



Value Investing in the EV Industry: A Case Study of Tesla

Ruiyang Ding

College of Public Administration and Law, Hunan Agricultural University, Changsha, 410125, China

DingRuiyang@stu.hunau.edu.cn

Abstract. This study examines Tesla Inc. through the lens of value investing principles, analyzing its long-term investment potential in the rapidly evolving electric vehicle and sustainable energy markets. Through SWOT analysis and key financial metrics evaluation, the research reveals Tesla's achievement of 1.809 million vehicle deliveries and \$96.77 billion revenue in 2023, while maintaining robust liquidity management with \$29.094 billion in cash and investments. Despite profitability pressure from intense competition leading to declining automotive gross margins, Tesla is successfully transitioning from a pure EV manufacturer to a technology-driven energy company, supported by significant growth in energy storage business and service revenue. Looking forward, Tesla's value will primarily depend on the successful launch of its next-generation platform, expansion of energy business, and commercialization of AI and autonomous driving technologies. While facing near-term challenges in market competition and macroeconomic uncertainties, Tesla's leading position in EVs and sustainable energy, coupled with continuous improvements in technological innovation and operational efficiency, underpins its long-term investment value, offering a cautiously optimistic outlook for value investors in the sustainable energy sector.

Keywords: EV Industry, Value Investing, Case Study.

1 Introduction

Value investing, as a classic investment philosophy, emphasizes identifying securities with long-term investment value through in-depth analysis of company fundamentals [1]. As the global automotive industry accelerates its transition to electrification, the new energy vehicle sector is reshaping the entire automotive industry landscape. In this context, Tesla, as a pioneer and leader in the electric vehicle industry, provides a unique research perspective for applying value investment theory in emerging industries [2].

Through continuous technological innovation and scaled production, Tesla has established a leading global market position. In fiscal year 2023, the company achieved vehicle deliveries of 1.809 million units, with Model Y becoming the best-selling vehicle model globally. Meanwhile, the company demonstrated strong financial performance, achieving total revenue of \$96.77 billion, net profit of \$14.974 billion,

financial performance, achieving total revenue of \$96.77 billion, net profit of \$14.974 billion, and operating cash flow of \$13.256 billion. Abundant cash reserves (\$29.094 billion) not only supported continued R&D investment (\$3.969 billion) but also provided strong backing for its global expansion.

Notably, Tesla is transforming from a traditional automobile manufacturer into a technology-driven energy company [3]. In addition to maintaining leadership in battery technology, autonomous driving, and artificial intelligence, the company's energy business has also achieved rapid growth, with revenue reaching \$6.035 billion in 2023. This evolution in business model suggests that Tesla may play an increasingly important role in the sustainable energy revolution.

This research will employ the SWOT framework to analyze Tesla's competitive position, assess its operational efficiency and profitability through key financial indicators, and make predictions about major risks and future development in combination with industry trends [4]. The study aims to explore Tesla's investment logic as a value investment target and provide reference for value investment practice in the new energy sector.

2 External Environment Analysis Based on SWOT Framework

2.1 Strengths

Brand and Technology Leadership: Tesla has established strong brand value and technological advantages through continuous innovation [5]. The company maintains a leading position in core technologies including batteries, powertrains, and autonomous driving. With R&D investment of \$3.969 billion in 2023, Tesla focuses on developing FSD capabilities, AI applications, and next-generation platforms. Its unique vertically integrated business model provides significant advantages in product development and cost control.

Global Manufacturing Network: The company has established a comprehensive manufacturing system across the United States, China, and Germany. Fremont Factory, Gigafactory Shanghai, Gigafactory Berlin-Brandenburg, and Gigafactory Texas form a globally coordinated production network. The new factory in Mexico planned for 2024 will further enhance capacity and localization. This layout reduces transportation and tariff costs while improving supply chain resilience.

Operational Excellence: Through continuous optimization of manufacturing processes and supply chain management, Tesla has achieved industry-leading operational efficiency. The results are evident in the benefits of economies of scale and lean production.

2.2 Weaknesses

Pricing Pressure and Profit Volatility: Facing increasingly intense market competition, Tesla has had to maintain market share through price reductions. Average selling prices have declined for seven consecutive quarters in 2023,

impacting gross margins. Automotive business gross margin decreased from 28.5% in 2022 to 19.4% in 2023.

Uneven Capacity Utilization: Affected by supply chain fluctuations and demand changes, some factories experience insufficient capacity utilization. Production volume decreased 14.4% quarter-over-quarter in Q3 2023 due to factory upgrades. The fluctuation in capacity utilization affects the efficiency of fixed cost allocation.

