

Financial Analysis and Risk Study of Tesla Inc.

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Abstract. In recent years, the development of energy-saving energy has become an important and promising market trend to strengthen the protection of the environment, achieve zero emission of transportation and reduce dependence on oil. The electric vehicle (EV) industry is growing rapidly with strong policy impetus in various countries, especially China. In 2022, China's EV sales accounted for 61.2% of global EV sales. However, with the continuous development of the market, the increasing progress of technology and the constant change of policies, the complexity of the market has increased. Therefore, it is challenging to predict the future direction of the EV industry and identify projects with long-term investment value. However, whether Tesla has the ability of sustainable development as the industry leader is the research topic of this paper. This paper describes the opportunities and challenges of the EV industry and analyzes its profitability, operating capacity, solvency, and development capacity based on TESLA's financial statements from 2020 to 2022. At the same time, the financial statements of companies in the industry, BYD and SAIC, were compared and analyzed with, and the opportunities and challenges encountered by them in China were analyzed. Ratio analysis is the main method used in this article in financial analysis, it is collected from the annual report of the company to calculate. The study found that from these different dimensions of financial analysis, it can be concluded that Tesla is a promising company.

Keywords: Electric vehicle, China, Tesla, Risk analysis, Financial analysis.

1. Introduction

1.1. Background

To solve environmental problems such as global warming, under the social background of promoting green travel, governments have promulgated various financial policies and subsidies to vigorously popularize the use of EVs. With the fast-growing EV industry aided by the government, the technology is gradually maturing. In recent years, many enterprises have flooded into this market, resulting in increasingly fierce competition and the market environment has become very complex. Therefore, in the future evolution of the EV industry, how to identify good enterprises to invest is very challenging. Specifically, due to the rapid development of the EV industry, there will be supply speed cannot keep up with the speed of development. In other words, it is crucial to vigorously produce battery raw materials and recycle batteries. However, given that the EV industry has also developed very rapidly during the epidemic, it shows that this industry is a general direction for future development obviously.

1.2. Related research

For decades, carbon neutrality and a significant increase in energy demand have attracted the attention of governments and policymakers. To address environmental pollution and global warming, the government has promoted the popularization of EVs to help reduce exhaust emissions. Sathivan et al. finished a study assessed countries with the highest conventional propulsion vehicles (CPV) to important policies that will help accelerate the popularization of EVs in countries in all regions. Through qualitative and quantitative research, the authors propose strategies that will help the development of the EV industry [1]. Razmjoo et al. found that governments have rapidly stepped-up efforts to expand the EV market by deploying fast-charging stations, increasing investment to promote adoption, and developing supportive policies. The authors highlight and analyze the most critical indicators that can expand the EV market, based on the aspects of policy, technology, and

government measures [2]. To simulate the demand of future EV, Kumar et al. use various diffusion models. The authors' study can help global policymakers accurately predict the demand for EVs and develop relevant resources in a timely manner [3].

Tesla Inc. holds a leading position in the global EV market. From inception to success, Tesla Inc. only use 10 years to be success. Chen studied the key factors of Tesla's success. The author expounds Tesla's development advantages and analyzes its success factors to provides insights for companies in the EV industry to learn from Tesla's key success factors [4]. Huang studied the development and marketing status of Tesla to find the reasons for the decision of the EV industry to be included in China's seven emerging industries. Huang makes an comprehensive analysis of the macro and microenvironment of Tesla, mainly using PEST analysis and SWOT analysis. At the same time, this paper gives some suggestions on how Tesla can improve its marketing strategy in China [5]. Qin et al. chose EV industry leader Tesla as a case and compared its financial statements from 2018 to 2020 with other competitors in the EV industry to analyze its comprehensive competitiveness. Through the case study method, the author points out the existing problems of Tesla and puts forward some feasible suggestions, which will help investors make the right investment decision [6]. In order to inform the desire for growth in the EV market held by investors, the authors study and quantify the main determinants of future EV demand. This study's model contrasts three factors that will affect EV market share: intrinsic (unsubsidized) EV demand growth, post-subsidy EV net cost reduction, and government subsidies [7].

