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Financial Analysis and Valuation of Tesla Inc.

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Abstract: As the head of the new energy vehicle industry, whether Tesla's market value is overvalued compared to the industry average, and whether the new energy vehicle market outlook is optimistic has been a hot topic. This paper firstly compares and analyzes the business performance and several financial statement indicators of Tesla and other companies involved in the production of new energy vehicles, points out the huge difference between Tesla's valuation and its performance, and secondly analyzes the reasons for the difference in Tesla's valuation through the industrial structure and strategy of Tesla, and points out that Tesla's market value hides the capital market's special premium for technological innovation industry, high threshold industry, and environmental protection energy development. Tesla's market capitalization has a special premium for technological innovation, high-threshold industries, and environmental energy development. Finally, this paper judges the considerable development potential of the new energy vehicle industry in the new era of environmental awareness and points out that it should analyze the industry with future expectations as the main indicator and view the valuation from a long-term investment perspective.

Keywords: new energy vehicle industry, valuation, financial ratios

1. Introduction

Since the last century, human beings have begun to put the problem of global warming into practice, and carbon emissions, as one of the important factors affecting heat emissions, have long been a problem that all mankind is concerned about and expect to solve. In September 2020, China also set a target of reducing domestic per unit of carbon dioxide emissions by more than 65 percent by 2030 from 20 years ago.

At the same time, the organic carbon emissions caused by the combustion of fossil fuels account for a large proportion of the total carbon dioxide emissions. In addition to the implementation of effective solutions in the carbon dioxide emission process and post-treatment, the change of the energy structure from the source cannot be ignored. In this regard, in August 2022, President Joe Biden signed the Inflation Reduction Act (IRA) to subsidize electric vehicles assembled in the US after January 1, 2023; Norway, currently the country with the highest penetration rate of new energy

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vehicles in Europe, has been encouraging electric vehicles since 1991. It is not difficult to find that clean and low-carbon energy as the main goal of energy development has become a global trend.

As the most important product of energy conservation and emission reduction in the automobile industry, new energy vehicles have shown a steady upward trend in output and production efficiency in recent years, and the industry has developed rapidly and has a good prospect. As a leading company of new energy vehicles, Tesla can be said to be a pioneer in the new energy vehicle industry both in terms of technology, market, and corporate philosophy [1]. To sum up, the far lead of Tesla's stock market value is not the so-called over-speculation or harvest of investors in the capital market, but the reasonable expectations and incentive innovation made by the capital market through various big data analyses and reasonable predictions of future trends.

From the technical level, with new energy and artificial intelligence driving as the core of Tesla has clearly and old driven by fossil fuels and artificial driving as the core of the traditional automobile industry, and with the coming era of artificial intelligence, Tesla's emerging technology will become the first auto industry to eat the dividends [2]. From the perspective of the market, on May 25, auto media Motor1, according to the data compiled by JATO, released the global auto sales ranking in the first quarter of 2023, showing that the sales volume of Tesla Model Y in the first quarter of this year reached 267,200 units, with a year-on-year growth of 55.3%, becoming the global sales champion. It is not difficult to find that the penetration rate of new energy vehicles in the world shows a rapid improvement trend, which has reached 8.5% this year, among which the penetration rate of new energy in China reached 13%, Germany reached 23%, and Norway reached 70%. With the penetration of new energy in the United States, the world's new energy vehicles have entered a new stage of strong development. From the company concept analysis, Tesla aims to profit from feedback of consumers, which is the company most of the profits again into the company's product research and development or the improvement of the production chain to reduce production costs and can gradually the product price reduction, this with the traditional enterprise pay attention to the return on investment, is also the key factor Tesla to stand out in the car market.

