

Research on the valuation of Tesla stock

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Abstract. Tesla Inc. is the largest electric car company in the U.S. and the world's first maker of self-driving cars. Tesla's products are now the world's best-selling electric cars. The company's market capitalization also surpassed \$1 trillion in October 2021. Many investors now consider Tesla to be a promising investment choice. This paper analyzes the current situation of Tesla from various perspectives and provide suggestion on investment related to Tesla.

Keywords: Investment, Tesla, Electric vehicles.

1. Introduction

With the increasing emphasis on environmental protection and energy conservation, the electric vehicle industry has witnessed tremendous development around the world, and Tesla, as a leader in the industry, cannot be ignored. Tesla Inc. is the largest electric car company in the U.S. and the world's first maker of self-driving cars. Tesla's products are now the world's best-selling electric cars. The company's market capitalization also surpassed \$1 trillion in October 2021. Having witnessed tesla's technological and financial progress, many investors consider Tesla to be a promising investment choice. This paper analyzes the current situation of Tesla from the perspective of business, finance, and industry evaluates the current stock price of Tesla by using the method of relative valuation and gives investment suggestions for Tesla.

2. Business and Financial Analysis

2.1 Overview and Mission statement

Tesla's mission statement is to accelerate the world's transition to sustainable energy. Tesla design, develop, manufacture, sell and lease high-performance fully electric vehicles and energy generation and storage systems, and offer services related to its sustainable energy products. Tesla also continues to grow its customer-facing infrastructure through a global network of vehicle service centers, Mobile Service technicians, body shops, Supercharger stations and Destination Chargers to accelerate the widespread adoption of its products. Tesla emphasizes performance, attractive styling and the safety of its users and workforce in the design and manufacture of its products and are continuing to develop full self-driving technology for improved safety. Tesla also strives to lower the cost of ownership for its customers through continuous efforts to reduce manufacturing costs and by offering financial services tailored to its products. Tesla's mission to accelerate the world's transition to sustainable energy, engineering expertise, vertically integrated business model and focus on user experience differentiates it from other companies.

2.2 Risks to the business model

The risks the company is currently facing are risks of business growth, operational risks, risks of government laws and regulations. The following is the detailed elaboration of mentioned aspects.

2.2.1 Risks of Business Growth

The world has been deeply impacted by the Covid-19 pandemic since the first quarter of 2020. Government regulations and social behaviors have been altered with non-essential transportation, government functions, business activities and person-to-person interactions limited or closed.

Under these circumstances, Tesla had suspended operations at each of its manufacturing facilities and certain of its suppliers shut down operations temporarily or permanently. Temporary employee furloughs and compensation reductions were also instituted during the time. Temporary impediments

to administrative activities supporting Tesla's operations also hampered its product deliveries and deployments. Meanwhile, the demand for personal electronic devices is increasing, resulting in a probable shortage in semiconductors and microchips. The duration and direction of this global trend under pandemic are unpredictable, the sustained impact of the current condition is largely unknown. Tesla must continue to monitor the progression of the pandemic and the related impacts to remain flexible and evolve its business. Tesla has previously experienced delays in launching and ramping of productions for new products and features, the same difficulties may also emerge in the future. For example, Tesla had faced supplier issues that resulted in delays during the ramp of Model X. Besides, there will be a risk in the future for Tesla to introduce new features or products successfully and timely.

Especially, Tesla's future business depends highly on the augment in production of mass-market vehicles including Model 3 and Model Y. Tesla now has limited experience to manufacture vehicles at high volumes across multiple factories in different geographics. The implementation, maintenance, ramp efficiency and cost-effective manufacturing capabilities are of utmost importance for the success of the company. If Tesla cannot successfully achieve their goals, it may suffer from delays and not be able to contain the cost and reach the target profitability.

The delays and other complications in ramping the production may lead to the damage of Tesla's brand, prospects and financial conditions.

2.2.2 Operational Risks

The growth of volume and profitability of Tesla's vehicles and energy storage products depend highly on the production of different components. The vital parts include lithium-ion battery cells produced by Panasonic at Gigafactory, battery modules and packs and drive units produced at Gigafactory Nevada and Gigafactory Shanghai, energy storage products manufactured at Gigafactory Nevada. As Tesla continues to increase the production rate and introduce new lines, additional bottlenecks may arise. The ability to manufacture products profitably would be limited if Tesla is unable to maintain and grow the respective operations at Gigafactory Nevada and Gigafactory Shanghai.

