

# Value Analysis Based on Investment in the New Energy Industry

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**Abstract.** New energy is an environmentally friendly industry that includes lithium batteries, new energy vehicles, and many other sub-industries that are gradually replacing traditional fossil fuel energy, and is a hot spot in society and an emerging industry that needs to be promoted urgently. Based on the new energy industry's rapid development and surge of heat, the study of the investment situation of the whole industry, represented by three companies involved BYD, CATL, and LONGI green energy was launched. The research indicated that the new energy industry is a growing industry, risks and opportunities at the same time, and various types of investors may choose this industry. In the final analysis, the purpose of this essay is to explore the commonalities and characteristics of different companies in the same industry in the hope of summarizing the patterns and general direction of investment in the new energy industry at this stage.

**Keywords:** New energy, Investment, Development.

## 1. Introduction

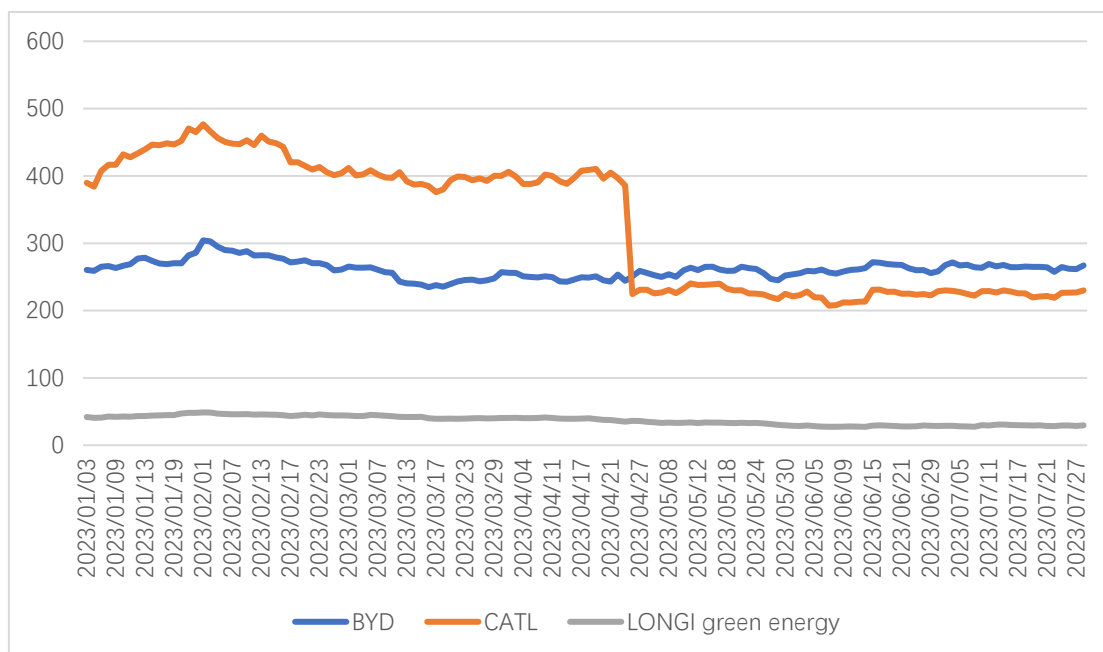
The proposal of the "dual carbon" goal highlights China's determination and boldness in addressing climate change and will have a far-reaching impact on social life, economic development and other aspects. This goal has brought new opportunities and challenges to the development of the new energy field, requiring a large number of scientific research and innovation talents engaged in related fields, and promoting major changes in the demand for talent knowledge structure[1]. In the era of comprehensive and rapid development of economy, culture, science, and technology, the new energy industry in the field of science and technology is changing with each passing day, including lithium batteries, especially electric vehicles. The first patent for lithium-ion batteries was published in 1981 and the battery industry involved mainly applies the working principle of galvanic batteries and electrolytic cells. Also, China has been able to deploy electric vehicles at an unprecedented speed and scale. Analysis of the evolution of policy regimes shows that the creation, transfer, and sharing of knowledge among key actors is key to catching up. Changing policy regimes have brought the technology development required for deployment to a minimum threshold. However, this is not enough to push the industry to the global technological frontier. Key to the sector's relative success is the Government's responsiveness to sector development and its ability to address production, demand, and knowledge issues simultaneously. In addition, it creates synergies between policies aimed at addressing environmental problems and promoting economic development. However, rapid deployment requires substantial subsidies and important policy initiatives present potential pitfalls that could hinder the sector's international competitiveness[2]. In summary, it can be concluded that the new energy industry as a whole is rising and fluctuating, and this film research also reached this conclusion through the analysis of various data analysis of the three representative companies. Therefore, the significance of this research is to observe the stage of development of the industry and the opportunities and challenges it faces and to give corresponding investment opinions and future prospects.