2. Financial Valuation of Tesla

As Table 1 shown, there are totally 10 new energy vehicles companies and included 4 China brands like BYD, XIAO PENG, Li auto and NIO and other traditional brands like BMW and so on. From this table, it is clear that the enterprise value of XIAO PENG and RIVIAN respectively at $6.19 billion and $4.19 billion is much lower than Tesla's $490.89 billion. What is more, the EBITDA, ROIC and ROE are some important and essential measures of whether a company is profitable. It can be known that the EBITDA of XIAO PENG, NIO and RIVIAN, the ROIC of XIAO PENG and Li auto, the ROE of XIAO PENG, Li auto, NIO and RIVIAN are all negative, which means that this companies are difficult to make profits. The nest several lines of this table show the 2023 and 2024 forecasts for 10 companies. Table 1 below shows that the EPS (2022, 2023, 2024), Enterprise value, EBITDA, P/E, share price (2022.12.30, 2023.5.26), and other significant data of Tesla and other 10 companies (Data souring from Yahoo and Morningstar websites).

Table 1: Financial ratios of Tesla and its competitors.

Variables (2022.12.30)	Tesla	BYD	XIAO PENG	BMW	Mercedes-Benz
Enterprise Value ($billion)	490.89	73.63	6.19	126.95	146.83
EBITDA($billion)	17.66	6.04	-1.07	34.64	29.22
Net Income($billion)	12.58	2.34	-1.30	17.51	15.55

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Table 1: (continued).

Share Price ($)	123.18	49.14	9.94	29.66	16.35
Earnings per share (EPS) ($)	4.02	1.61	-0.76	29.31	13.55
Price/Earnings	30.64	30.52	-13.08	1.01	1.21
Enterprise Value/EBITDA	27.80	12.19	-5.79	3.66	5.02
ROIC (%)	20.13%	0.10%	-31.01%	5.26%	6.14%
Dept/Equity(%)	0.08	2.21	0.24	0.64	0.60
ROE(%)	28.68	18.87	-23.12	11	18.43
Share Price ($.5.26.2023)	193.17	59.52	8.60	37.32	19.08
EPS - Actual - Dec 2022	4.02	1.61	-0.76	29.31	13.55
EPS - Analyst Forecast - Dec 2023	3.44	1.12	-1.06	17	12.59
EPS - Analyst Forecast - Dec 2024	4.86	1.60	-0.12	17	12.69
EBITDA - Actual - Dec 2022	17.66	6.04	-1.07	34.64	29.22
	Li auto	NIO	Volvo	RIVIAN	Porsche
Enterprise Value ($billion)	17.28	13.46	86.55	4.19	24.89
EBITDA($billion)	-0.12	-1.48	6.19	-6.00	4.70
Net Income($billion)	-0.28	-2.06	3.02	-6.75	4.78
Share Price ($)	20.4	9.75	19.87	16.40	54.00
Earnings per share (EPS) ($)	-2.08	-8.89	1.50	-7.40	15.62
Price/Earnings	-9.81	-1.10	13.25	-2.22	3.46
Enterprise Value/EBITDA	-144.00	-9.09	13.98	-0.70	5.30
ROIC (%)	-13.73%	4.69%	4.92%	2.31%	N/A
Dept/Equity(%)	0.26	0.73	0.78	0.24	0.11
ROE(%)	-2.44	-49.71	23	-42	8
Share Price ($.5.26.2023)	28.16	7.7	19.68	15.14	5.78
EPS - Actual - Dec 2022	-2.08	-8.89	1.50	-7.40	15.62
EPS - Analyst Forecast - Dec 2023	0.34	-1.8	2.01	-5.14	15.94
EPS - Analyst Forecast - Dec 2024	0.79	-0.7	1.79	-3.36	16.6
EBITDA - Actual - Dec 2022	-0.12	-1.48	6.19	-6.00	4.70

Because the ROIC and market value of XIAO PENG, NIO, and RIVIAN are too low compared with other brands, they cannot be directly compared with Tesla about the stock market value. In addition, Porsche is a traditional car brand and has not invested much in the manufacture of electric cars, so as a result, it cannot be a competitor of Tesla.

