

Research on Corporate Financial Data Evaluation and Investment Decision-Making

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Abstract. Against the backdrop of the global consensus on carbon neutrality, an irreversible industrial revolution driven by energy transition has arrived. The global automotive industry landscape is being reshaped, transitioning from the internal combustion engine era to an era of electrification and intelligence. Therefore, technology-based auto manufacturers, such as NIO Inc., Li Auto Inc., XPeng Inc., and Tesla, Inc., have seized the historical opportunity to make a strategic leap and successfully secure leading positions. In addition, companies that develop new energy vehicles can mitigate the risk of dependence on foreign energy sources. This paper analyzes the annual financial reports of four new energy vehicle companies (NIO Inc., Li Auto Inc., XPeng Inc., and Tesla, Inc.) from 2021 to 2025. By employing quantitative numerical analysis, three aspects—namely solvency, operational capability, and profitability—are evaluated to identify optimal investment targets. Consequently, risk-tolerant investors are advised to choose NIO Inc. and XPeng Inc., whereas risk-averse investors may prefer Li Auto Inc. and Tesla, Inc.

Keywords: New energy vehicles, debt-to-asset ratio, inventory turnover rate, return on capital, price-earnings ratio

1. Introduction

New energy vehicles are key drivers of the global energy transition and the century-long transformation of the automotive industry. Electrification is a disruptive technology in the automotive industry that drives energy transformation and carbon emission reduction [1]. Moreover, the emergence of new energy vehicles has brought an entirely new growth path and transformation opportunities to the global automotive industry. This shift has restructured the industry's value chain, altered its technical barriers, and overcome the dilemma of homogeneous competition in this sector [2]. Against this backdrop, the capital market remains optimistic about new energy vehicle manufacturers. Even though most of the new players have been operating at a loss for a long time, institutional and individual investors are still willing to invest capital. They no longer merely rely on sales narratives, but instead consider fundamental indicators related to solvency, operational efficiency, and profitability, and select investment targets. These indicators suggest that financial ratios are not static values but rather predictors of an enterprise's future cash flows and shareholder returns. They serve as fundamental tools for institutional investors in valuation and investment decision-making [3]. This paper first introduces the core business, product positioning, core

technical barriers, and primary revenue sources of four automotive companies to provide an overview of these companies. Then, it analyzes four specific indicators: the debt-to-asset ratio, inventory turnover ratio, return on equity (ROE), and price-to-earnings ratio (P/E) of NIO Inc. (NIO), Li Auto Inc. (Li Auto), XPeng Inc. (XPeng), and Tesla, Inc. (Tesla) for comparative analysis and to derive the investment logic. Ultimately, the proposed four-dimensional financial analysis framework can serve as a reference for investors to distinguish stable investment targets from high-risk ones.

2. The overview of the four automotive companies

2.1. The similarities

All four share a similar strategic focus, targeting the high-end new energy passenger vehicle market and directly replacing traditional fuel-powered cars. At the same time, They position intelligent driving and the intelligent cockpit as the core product strengths, differentiating themselves from traditional automakers' "gas-to-electric" approach. Their R&D focuses on advanced autonomous driving algorithms and automotive chips, following a model of upfront investment in R&D with delayed revenue realization. In terms of the sales model, they completely abandon the dealer system and adopt an online-plus-offline direct store model. They establish their own sales, delivery, after-sales, and user operations teams. There are common shortcomings in the revenue structure among the four. Vehicle sales revenue accounts for a large proportion of total revenue, which creates a structure heavily dependent on a single primary business. During industry downturns, their ability to withstand risks is weak. Finally, as all four are asset-heavy companies, the expansion of vehicle factories and charging networks has increased capital expenditures and depreciation pressure, and exacerbated debt risk.