Wen et al. studied the foreground of EV in China and the impact of the pandemic. The author shows that the EV industry has developed rapidly in the past decade. However, global EV sales have plummeted from the second half of 2019. Since China is one of the major markets of the world's EV industry, the authors used China to study the impact of the epidemic on it [8]. Additionally, shortage of raw materials is another problem. Nowadays, EV have become a key technology for achieving carbon neutrality in road transportation. However, there is a shortage of key metal resources in China, and Liu et al. illustrate its impact on the progressing goals of China's EV industry. The results of this study have important implications for policy makers to further adjust and develop relevant policies [9]. By considering several technologies and growth scenarios, Maisel et al. study the future demand for EV battery raw materials. The results of this study indicate that future material demand for EVs will exceed current raw material production. Therefore, expanding resource production in the future and focusing on recycling battery metals to meet the growing consumption of EVs is a challenge for the industry [10].

1.3. Objective

This article mainly studies Tesla's development prospects in the EV industry and the difficulties it has faced based on its financial indicators in the past three years. This paper introduces the historical background and business mode of Tesla from the second chapter and summarizes four capabilities of Tesla based on the financial statements in 2020-2022. The third chapter analyzes the opportunities and competition encountered by Tesla in the industry, based on the analysis of the sales and product side. In chapter 4, based on the comparison with the financial statements of two companies in the same industry, BYD and SAIC, the challenges and prospects of Tesla in China are analyzed.

2. Tesla's company introduction and financial analysis

2.1. Company Introduction

Tesla Inc. (Tesla), founded by a team come from Silicon Valley and used IT concepts to build cars in 2003, is an American EV and energy company with a market value of 371 billion dollars at the end of 2022, producing and selling EV, solar panels, and energy storage equipment. At the same time, Tesla is also the first EV enterprise using lithium-ion batteries in a true sense around the world [11]. Tesla has always believed that weaning the world off fossil fuels and moving toward zero emissions as soon as possible is an important and consistent goal.

Tesla has Giga, its factories, all over the world. Currently, Tesla has Gigas in four U.S. states: California, Texas, Nevada, and New York. Specifically, Tesla has two overseas Giga in China and Germany, respectively, targeting the Asian and European markets. Additionally, Tesla announced in 2023 that it would build a seventh Giga in Mexico.

2.2. Financial Analysis

2.2.1 Tesla's Profitability

Tesla's profitability is very strong, and its profit has continued to grow in the past three years. In the early stage, due to the continuous expansion of Tesla, it has been in the loss stage. However, with the continuous enrichment of product lines, as well as the continuous optimization and globalization of manufacturing and supply chains, operating income improve. Firstly, from the perspective of 2020-2022 net profit margin, Tesla's profitability is stable, and there is not much fluctuation, indicating that Tesla's comprehensive profitability is stable. Secondly, Tesla's gross margin from 2020 to 2022 is increasing. In the case of the price reduction of all products, it can maintain the gross profit margin in 2021, indicating that Tesla has the ability to control costs and has strong profitability, as shown in Table 1.

Table 1. Tesla's Income Situation (2020-2022)

	2020	2021	2022
Revenue from Business Activities (,000)	31,536	53,823	81,462
Net Profit (,000)	690	5,524	12,583
Net Profit Margin (%)	21.88	10.26	15.45
Gross Profit (,000)	6,630	13,606	20,997
Gross Margin (%)	21.02	25.28	25.78

2.2.2 Tesla's Operating Ability

Tesla's operating ability is very outstanding, and it has a high reputation in the EV industry. The sales and delivery of its EV products continue to rise, and the number of people who recognize Tesla's pure EVs has increased. In addition, the company achieved efficient production by establishing Gigas globally, which further reduced product costs. All this has helped improve Tesla's operating efficiency and profitability. However, as can be seen from the debt-to-assets ratio in Table 2 in the next section, it has been declining in the first three years. This cliff drop may indicate that Tesla is not fully utilizing its assets, and there is no way to show Tesla's operating ability from this index.

2.2.3 Tesla's Solvency

Tesla's solvency is strong. At the end of 2022, its total liabilities were 3 billion dollars, with a debt-to-assets ratio of 3.76%. At the same time, from the cash-to-debt ratio of the past three years, the ability of enterprises to borrow is increasingly strong. Since Tesla can pay interest on time, it can borrow new debt to repay the old debt and continue the debt scale, as shown in Table 2.