As Table 2 shown, it has screened out the companies that could not be directly compared with Tesla, and then listed the stock price of the remaining companies in 2023, EPS in 2022, and EPS Forecast in 2023 and 2024, in order to calculate the P/E value of each company more conveniently in the next step. Table 2 below shows the EPS in three years (2022,2023,2024) and the Stock Price (5.26, 2023) of the other five companies.

Table 2: Stock Price and EPS(2022,2023,2024) of other five companies.

	Stock Price (2023.5.26)	EPS (2022)	EPS (2023 forecast)	EPS (2024 forecast)
BYD	59.52	1.61	0.79	1.37
BMW	37.32	29.31	17.00	17.00

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Table 2: (continued).

Mercedes-Benz	19.08	13.55	12.59	12.69
Li auto	28.16	-2.08	0.34	0.79
Volvo	19.68	1.50	2.01	1.79

As Table 3 shown, using each company's stock price to divide the EPS for each years, then we can calculate the P/E ratios in three years of each companies. Finally, the last two lines show the P/E (median and average) that calculated from the five companies and this figure can be seen as the industry P/E (median and average). Table 3 below shows that the P/E ratios in three years (2022, 2023, 2024) for each companies and the P/E (median and average) of this industry.

Table 3: P/E ratios (2022, 2023, 2024) and the P/E (median and average) of the industry.

	P/E (2022)	P/E (using EPS 2023 forecast)	P/E (using EPS 2024 forecast)
BYD	37.0x	75.3x	43.4x
BMW	1.3x	2.2x	2.2x
Mercedes-Benz	1.4x	1.5x	1.5x
Li auto	-13.5x	82.8x	35.6x
Volvo	13.1x	9.8x	11.0x
P/E (median) of the comparable firms:	1.4x	9.8x	11.0x
P/E (average) of the comparable firms:	7.8x	34.3x	18.8x

As Table 4 shown, using Tesla's annual EPS to Multiply by the median and average P/E of the new energy industry each year, and finally we calculate the average and median stock price of this industry in 2022,2023 and 2024. After that, Tesla's stock price is compared with the average and median stock price of this industry to know whether the TESLA company is developing better than other brands in the new energy vehicle industry. Table 4 below shows the stock price (5.26, 2023) and EPS (2022,2023,2024) of Tesla and the P/E (median and average) of the new energy vehicle industry in each year.

Table 4: P/E ratios and the P/E (median and average) of the industry and Tesla.

Tesla	EPS (2022)	EPS (2023 forecast)	EPS (2024 forecast)
$193.17 Share price on 2023.5.26	4.02	3.44	4.86
Industry	Price (using actual EPS 2022)	Price (using 2023 EPS forecast)	Price (using EPS 2024 forecast)
Using median:	5.66	33.68	53.43
Using average:	31.54	118.11	91.16

It does not make sense to use the median to compare because the median over three years is too low. Finally, we compare the average value with the stock price and it shows that Tesla's stock price is overpriced. On the one hand, Tesla's stock price far exceeds the industry average. It can be known that Tesla is far ahead of other brands in the development of the new energy vehicle industry. It can

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conclude that China's new energy vehicle brands have just started their development and still need a long time to reach profitability [3]. With the growth of the economy and the continuous improvement of the living standards of Chinese residents, the demand for passenger cars will also increase. The growth of demand and the development of the overall market will ensure the growth of China's new energy vehicle industry in sales volume and direction.

3. SWOT Analysis of Tesla

The purpose of this report is to examine the effectiveness of Tesla's business model and strategies by the method of SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats). This paper will study Tesla's strengths and weaknesses in areas such as technological innovation, product development, market penetration, and dealing with potential competition and challenges. Furthermore, we will think about its foreseeable future, focusing on the opportunities and threats it confronts.

3.1. Strengths

Tesla is a pioneer in the realm of the electric vehicle industry, and enjoys a unique position that entails a series of strengths. This company is widely acknowledged for its remarkable innovation, making it a leading employer and the most valuable automobile company of our time [4]. Tesla's efficient management strategy has helped it better overcome economic uncertainties, ensuring its survival and continued advancement.