2.2. The differences

They have adopted differentiated product positioning strategies to attract different customer groups. NIO targets high-net-worth individuals as its core customer base. It aims to establish a high-end luxury brand. Customer loyalty and repeat purchase rates are extremely high, and it also has a distinctive community culture. Families with children who value practicality and comfort can choose the practical family brand Li Auto. XPeng, on the other hand, targets young tech enthusiasts. With the labels of intelligence, affordability and cutting-edge technology, it establishes the "Tech Geeks" brand. Tesla is the only foreign company among the four. Its brand is inherently attractive and represents innovation and simplicity. It is ultimately positioned as a sustainable energy and AI technology company, and it is also the only one that has established a second revenue pillar. The fundamental differences in business strategies lie at the core of the hierarchical differentiation among the four companies. NIO adopts the battery-swapping charging mode, bearing the highest depreciation and debt burden, and continues to incur losses. Li Auto's R&D focuses on vehicle architecture and does not involve many cutting-edge or speculative projects. By leveraging popular products and moderate R&D investment, it has become the first to achieve profitability. XPeng's biggest weakness is its excessively high R&D intensity. Coupled with the inventory write-downs caused by the rapid model replacement of multiple vehicles, this has led to long-term losses. Tesla has built the strongest profit resilience through its minimalist large-scale manufacturing and the second growth curve in energy storage.

3. The connection between numerical analysis and enterprise capabilities

3.1. The importance of numerical analysis

Before making investment decisions, it is necessary to apply common analytical and numerical methods, such as multiple regression, to quantitatively compare the solvency indicators, operational efficiency indicators, and profitability indicators to assess the explanatory power of these indicators for enterprise risk [4]. A single indicator has limitations. A comparative analysis of all three types of indicators is necessary to reach the final conclusion. Quantitative measurement of these indicators can identify the financial vulnerability of enterprises, and is suitable for risk assessment of asset-heavy, high-debt new energy vehicle manufacturers [5]. New energy vehicle manufacturers exhibit characteristics such as long development cycles, significant fluctuations in inventory levels, and substantial differences in debt ratios. The analysis of three-dimensional indicators is a crucial tool for investment decisions [6].

3.2. Solvency

The debt-to-asset ratio measures the ability of an enterprise to use funds from creditors or its business operations, and reflects the safety of creditors' loans. It provides a clear picture of the proportion of a company's funds that come from creditors and shareholders and is a fundamental quantitative tool for assessing a company's financing strategy [7]. NIO maintains a consistently high debt-to-asset ratio, and its asset-heavy model increases its long-term capital requirements. Li Auto's debt level rises gradually as the business expands, and is then actively reduced later on. Overall, the risks are manageable. Over the course of five years, XPeng experienced the greatest increase in its debt ratio, while financial risks continued to accumulate. Tesla has achieved active deleveraging, making it the company with the strongest financial position among the four automakers. (as shown in Table 1)

Table 1. Debt-to-asset ratio

	NIO Inc.	Li Auto Inc.	XPeng Inc.	Tesla, Inc.
2021	54%	34%	35%	49%
2022	71%	48%	48%	44%
2023	74%	58%	57%	40%
2024	87%	56%	62%	40%
2025	89%	53%	71%	40%

3.3. Operating capacity

The inventory turnover ratio reflects the efficiency of an enterprise's supply chain and inventory management, and quantifies the speed at which its products are converted into cash [8]. The higher the number, the better the operational status. The shorter the days of inventory, the faster the turnover of the company's inventories. This leads to a higher degree of profit growth, stronger production and sales capabilities, and better operational efficiency. Changes in this ratio all reflect the operational decisions of the enterprise. Moreover, the four automakers are affected by roughly similar factors. During an enterprise's expansion phase, if it takes actions such as expanding

production capacity and actively increasing inventory, it will exhibit a low ratio. Furthermore, if an enterprise undergoes model iteration and replacement, this will also lead to a decrease in the ratio. On the contrary, if the vehicle model lineup is simple, optimizing inventory management can increase the ratio. (as shown in Table 2)

Table 2. Inventory turnover times and days

	NIO Inc.		Li Auto Inc.		XPeng Inc.		Tesla, Inc.	
2021	18.68	19.27	15.94	22.58	9.17	39.26	8.16	44.12
2022	8.61	41.81	8.67	41.52	6.62	54.38	6.52	55.21
2023	7.81	46.09	14.09	25.56	6.02	59.80	5.98	60.20
2024	9.58	37.58	15.25	23.61	6.32	56.96	6.26	57.51
2025	9.68	37.19	10.78	33.40	7.81	46.09	6.37	56.51