Unbalanced Regional Market Development: While performing strongly in the Chinese market (30% YoY growth in Q3 2023), Tesla faces challenges in certain key markets. The European market is affected by tariff policies, while the North American market faces competition from hybrid vehicles, impacting overall growth.

2.3 Opportunities

Expanding Market Size: Global electrification trends are accelerating, with continued policy support in major markets. The IRA provides significant support for the U.S. market, while European and Chinese market demand shows steady growth [6]. Global EV penetration is expected to increase significantly by 2025, bringing growth opportunities for Tesla.

Rapid Energy Business Development: The energy storage business shows strong growth momentum, with revenue increasing 54% YoY to \$6.035 billion in 2023. Megapack business achieved a record high gross margin of 30.5%. The energy storage market outlook remains promising amid global clean energy transition.

Software Service Revenue Growth: Revenue from FSD, Supercharging, and insurance services is growing rapidly. Services and other revenue reached \$8.319 billion in 2023, up 37% YoY. These high-margin businesses will become new profit growth drivers.

2.4 Threats

Intensifying Competition: Traditional automakers and emerging EV companies are increasing investments, intensifying market competition. Chinese companies like BYD have advantages in cost-effectiveness, while traditional European and American automakers leverage their brand and channel strengths [7]. Intensifying competition may further compress profit margins.

Policy and Regulatory Risks: The company faces increasingly stringent safety standards, environmental regulations, and data compliance requirements. Changes in subsidy policies in certain markets may affect demand. U.S.-China trade relations changes could also impact global operations.

Raw Material Risks: Battery raw materials such as lithium, nickel, and cobalt experience significant price fluctuations, and supply chains face geopolitical risks. Continuous optimization of material technology and supplier management is needed to address cost pressures.

3 Internal Environment Analysis based on Financial Performance

3.1 Liquidity Analysis

Table 1. Liquidity ratios of Tesla.

	FY22	FY23	FY24e
Current ratio	1.52	1.73	1.82
Quick ratio	1.05	1.25	1.31
Cash ratio	0.44	1.01	1.04

Tesla's liquidity indicators have shown significant improvement over the past three years, as Table 1 shown. The current ratio steadily increased from 1.52 in 2022 to 1.82 in 2024, significantly higher than the automotive industry average, reflecting the company's prudent working capital management strategy. This improvement can be attributed to Tesla's strong cash generation capability and effective inventory management. In fiscal year 2023, the company's operating cash flow reached \$13.256 billion, and while lower than \$14.724 billion in 2022, it remained at a high level.

The continuous improvement in quick ratio (from 1.05 to 1.31) further demonstrates the company's strong short-term solvency. Even after excluding inventory, the company's immediate debt-paying ability remained at a healthy level. However, according to financial reports, Tesla experienced its first negative free cash flow (-\$2.53 billion) in Q1 2024, mainly due to inventory increase (\$2.4 billion) and AI infrastructure investment (\$1.0 billion). By Q2, free cash flow had returned to positive at \$1.3 billion, demonstrating Tesla's ability to quickly adjust and recover.

The substantial increase in cash ratio (from 0.44 to 1.04) is particularly notable. As of the end of 2023, the company held \$16.398 billion in cash and cash equivalents, and \$12.696 billion in short-term investments, totaling \$29.094 billion in liquidity reserves. These ample cash reserves not only cover short-term liabilities but also provide strong support for strategic investments. According to financial reports, the company expects capital expenditure to exceed \$10 billion in 2024, primarily for capacity expansion and technological development.

3.2 Solvency

Table 2. Solvency ratios of Tesla.

	FY22	FY23	FY24e
Total debt ratio	44.2%	40.3%	41.3%
long-term debt ratio	1.9%	2.7%	4.0%
interest turnover	72.05	62.82	41.49

Tesla demonstrates solid long-term solvency capabilities, as Table 2 shown. The total debt ratio decreased from 44.2% in 2022 to 40.3% in 2023, with a slight increase to 41.3% in 2024, maintaining overall low levels. According to financial reports, as of the end of 2023, the company's total debt balance was \$4.683 billion, with long-term debt accounting for only \$2.857 billion. Compared to traditional automakers' typical 60-70% debt ratios, Tesla has adopted a more conservative financial leverage strategy [8].

Although the long-term debt ratio shows a slight upward trend, increasing from 1.9% in 2022 to 4.0% in 2024, it remains at an extremely low level. This growth mainly stems from the company's issuance of \$3.931 billion in new debt in 2023 to support global capacity expansion. Tesla expects capital expenditure to exceed \$10 billion in 2024, but given its ample cash reserves (\$29.094 billion) and strong operating cash flow, this investment scale will not significantly impact the company's debt structure.

3.3 Profitability

Table 3. Profitability ratios of Tesla.