A key strength of the company is its expertise in electric vehicle technology. Tesla electric cars have a better range than its competitors, with the Model S demonstrating the most impressive performance, with a range of 600 kilometers per charge. The company's innovation extends beyond its vehicles, as exemplified by the introduction of a comprehensive insurance program for its vehicles, InsureMyTesl, in collaboration with Liberty Mutual. A further strength is Tesla's capacity for innovation. The market expects the company to develop competitive and profitable products, such as the world's first fully electric semi-truck and new sports car models. This trust results in substantial financial gains.

Tesla's position within the industry is crucial. Despite the prevailing economic uncertainty, the company is poised to thrive owing to its substantial revenue growth and increased car delivery volumes. Tesla's distinctive and highly effective management approach, as revealed in a leaked employee handbook, also contributes to its accomplishments. The company employs smart, innovative personnel and measures them by establishing clear and concise objectives [5].

3.2. Weaknesses

Tesla, a pioneer in the field of energy-saving vehicles, is confronted with numerous weaknesses that affect its competitiveness and business expansion. The primary concern among these are complications arising in the manufacturing process. Tesla's innovative standards means the intricate production procedures and the potential of launch delays, as witnessed with the launch of Model X and battery assembly line at Gigafactory. Moreover, Tesla encounters difficulties in meeting demand due to intricate procedures, which consequently affects brand value. It also struggled to scale up, notably considering its plans to mass-produce Model 3 vehicles. As CEO Elon Musk admitted, a shortage of batteries has likewise affected Tesla's production rates, negatively impacting vehicle sales and energy storage systems.

The extensive reliance on Musk as Tesla's representative also presents a risk due to his involvement in other highly demanded projects such as Space X and The Boring Company. Financial uncertainties, highlighted by a $5.38 billion debt, pose a risk for future expansions and investments.

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Additionally, Tesla's employee safety record is concerning, with a recent fine imposed for unauthorized and unsafe tent production lines. The company has also encountered leadership wrangles that hamper long-term viability and productivity. Lastly, Tesla's workplace culture has come under scrutiny due to lawsuits alleging sexual misconduct and harassment, which threaten to tarnish its reputation.

3.3. Opportunities

Several significant growth opportunities are available to Tesla. Firstly, the Asian market is a promising place for Tesla to expand its business in cars and renewable energy, This enables Tesla to expand its global business and stabilize its finances. Secondly, the introduction of Model 3, a more affordable version of the flagship Model S, can widen Tesla's customer base. Moreover, Tesla's strategic plan to bring battery production in-house will result in an increased manufacturing rate and reduced production costs, significantly enhancing the company's self-reliance. The emerging pickup truck market currently accounts for 17.6% of the U.S. [6]. The automotive industry offers considerable growth potential. Tesla's Cybertruck could revolutionize this segment and bolster Tesla's growth.

The recent reassurance of the market in Tesla, as demonstrated by its surpassing projected car deliveries and reaching a market cap of trillion dollars, further consolidates its standing in the industry. Tesla's potential foray into the burgeoning air-taxi market, through the production of electric-vehicle-to-air-transport vehicles, showcases the company's innovative potential to disrupt and lead in novel mobility solutions [7]. Finally, a recent bulk order placed by Hertz for 100,000 Tesla cars, driven by the surging demand for electric vehicles and the shortage of chips impacting gasoline-powered vehicles, is anticipated to elevate Tesla's fleet sales, opening a new avenue of growth. These opportunities indicate that Tesla is well-positioned to take control and thrive in the rapidly evolving automotive and energy sectors.

3.4. Threats

Despite its prominence in the electric vehicle industry, Tesla faces a range of challenges that could hinder its continued growth and success. One such challenge is product liability claims. As a pioneer in autopilot technology, Tesla's vehicles have not always been successful in avoiding accidents, resulting in numerous lawsuits and substantial financial threats. Moreover, the competition Tesla faces is becoming increasingly extensive, with both luxury and economy brands preparing to enter the electric and self-driving car markets. These competitors are not only launching similar technology but are also offering their products at lower prices, posing a significant threat to Tesla.