## 2. Data Collection

The three firms referred to in this essay are BYD, CATL, and LONGI Green Energy. These oriented the new energy industry in the field of science and technology. The companies may related

to the lithium battery and new energy vehicles, which received comprehensive attention recently. The battery industry involved mainly applies the working principle of galvanic batteries and electrolytic cells. The first patent for lithium-ion batteries was published in 1981. To summarize, a sequence of tangible measures like developing new energy, realizing energy transformation, and building an energy system of green and low-carbon have been taken to reduce carbon dioxide emissions and achieve carbon neutrality.

BYD operates its main business as an automotive business including new energy and conventional fuel vehicles, rechargeable batteries, and photovoltaic business. CATL era, a domestic competitive company manufacturing the power batteries. LONGI green energy devoted itself to solar energy and unconventional batteries.



**Figure 1.** The stock price of different company

The stock prices of three companies lasting a half of year are illustrated as follows according to Figure 1. According to the illustration, LONGI and BYD had a comparatively flat trend but CATL had a steep drop at the beginning of the second quarter of 2023. And empirical calculation said that the indexes connected with the market are shown in the table below.

**Table 1.** The indexes connected with the market

	BYD	CATL	LONGI
Market cap	7773000000000	1011400000000	223700000000
Current ratio	0.69	1.34	1.49
TA T/O	0.22	0.14	0.2
Profit (%)	0.04	0.1132	0.1282
ROA	0.0449	0.0736	0.01244
ROE	0.1614	0.1868	0.2383
PE	39	23.4	14.2
PB	6.73	5.94	3.43
PEG	-76.53	0.7	-8.69
beta	0.98	1.25	0.99

Based on the ratio analysis in Table 1 including the aspects of risk, profitability, and market ratio. For the risk factor, only the beta of CATL is more than 1, namely, it has more volatility than the broader market portfolio, and BYD's current ratio is less than 1 means that it has high leverage but due to its credit rating in the bond market is AAA so this can decide its liquidity risk is comparatively low. Regarding the profit margin, it could be concluded that LONGI has the best profitability

followed by CATL, and BYD has the worst profitability. To analyze the market ratio, firstly, as value investors, when PE is less than 10 or PB less than 1 they may invest in a relatively new stock. Then, when the PEG is less than 1, the PEG investors will buy the stock, and an ROA of more than 4 percent indicates that index investors are more inclined to this kind of stock. Thirdly, using its market cap as an entry point, since the total market capitalization of three companies all beyond £1.5 billion, they are large enterprises in the broad sense then the income investors may buy the stocks. And at last, observing the illustration of their stock price line chart, LONGI had the opportunities be chosen by the momentum investors.

### 3. SWOT

SWOT analysis method as a strategic decision-making analysis method has been applied in many aspects in recent years, from individual micro-enterprises to national development strategy decision-making, SWOT analysis method provides a valuable reference for final decision-making[3]. A centralized SWOT approach distills strengths and weaknesses into core competencies and core issues by using the Core Competence Tree and the Current Reality Tree. The core competencies and core issues are then linked to developing action plans aimed at protecting and leveraging the organization's core competencies while preventing exposure to the core issues[4].

The new energy industry enjoyed heat development prospects in recent years. It has obvious pros and cons due to its short-lived rise. And meanwhile, emerging industries always come with new risks and opportunities.

Concerning the industry's internal superiorities, the in-depth development of a new energy industry is an inevitable trend of social development. In the case of the increasing shortage of fossil energy such as oil, the new energy industry can replace the traditional fuel and at the same time also respond to the national advocacy of dual-carbon policy. So in the national policy support and under the to-be-developed broad prospects, it has a pretty good momentum and investment development space.