	FY22	FY23	FY24e
Gross margin	25.6%	18.2%	18.7%
net profit margin	15.4%	15.5%	8.6%
ROA	15.3%	14.0%	7.5%
ROE	28.2%	23.9%	12.1%

Tesla's profitability indicators have shown significant fluctuations over the past three years [9]. As shown in Table 3, Tesla's gross margin declined sharply from 25.6% in 2022 to 18.2% in 2023, with a slight recovery to 18.7% in 2024. This trend primarily reflects the company's pricing adjustment strategy amid intensifying global competition. Table 3 further illustrates how these fluctuations align with Tesla's broader financial performance and market dynamics. In Q1 2024, the automotive business gross margin (excluding regulatory credits) reached a historic low of 14%, mainly due to price reductions, Cybertruck production ramp-up, and EU tariff impacts.

Net profit margin changes were more pronounced, dropping from 15.5% in 2023 to 8.6% in 2024. This decline reflects the profit pressure faced while maintaining market share. However, in Q3 2024, the company showed signs of recovery, with gross margin improving 180 basis points quarter-over-quarter to 19.8%, mainly due to cost optimization measures. Vehicle delivery volume (463,000 units) increased 6% year-over-year, China market sales grew 30%, and manufacturing cost per vehicle decreased 6%. The energy business performed particularly well, with revenue growing 52.4% year-over-year and Megapack business achieving a record high gross margin of 30.5%.

The decline in both Return on Assets (ROA) and Return on Equity (ROE) reflects a decrease in operational efficiency. ROA dropped from 15.3% in 2022 to 7.5% in 2024, while ROE decreased from 28.2% to 12.1%. This downward trend is related to the company's large-scale capital expenditure plans. In 2024, Tesla expects capital expenditure to exceed \$10 billion, primarily for global capacity expansion and technological development, which may impact asset returns in the short term [10].

From a revenue growth perspective, despite pricing pressures, Tesla achieved total revenue of \$96.77 billion in 2023, representing a 19% year-over-year increase. This includes automotive revenue of \$82.419 billion (+15%), energy business revenue of \$6.035 billion (+54%), and services and other revenue of \$8.319 billion (+37%). The diversification of business structure helps mitigate profit pressure from the automotive segment. According to financial reports, the company is accelerating new product development, with the new affordable model planned for launch in early 2025 expected to boost sales growth by 20-30%. Additionally, the expansion of software services (FSD, Supercharging, etc.) and insurance business will provide further support for future profitability.

Looking ahead, Tesla's profitability will primarily depend on the successful launch and production ramp of new products (such as Cybertruck and next-generation platform) and the continued implementation of cost optimization measures. Furthermore, the expansion of high-margin businesses (such as energy storage and software services) will play an important role in improving Tesla's profitability. As capacity utilization improves and product mix optimizes, Tesla's profitability indicators are expected to gradually improve. However, considering intensifying market competition and macroeconomic uncertainties, maintaining stable profitability levels still faces challenges.

4 Risk Assessment

4.1 Risk

Industry Risks. Market volatility and uncertainty remain significant concerns in the EV sector. Electric vehicles still represent a small percentage of total vehicle sales, making the market susceptible to various factors [11]. Market demand can be negatively affected by competition from other alternative fuel vehicles, plug-in hybrids, and high fuel-efficiency internal combustion engines, as well as fluctuations in oil, gasoline, and energy costs. In many markets, automotive sales are cyclical, and EV manufacturers may find it difficult to predict the duration or direction of current global trends or their sustained impact on consumer demand. Furthermore, rising interest rates may lead to reduced consumer spending, potentially harming demand, business operations, and financial performance.

Individual Risks. Supply Chain Risk: The company relies on hundreds of global suppliers for thousands of components. Some critical components, particularly

batteries, have limited supply sources. Tesla's vehicles and energy storage products depend heavily on a continuous supply of lithium-ion battery cells. Currently relying on suppliers like Panasonic and CATL, any supply chain disruption could significantly limit production. While Tesla plans to supplement supplier-provided batteries with in-house production, this effort requires substantial investment with uncertain outcomes.

Intellectual Property Risk: Tesla's competitors or other third parties may hold or obtain patents, copyrights, or other proprietary rights that could prevent, limit, or interfere with their ability to manufacture products and provide services. Such intellectual property holders may assert their rights and urge Tesla to obtain licenses or initiate litigation. Additionally, in certain countries, protection of brands, technologies, and proprietary information may be limited or unavailable, making it difficult to protect intellectual property from misappropriation or infringement.