Table 2. Solvency Index

	2020	2021	2022
Debt-Total (,000)	11,739	6,834	3,099
Assets-Total (,000)	52,148	62,131	82,338
Net Cash Flow from Operating Activities (,000)	5,943	11,497	14,724
Debt-to-Assets Ratio (%)	22.51	11.00	3.76
Cash-to-Debt Ratio (%)	50.63	168.23	275.12

2.2.4 Tesla's Development Ability

Tesla has strong growth ability, mainly reflected in profit growth rate and investment in technology. Tesla's global trade is frequent, and due to the support and investment of many countries in Tesla, the scope of Tesla's service will be more and more extensive. As mentioned earlier, Tesla will build a seventh Giga in Mexico. This trend shows that Tesla is still expanding outward. Firstly, from the

growth rate of Tesla's operating income, the growth rate in the first three years is a sustained high growth. The operating revenue growth rate reflects the company's operating revenue speed and development prospects. Although this indicator has declined in 2022, in terms of the revenue growth rate of the first three years, the company has a high growth sustainability and market expansion ability. In addition, Tesla's technology investment ratio is another important index to show Tesla's development ability. The EV industry is highly dependent on technology, and technological innovation is the key for enterprises to maintain competitiveness. Tesla's CEO Musk said in the earnings conference that the focus in 2022 is to expand production rather than launch new cars, which means that technology investment will be reduced. Therefore, aside from the technological investment in 2022, Tesla's financial reports of the first three years show that the enterprise attaches high importance to technology research and development. To conclude, Tesla still has potential to grow, as shown in Table 3.

Table 3. Development Ability Index

	2019	2020	2021	2022
Revenue from Business Activities (,000)	24,578	31,536	53,823	81,462
Revenue Growth Rate (%)	-	28.31	70.67	51.35
Research & Development Expense (,000)	1,340	1,491	2,593	3,075
Three-year average growth rate of capital (%)	-	4.73	4.82	3.77

3. Opportunities and Risks in EV Industry

3.1. Industry Overview

As oil prices continue to climb. With the constant improvement of environmental awareness and the support of national policies, new energy has become an indispensable part of the modern energy system. In the past few years, the global new energy industry has developed rapidly, bringing major changes to human economy and life. In the past two years, the progress of EVs in China has accelerated, and the production and sales of EVs have increased significantly. China's EV production and sales reaches 3.58 million units and 3.56 million units respectively in 2021 [12]. In 2022, China's EV production and sales further soared, reaching 7.06 million units and 6.89 million units [13]. In addition, the popularization of charging facilities and the continuous progress of technology will also promote the rapid development of the EV market. As a result, many brands have entered this market in recent years. Competition is getting fiercer.

3.2. Competition-Sales

Table 4. Top10 Global Sales of New Energy Model Numbers (2022)

Ranking	Model	Sales (,000)
1	Tesla. Model Y	771.3
2	BYD. Song Plus	477.1
3	Tesla. Model 3	476.3
4	SAIC-Wuling. MiniEV	424.0
5	BYD. Qin Plus	315.2
6	BYD. Han	273.3
7	BYD. Dolphin	205.2
8	BYD. Yuan Plus	201.7
9	Volkswagen. ID 4	174.1
10	BYD. Tang	151.1

There are many leading enterprises in the new energy automobile industry, such as SAIC, Toyota, Volkswagen, BYD, Hyundai and so on. In 2022, the cumulative sales of global EVs exceeded 10 million, an increase of 55% over 2021 [13]. Among them, the sales volume of TOP20 brands was 4.3

million accounting for 43.48% of global sales. Tesla topped the list of 2022 EV sales with a resounding victory, with Model Y. Still, BYD is a formidable competitor to be reckoned with, with six of its models in the top10 by sales. Wuling, a subsidiary of SAIC Motor, also performed well, surpassing BYD's five models. The reason is obviously that the price of Wuling mini below 100,000 helps its sales volume quite a lot, as shown in Table 4.

3.3. Competition-Product

From the product side, there are three kinds of energy driven vehicles in the current automotive industry, pure electric vehicles, hybrid vehicles, and fuel vehicles.

Tesla only produces pure electric vehicles. Its product advantages mainly lie in the huge factory scale, low production costs, and advanced technology. Tesla currently sells several major vehicles including the Model 3, Model Y, Model S, and Model X. Model 3 is biased towards sports tuning, Model Y is a medium-sized SUV with the best sales volume at present, and the price range of these two models is between 200,000 and 350,000 yuan. The Model S is a midsize sedan priced between 800,000 and 1.05 million yuan; Model X is a very entertaining medium and large SUV, including car games, karaoke, gull-wing door design, and more, priced between 85 million and 1.00 million yuan.