3.4. Profitability

ROE is a fundamental proxy for a company's profitability. A positive value indicates that the company can generate excess returns for shareholders, while a negative value implies that the shareholders' equity is being eroded, with potential issues such as equity dilution and financing pressures. Through horizontal comparison of this indicator, investors can distinguish between high-quality enterprises and those that are constantly incurring losses [9]. The figures show that the profitability of this industry is highly stratified. NIO has experienced continuous and significant losses, with a long-term negative return on equity, continuous erosion of shareholders' equity, and prominent financial pressure. Li Auto has achieved a phased transition from capital consumption to profit creation, but profit stability is relatively weak. XPeng incurred losses for five consecutive years, but there were clear signals indicating a turnaround in its situation. Tesla is the only company that has achieved a positive ROE for five consecutive years. Its shareholder returns have consistently significantly outperformed the market. (as shown in Table 3)

Table 3. Capital return

	NIO Inc.	Li Auto Inc.	XPeng Inc.	Tesla, Inc.
2021	-30.24%	-0.91%	-12.70%	20.00%
2022	-44.31%	-4.67%	-23.12%	32.41%
2023	-73.89%	22.13%	-28.33%	27.39%
2024	-105.13%	12.18%	-17.13%	10.33%
2025	-118.86%	1.56%	-3.70%	4.85%

The P/E ratio is the most widely used relative valuation indicator, which measures the price that investors are willing to pay for each unit of profit and incorporates the market's expectations regarding the growth risks and profit prospects of the enterprise. Through horizontal comparison, one can determine the relative valuation level of the enterprise. However, when this indicator is negative, it loses its explanatory power [10]. The valuations of new energy vehicle companies show significant differentiation during their growth stage. XPeng and NIO belong to the group of emerging players. They have not achieved stable profitability, and thus the P/E valuation method

cannot be applied to them. After Li Auto achieved profitability, its P/E ratio has continued to rise, and the valuation pressure gradually accumulates. Tesla's valuation encompasses the option values of multiple business segments including automobiles, energy storage, and artificial intelligence. These fluctuations are significant and are supported by long-term growth expectations. (as shown in Table 4)

Table 4. Price-to-earnings ratio

	NIO Inc.	Li Auto Inc.	XPeng Inc.	Tesla, Inc.
2021	-32.9	-615.1	-56.5	170
2022	-7.3	-73.6	-6.5	44
2023	-4.9	24	-9.4	41
2024	-2.8	21.6	-13.9	182
2025	-5.7	113.3	-119.5	412

4. Conclusion

In conclusion, through comparative analysis, this study presents the following findings. The most obvious advantage of NIO lies in its differentiated battery-swapping technology, but its asset-heavy model continues to consume capital, and it remains far from achieving sustainable profitability. Li Auto serves as the benchmark among China's emerging EV manufacturers, demonstrating high capital efficiency. However, its business scope is limited, and it faces pressure in transitioning to battery electric vehicles (BEVs). Although XPeng has allocated sufficient resources for intelligent technology R&D, its debt burden continues to mount. Tesla, as the industry leader, has a stable ability to generate revenue and the lowest level of financial risk. However, its profits have declined continuously, and it faces the risk of valuation correction. When selecting investment targets, one should aim for stability and low default risk. In this case, Tesla emerges as the optimal choice. Given that its profitability is the most robust, its capital structure offers the highest margin of safety. Investors focusing on the new energy sector in the Chinese market may consider Li Auto, but they need to closely monitor valuation changes. Risk-averse investors should avoid NIO and XPeng. The financial uncertainties of these two enterprises are substantial. Amid continuous losses, these companies face refinancing pressures and the risk of equity dilution. They are suitable only for highly risk-tolerant speculative investors. However, this study has several limitations. The analysis of individual firms lacked comprehensiveness, and the results of the numerical analysis lack uniform units of measurement. Most importantly, it lacks a clear analysis of the business implications of the numerical findings. Future research should address these areas, and methodological standardization should be pursued.

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