Policy and Regulatory Risk: Tesla operates under complex legal and regulatory requirements across multiple jurisdictions, facing political uncertainty and varying social, environmental, and economic conditions. As a U.S.-based company, Tesla must monitor global tax regulation changes, including those arising from the OECD's multi-jurisdictional plan addressing base erosion and profit shifting. The company also faces ongoing regulatory investigations, including those from California's Civil Rights Department (CRD) and the Equal Employment Opportunity Commission (EEOC).

4.2 Forecast

Based on analysis of Tesla's strategic positioning and industry trends, we project the company's market value for 2025-2026. Under the moderate scenario, market capitalization is expected to maintain between \$1.4-1.6 trillion. This projection is supported by Tesla's expansion plans detailed in their 10-K report, showing steady progress in global manufacturing deployment, with the new Mexican factory further optimizing production capacity. Additionally, the energy business achieved 54% growth in 2023, while services and other revenue (including FSD and Supercharging) grew 37%, demonstrating the potential of new business models. Revenue is projected to reach \$104.367 billion in FY2024, with this steady growth trajectory expected to continue through 2025-2026, supported by ongoing cost optimization and production localization efforts.

The realization of this scenario heavily depends on global EV adoption rates, the pace of energy transition, and the company's success in commercializing new technologies. Given intensifying market competition and macroeconomic uncertainties, investors should closely monitor these key factors' evolution.

5 Conclusion

Through comprehensive analysis of Tesla, we observe that the company is undergoing a critical strategic transformation. From a financial performance

perspective, Tesla demonstrates strong liquidity management capabilities, holding \$29.094 billion in cash and investments at the end of 2023, while maintaining low debt levels (total debt ratio of 41.3%). However, profitability faces pressure, with declining gross and net profit margins reflecting intense market competition.

Tesla's competitive advantages primarily manifest in its technological innovation capabilities and manufacturing efficiency at scale. Continuous R&D investment (\$3.969 billion in 2023) and global production capacity layout provide a foundation for long-term development. Notably, the company is transitioning from a pure automotive manufacturer to a technology-driven energy company. The rapid growth of the energy storage business (54% YoY revenue growth in 2023) and expansion of software service revenue demonstrate the effectiveness of business diversification strategy.

Looking ahead to 2025-2027, Tesla's investment value will primarily depend on several factors: first, the successful launch of the next-generation platform vehicles, expected to begin production in early 2025; second, the continued expansion of the energy business, particularly improvements in Megapack's efficiency and scale; and third, the commercialization progress of AI and autonomous driving technology. Revenue is projected to reach \$104.367 billion in FY2024, but given intensifying competition and macroeconomic uncertainties, investors are advised to maintain a cautiously optimistic outlook.

From a value investment perspective, while Tesla faces short-term growth slowdown and profit pressure, its leading position in electric vehicles and sustainable energy, along with continuous improvements in technological innovation and operational efficiency, still supports its long-term investment value. Investors should closely monitor the company's new product development progress, cost control measure effectiveness, and evolution of global market competition dynamics.

References

1. Piotroski, J. D. (2000). Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers. *Journal of Accounting Research*, 38, 1.
2. Teece, D. J. (2018). Tesla and the reshaping of the auto industry. *Management and Organization Review*, 14(3), 501–512.
3. Hopkins, M., & Lazonick, W. (2024). Tesla as a global competitor: Strategic control in the EV transition.
4. Sloan, R. G. (2019). Fundamental Analysis Redux. *The Accounting Review*, 94(2), 363–377.
5. Curiel, J., & Perkins, R. K. (2022). Using systems theory to analyze management styles, market, and product competition between Tesla and legacy carmakers. *International Journal of Innovative Business Strategies*, 8(1), 519–527.
6. IEA (2024), *Global EV Outlook 2024*, IEA, Paris <https://www.iea.org/reports/global-ev-outlook-2024>
7. Khaleel, M., Nassar, Y., El-Khozondar, H. J., Elmnifi, M., Rajab, Z., Yaghoubi, E., & Yaghoubi, E. (2024, January 9). Electric vehicles in China, Europe, and the United States: Current trend and market comparison.

8. Vladimirova, D., & Fang-Klingler, J. (2023). Bonds with Benefits: Impact Investing in Corporate Debt. *Financial Analysts Journal*, 80(1), 41–56.
9. Lang, J. W., Reber, B., & Aldori, H. (2021). How Tesla created advantages in the ev automotive paradigm, through an integrated business model of value capture and value creation. *Business and Management Studies an International Journal*, 9(1), 385–404.
10. Fama, E. F., & French, K. R. (2007). The anatomy of value and growth stock returns. *Financial Analysts Journal*, 63(6), 44–54.
11. Subhani, M. I., Ezhak, E., Osman, A., & Prachyangprecha, S. (2022). Volatilities in Market Shares through Financial Fundamentals for Global Automobile Industry. *Transportation Research Procedia*, 63, 2409–2420.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