On the defects aspect, the burgeon hurdles mainly concentrated at the technical level. In the procession of exploring new energy, there are no technologies mature enough to enable new energy sources to completely replace fossil fuels, i.e., society's energy system cannot be transformed thoroughly. As for the extraction and use of energy, the current technology makes it difficult to efficiently utilize the new energy, so some of the new energy vehicles still use hybrid engine mode, which shows that the new energy industry is still in the early phase, and there will certainly be greater progress and renovation in the future.

With the commercialization of the new energy industry, the investment opportunities surged. Precisely because of its opportunistic nature, every related company is in the competition so it will promote rapid technological innovation. And with it, on the supply side, the problem lies in the contradiction between the exploding demand for new energy-related products and the lagging production capacity. High price volatility, severe premiums, and uneven product quality are also part of this industry, and the market and research environment are in dire need of consolidation.

Overall, the new energy still deserves to be invested in and paid attention to. In the early stage of the market, you can pay attention to the update of its technology, and in the middle of the industry, pay attention to the relationship between the profit generated by different types of energy.

### 4. Investment Analysis

In order to analyze all three stocks comprehensively [5-6], various types of models such as DCF, WACC, CAPM, and momentum models are applied here. In DCF, knowing the free cash flow of three companies, through the calculation arrives at a conclusion that BYD's expected price is 337, LONGI's is 18. Owing to CATL didn't pay the dividend last year, so it doesn't apply to this model. And it can be seen the price of BYD is overrated, and the price of LONGI is underestimated. In the

CAPM model, firstly, the beta of each stock is derived from the covariance of the stock to the SSE market and the ratio of the returns, then the value of the final CAPM is derived from the difference between the average of the yields of these firms and the mean of the yields of the SHIBOR [7-8]. In the process of using the momentum analysis model, when the average closing price of each stock over the past 50 days is greater than the average closing price of the last 200 days, the stock is worth investing in momentum analysis. In the conclusion, LONGI's share price trend is good. Meanwhile, to reflect the unit risk-adjusted fund yield, it is necessary to calculate the Sharpe ratio using the Sharpe model [9-10], when the Sharpe ratio is positive, it can indicate that the average net value growth rate of the fund exceeds the risk-free rate during the measurement period, namely the investment fund is better than the bank deposit at this time. Finally, the Sharpe ratio of all three stocks is slightly greater than 0, which shows that it has investment value.

Having a brief summary, CATL carries a higher level of risk compared to the other two stocks. The stock price of BYD is underestimated so appropriate investments can be made. And focus on the entire new energy industry, The market is on the rise because it has just entered the public field of vision is supported by the general environment, and has a good investment environment and development space.

## 5. Conclusion

In order to consider the dominant position and popularity of the new energy industry in current society, and new energy as an emerging industry has attracted widespread interest and attention, this essay uses SWOT and other perspectives to introduce the multi-faceted information of the new energy industry, and takes three representative enterprises in this industry as an example to analyze the investment choices of the new energy stock market in detail, comprising the various technical indicator data of and a variety of stock market analysis models, so as to more comprehensively and accurately judge the direction and timing of investment. In conclusion, the development of new energy represented by BYD, CATL, and LONGI stocks is generally good, and in future investments, appropriate investments can be made for different angles or enterprises according to different periods of industry development. The new energy industry as a whole has the characteristics of large enterprise scale and good momentum, most of the stock prices are undervalued, and the yield is high. To summarize, BYD may be purchased by the DCF, PEG, Income, and investors, CATL would be chosen by PEG, Income, and Index investors, and LONGI green energy would be bought by momentum, PEG, Income, and Index investors. According to the results of the study, the model applied still possessed one-sidedness and superficiality, also the SWOT analysis has its subjectivity. SWOT analysis is a proven strategic decision-making aid, and its application has a broad social universality. However, the current SWOT is still based on qualitative analysis, so there is an unavoidable involvement of subjective consciousness. Recently, some commonly used quantitative methods, such as expert consulting method, hierarchical analysis, and their combination with SWOT to a certain extent to assist the lack of objectivity of SWOT[4]. In future research, if more comprehensive and detailed models and more objective theoretical analysis methods can be applied, and when the new energy industry further develops into a stable state, then the investment and risk analysis of these three companies and even the new energy industry will be more credible and convincing.

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