_d(1 - T) \quad (2)$$

We calculated the EVA value of each year from 2018 to 2021 in Ningde Era, as shown in Table 5.

Table 5: Ningde Times EVA 2018-2021 (Unit: ten thousand yuan)

	2021Y	2020 Y	2019Y	2018Y
Net operating profit after tax	2590584.49	915898.30	867368.19	604168.56
Total Capital	15143968.46	9896344.93	5455201.59	4252987.69
Weighted average cost of capital (%)	6.52	4.19	7.50	8.96
EVA	1603197.75	501241.45	458228.07	223100.86

Equation 3 is the EVA value calculation formula.

$$EVA = NOPAT - WACC \times TC \quad (3)$$

#### 4.4 Evaluation of Ningde Times' EVA metrics for 2018-2021

According to this study, the EVA value in the Ningde era from 2018 to 2021 was positive and increased annually. In 2021, the increase was a whopping 219.85%, amounting to 110.1956.30 million yuan. This growth is attributed to the expansion of Ningde Times and its significant increase in operating revenue. The company's growth rate in 2020 was 430,133,800 yuan, indicating a 9.39% increase, mainly due to the escalating competition in the new energy market and the COVID-19 pandemic's severe impact on the industry's cyclic demand. Meanwhile, in 2019, the amount increased by 105.39% to 235,127.21 yuan. These findings demonstrate that Ningde Times actively responds to policy guidelines and focuses on developing the new energy industry to create potential value for its shareholders. Additionally, the study shows that the management of Ningde era has formulated a rational operation and management strategy, maintaining the company's interest orientation consistent with its shareholder's interest, ensuring that the company adds value to its shareholders.

According to this study, Ningde Times' EVA value has been steadily increasing from 2018 to 2021. The enterprise shows significant potential for development and meets the necessary constraint conditions required by the EVA performance evaluation model, which mandates that the enterprise must be in a continuous earnings state.

## 5. Combined with traditional metrics analysis

### 5.1 Comparison of Net Income and EVA

While net profit is a standard numerical measure used in accounting, EVA (Economic Value Added) focuses specifically on profit after taking into account the cost of equity capital. Both indicators offer different perspectives on an enterprise's problems. In this study, we compare and analyze traditional indicators with EVA indicators to evaluate Ningde Times' financial performance using various metrics. We calculated the EVA index and net profit index from 2018 to 2021 in Ningde Era, as shown in Table 6.

Table 6: Comparison of Net Income and EVA of Ningde Times (Unit: ten thousand yuan)

	2021Y	2020 Y	2019Y	2018Y
Net Profit	1786073.01	610391.81	501267.4	373589.6
EVA	1603197.75	501241.45	458228.1	223100.9

The EVA index and net profit index both show a positive trend based on the general analysis of both indices. The EVA index is calculated by deducting non-recurrent gains and losses from the net profit and subtracting the cost of equity capital [12]. It may yield a lower value than net profit, making it a stricter measure than traditional indices. As such, it provides a more precise reflection of an enterprise's profitability level.

### 5.2 Comparison of return on net assets and EVA ratio of net assets

The EVA ratio of net assets can be obtained by dividing the calculated EVA value by shareholders' equity. The EVA value is computed based on the deduction of non-recurring gains and losses. Table 7 shows the results of calculating both the EVA rate on net assets and the return on net assets using the same calculation method.

Table 7: Comparison of Net Income and EVA of Ningde Times (Unit: ten thousand yuan)

	2021Y	2020 Y	2019Y	2018Y
Net Asset EVA Ratio	26.81%	8.38%	7.66%	3.73%
Return on Net Assets	29.87%	10.21%	8.38%	6.25%

This study reveals that the fluctuation of ROE is similar to the EVA rate of net assets. During 2018-2021, the return on equity was higher than the EVA ratio due to low net profit after deducting non-recurring gains and losses. Therefore, the EVA ratio of net assets was relatively low compared to the return on equity, but it more accurately reflected Ningde Times' actual profit situation. The company still managed to achieve positive profitability despite deducting equity capital.

A significant increase in the return on equity in 2021 led to a rapid rise in the EVA ratio of net assets. However, 2021 also saw considerable changes in the capital structure, as the debt ratio increased significantly, equity capital showed a downward trend, and the cost of equity was higher than the cost of debt capital. Consequently, the rate of EVA did not increase as fast as the rate of return on equity.

As the trends of ROE and the EVA ratio of net assets are similar, we can deduce that the latter provides a more accurate reflection of an enterprise's true profitability. Furthermore, its low volatility contributes to a more reasonable evaluation of a company's financial performance[13].