Product defects, often due to the complexity of engineering innovative vehicles, have also been a persistent issue for Tesla. These defects can potentially tarnish the company's image and customer trust. Along with product defects, there are public concerns about Tesla's long-term sustainability due to unstable manufacturing conditions, which could inhibit further business development.

4. Outlook of Tesla

4.1. Strategic Objectives

4.1.1 Increase Production Capacity

Tesla aims to increase its production capacity to meet the growing demand for electric vehicles. And then it will expand its global footprint by entering new markets and building new factories globally, aiming to increase its market share in Europe and Asia especially. The company will plan to achieve

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this by building new super factories all over the world and expanding existing ones. It is said that Elon Musk, the CEO of Tesla, has shown pretty interest in building up a new super factory in India during his visit to India. While Indian government will also provide a better business environment and issue some beneficial laws to support the building of factories.

4.1.2 Develop New Products

In addition, Tesla plans to develop new products to diversify its revenue streams. This includes electric trucks, buses, and semi-trucks. Tesla will increase its market share by laying out various models of cars, which is indeed an effective and competitive means. This presents an opportunity for Tesla to expand its market share and increase its production capacity [8]. Of course, we know that in the field of heavy trucks, whether the power of battery energy can support enough carrying capacity will also be a problem that Tesla should face.

4.1.3 Innovate Battery Technology

Tesla aims to improve its battery technology to increase the range of its vehicles and reduce costs. The company plans to achieve this by investing in research and development. The company's strategic objective is to continue to innovate and improve its technology to stay ahead of its competitors. Tesla's expertise in battery technology and renewable energy presents an opportunity for the company to expand into energy storage and solar power, which are growing industries with significant potential [9]. Of course, investors have full confidence in Tesla's future and its ability to innovate state-of-the-art battery technology.

4.2. Risk Management

4.2.1 Production Delays

Tesla has faced production delays in the past, which can result in lost revenue and damage to the company's reputation. Because Tesla relies on a complex supply chain to manufacture its products. Any disruptions in the supply chain can result in production delays and lost revenue [10]. Tesla must implement new production processes, increase automation, diversify its supply chain, and develop relationships with multiple suppliers to manage this supply chain disruption.

4.2.2 Safety Concerns

Tesla's autonomous driving technology has faced safety concerns in the past. Because driverless technology is not yet mature, people still have a skeptical attitude toward this technology. Tesla The reasonable approach to tackle this issue could be that Tesla needs to implement new safety features, increase training for drivers, and need repeated experiments to enhance the stability of the technology and reduce people's safety concerns about it.

4.2.3 Regulatory Risks

The electric car industry is heavily regulated, and any changes in regulations could impact Tesla's business operations. So Tesla faces regulatory risks related to environmental regulations and government incentives for electric vehicles. As far as I know, Tesla has developed relationships with government officials and invested in lobbying efforts to manage this risk. Since June 2023, Elon Musk, as the chairman of Tesla’s board of directors, has successively visited East Asian countries to build a more friendly relationship with local government officials.

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5. Conclusion

First of all, under the changing trend of The Times, in order to respond to the slogan of low carbon environmental protection, the world has a carbon peak and carbon neutral vision, environmental policy, action plan, high carbon emissions industry strictly restricted, low carbon emissions, or zero carbon emissions industry favored and encouraged, carbon tax levy, carbon emissions trading system arrangement. The new energy vehicle industry has also become the biggest beneficiary, so the development of new energy vehicles is considerable. At the same time, with the help of scientific and technological progress, the artificial driving fuel car upgraded to fully autonomous driving (FSD) electric vehicle will gradually turn from a dream to a reality. With the rapid development of fully autonomous electric vehicles, Tesla has further consolidated its leading position in the industry. All kinds of data show that new energy vehicles have good development opportunities, and the capital market gives Tesla a higher premium due to its leading position and bright future, which is logical to discount to the bleak development prospects of traditional car companies.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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