BYD has two models of pure electric cars and gasoline-electric hybrids. Its product strengths are photovoltaic technology, slightly lower prices than other enterprises, and a focus on EVs. BYD's models are relatively rich and cover a wide price range. BYD has five main product lines. Ocean series focuses on young design style, Dynasty series is calmer, these two series cover models below 300,000 yuan; Denza series is positioned in the middle and high-end price range of 300,000-500,000 yuan; the high-end series is mainly a luxury model of 800,000 to 1.5 million yuan; The hipster -F is positioned between Dynasty and Denza. Its petrol-electric hybrid cars have also been further developed.

SAIC has many brands, including Shanghai Volkswagen, Shanghai GM, SAIC-GM Wuling, Nanjing Iveco, SAIC-IVECO Hongyan, Shanghai Shenwo, etc. It not only makes pure electric vehicles and hybrid vehicles, but also retains the part of fuel vehicles. For Wuling, whose sales are in the top10 in 2022 in the world, its Wuling miniEV price is below 100,000 yuan. In the context of the economic downturn during the epidemic, such low-cost cars are a good choice and cost-effective.

Get rid of the view of the price, pure electric vehicles will have more advantages. The first is the issue of environmental protection, the world's environmental pollution is becoming more and more serious. The effective emission reduction of pure electric vehicles is in line with national conditions and national policy support. The second reason is that the positioning of hybrid vehicles is more awkward, the comprehensive performance is not as good as fuel vehicles, and the environmental protection is not as good as pure electric vehicles. Therefore, companies that focus on pure electric vehicles have better prospects for future development.

4. Compare financial indicators with BYD & SAIC

4.1. High Risks

It can be seen from Table 5 that the WACC and equity beta of tesla are higher than those of the other two companies. Tesla is an international company with a bigger plate. Bigger plates naturally increase the risk. At the same time, its price is also high, including the frequent quality problems and negative news in recent years, will pose a threat to its sales.

Table 5. WACC & equity beta (2022)

	Tesla	BYD	SAIC
WACC (%)	13.00	7.67	3.45
Equity beta	1.45	0.91	0.92

4.2. Low Costs & High Profitability

Tesla's manufacturing ability is very strong, and it has its own full-supporting Giga, which can effectively reduce costs. And its reputation and technology allow it to set relatively high prices. It can be seen from the gross profit rate in Table 6 that Tesla has the highest, indicating that it has the strongest cost control ability and strong profitability.

Table 6. Gross Margin (2022)

	Tesla	BYD	SAIC
Revenue from Business Activities	81,462,000	62,519,423	110,387,585
Gross Profit	20,997,000	10,005,454	12,499,737
Gross Margin	25.78%	16.00%	11.32%

4.3. Repayment Ability

As can be seen from Table 7, the debt-equity ratio of SAIC is greater than 100%, which indicates that its long-term debt is too high, and there is repayment risk, which is a large financial risk. On the contrary, Tesla is the lowest, only 0.80%, which means its debt repayment ability is strong.

Table 7. Debt-to-Equity Ratio (2022)

	Tesla	BYD	SAIC
Debt-Total	3,099,000	21,150,653	46,420,328
Equity-Total	388,971,947	94,631,704	24,409,714
Debt-to-Equity Ratio	0.80%	22.35%	190.17%

5. Conclusion

This paper mainly studies the development prospects and risks of Tesla in the EV market through financial data, and evaluates its profitability, operating capacity, debt repayment capacity, and development capacity. At the same time, it also carried out a comparative analysis with the two enterprises with awesome sales performance in 2022, BYD and SAIC.

This study concluded that there is still a lot of room for the development of EV market, and there is a good development prospect. As the industry leader, Tesla has strong profitability, stable net interest rate and rising gross profit rate; the operation has proved the ability from the fact level, but the reflection on the data needs further research; the debt repayment ability is continuous growth; profit growth rate and investment in technology can reflect its good development ability.

This study also makes a financial comparison between Tesla and the two companies that make same great sales in the EV top10 global sales model in 2022. Both are Chinese EV companies, BYD and SAIC. From the comparison, the article concludes that in addition to its own risk problems, Tesla's ability to perform in China is still very good and has a promising development prospect.

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