### 5.3 Comparison of earnings per share and EVA per share

We divide EVA by the weighted average number of common shares outstanding to calculate the EVA per share. Similarly, earnings per share used in this study are also computed by deducting non-recurring gains and losses. Both calculations follow the same criteria, and the results are presented in Table 8 for comparison.

Table 8: Comparison of net profit EVA ratio and return on net assets of Ningde Times (Unit: Yuan)

	2021Y	2020 Y	2019Y	2018Y
Earnings per share	6.88	2.49	2.09	1.64
EVA per share	7.39	2.31	2.11	1.03

The research indicates that Ningde Times has consistently recorded positive annual earnings per share and a rapid growth rate, making it an attractive investment option with substantial value for value investors between 2018 to 2021. Generally, changes in EVA per share and earnings per share in Ningde Times are similar, indicating that EVA per share accurately reflects the changes in earnings per share. The EVA per share increased from RMB1.03 in 2018 to RMB7.39 in 2021, demonstrating Ningde Times' reasonable adjustment of capital structure and effective use of financial leverage. The company successfully reduced the cost of capital and achieved its business expansion goals.

Traditional indicators may be influenced by the company's management, leading to an irreparable impact on investors overall. Thus, introducing EVA indicators is necessary to evaluate an enterprise's financial performance accurately.

## 6. Policy recommendations for financial performance of Ningde Times

### 6.1 Introducing EVA for evaluation

The findings of this study demonstrate that the EVA index and traditional financial indices offer different perspectives on Sunde era's operational performance. In recent years, Ningde Times has consistently increased its capital investment, resulting in exceptional performance according to the EVA index.

The capital invested by the organization yields a higher rate of return, allowing shareholders to benefit from wealth appreciation [14]. This paper combines traditional indicators with EVA indicators to evaluate the financial performance level of Ningde comprehensively and objectively [15].

## 6.2 Enterprise innovation ability

Ningde Times' net profit has shown a slower upward trend than in previous years, primarily due to increased competition. With more choices available to consumers, Ningde Times has less bargaining power in the market. Additionally, the subsidy scale reduction in the new energy vehicle industry in 2019 has significantly impacted the sales volume of new energy vehicles, which also affected Ningde era's performance. To maintain long-term, sustainable earnings, enterprises must seek breakthroughs from the demand side and introduce high-tech talent through continuous innovation.

In order to reduce dependence on subsidies, companies like Ningde Times must continue to adhere to independent innovation, increase publicity and marketing efforts, and open up new markets. This will help them achieve real value creation and ensure continued success in the future.

## 6.3 Enterprise internal management control

Ningde Time is currently the leader in the power battery business, and its recycling and energy storage businesses are thriving too. While the company's success can be attributed to its own strength, it also reflects the rapidly growing industry. However, relying solely on industry dividends in this highly competitive market is unsustainable. Ningde Era's gross profit has continued to decline, making it imperative to prioritize efforts to reduce costs and improve efficiency.

(1) We suggest two main strategies. Firstly, the financial department should collaborate horizontally with the production, sales, and purchasing departments to develop material purchase plans by improving profit quality and strengthening cash control. The company should adjust its production schedule and marketing strategy, focusing on reducing inventory levels and minimizing cash occupation. Improving the company's profit quality can be done by decreasing the proportion of credit sales and enhancing the recovery of accounts receivable, especially for downstream buyers such as automobile manufacturers targeted by the power lithium battery business.

(2) Secondly, we recommend increasing the proportion of accounts payable, optimizing the debt structure, and further implementing the OPM (Operations Performance Management) strategy. This will enhance overall strength, increase bargaining power with upstream suppliers, increase the proportion of accounts payable in current liabilities, improve working capital efficiency, and reduce financial pressure.

## 7. Conclusion

This paper argues that introducing the EVA (Economic Value Added) performance appraisal index for financial condition can enhance a company's value. As an example, we evaluated the EVA value of Ningde Times during the stage of expansion and efficiency enhancement over the previous four years. This approach aims to protect shareholders' rights and interests while promoting enterprise development. Our findings revealed that traditional performance appraisal methods inflate a company's profit and lack proper assessment, making it difficult to accurately reflect its actual situation.

We firmly believe that introducing the EVA performance appraisal index can help managers make informed investment decisions and avoid distorting financial information. Through evaluating financial performance, companies can improve their innovation ability and strengthen internal control to enhance their overall value. Managers should set reasonable strategies that align with investors' objectives to protect shareholders' rights and interests. Enterprises should objectively analyze the evaluation results of their own EVA models and identify any shortcomings that need correction. Improving internal management and decision-making ability can help the EVA model play a crucial role in performance appraisal. We aim to enhance the universality of the model and promote development in the field of performance evaluation.

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