In addition, mishandling of battery cells may cause disruption to the operation of such facilities. Although safety regulations are established, there can be no assurance that a safety issue or the fire-related to the cells would not disrupt the operations. Tesla's products may contain design or manufacturing defects that cause them not to perform as expected or that require repair or certain features of our vehicles such as new Autopilot or FSD features take longer than expected to become enabled, are legally restricted, or become subject to onerous regulation, such defects can hamper Tesla's ability to develop, market and sell its products and services, and it may experience delivery delays, product recalls, or other significant expenses. Tesla's products are highly dependent on software, which is naturally complex and unstable.

Customers have already been experiencing issues such as the Model S and Model X 17-inch display screens. Although the company attempt to remedy any issues observed in our products as soon as possible, there are chances that such efforts may not be timely. While Tesla has performed extensive internal testing on its products and features, it currently has a limited capability to effectively evaluate the long-term quality, reliability, durability, and performance characteristics. There can be no guarantee that Tesla will be able to detect and fix any defects in its products prior to their sale to or installation for customers.

2.2.3 Risks of Government Laws and Regulations

There are currently incentives that support the development and adoption of electric vehicles in the U.S. and other countries, including certain tax exemptions, tax credits and rebates. However, such favorable policy may be reduced, eliminated, or exhausted from time to time.

In addition, certain government rebates, tax credits and other financial incentives are now available for Tesla to reduce the cost, attract the customer and investors, helping to increase the sales of

products and funds raised. However, when funding is exhausted, these incentives may become expired without warning.

2.3 Financial Strategy

Income:

In 2021, Tesla generated 11,497,000 dollars from operating activities. According to the income statement, Tesla had received an operating income of 6,523,000 dollars and a net income of 5,644,000 dollars, with 5,519,000 dollars as net income attributable to common stockholders. Meanwhile, there are only 135,000 dollars as other income.

Tesla also gained an income of 272,000 by selling digital assets. Proceeds from issuances of convertible and other debt and from exercises of stock options and other stock issuances are respectively 8,883,000 dollars and 707,000 dollars.

Expense:

In 2021, the company spent 7,868,000 dollars on investing activities, mainly on the purchase of property and equipment (excluding finance leases, net sales) and digital assets, which combined for 7982 million dollars. The Property, plant, and equipment increased to 18,884,000 dollars and digital assets are now worth 1,260,000 dollars. At the same time, the company also invested 132,000 dollars in marketable securities.

In respect of financing activities, 5,203,000 dollars were spent. While issuing convertible and other debt for 8,883,000 dollars, Tesla spent 14,167,000 dollars repaying convertible and other debt. Besides, the company also paid 439,000 dollars on finance leases.

In operation, the company spent considerably more on research and development increasing this expense from 1,491,000 in 2020 to 2,593,000 in 2021. Tesla also increased expenses for selling, general and administrative over the year from 3,145,000 dollars to 4,517,000 dollars.

Tesla has been able to increase its net income drastically. While the company lose 862,000 dollars in 2019 and gain only 721,000 dollars in 2020, it earned 5,519,000 dollars in 2021. And spent most of their cash repaying debt and investing in property, plant and equipment, and digital assets. Tesla repaid the debt of 14,615,000 dollars as well. In the end, Tesla was left with a free cash flow of 3,483,000 at the end of 2021.

3. Industry Analysis

Tesla focuses mainly on electronic automotive and energy generation and storage. The main products of the company include the follows:

Model 3:

A four-door mid-size sedan with a base price for mass-market appeal. Tesla currently manufactures Model 3 at the Fremont Factory and at Gigafactory Shanghai.

Model Y:

A compact sport utility vehicle (“SUV”) built on the Model 3 platform with seating for up to seven adults. It is currently manufactured at the Fremont Factory and at Gigafactory Shanghai.

Model S and Model X:

Model S is a four-door full-size sedan and Model X is a mid-size SUV with seating for up to seven adults. Model S and Model X feature the highest performance characteristics and longest ranges that Tesla offers in a sedan and SUV, respectively. Both models are manufactured at the Fremont Factory.

The products make Tesla a competitive company in the automotive renewable industry.

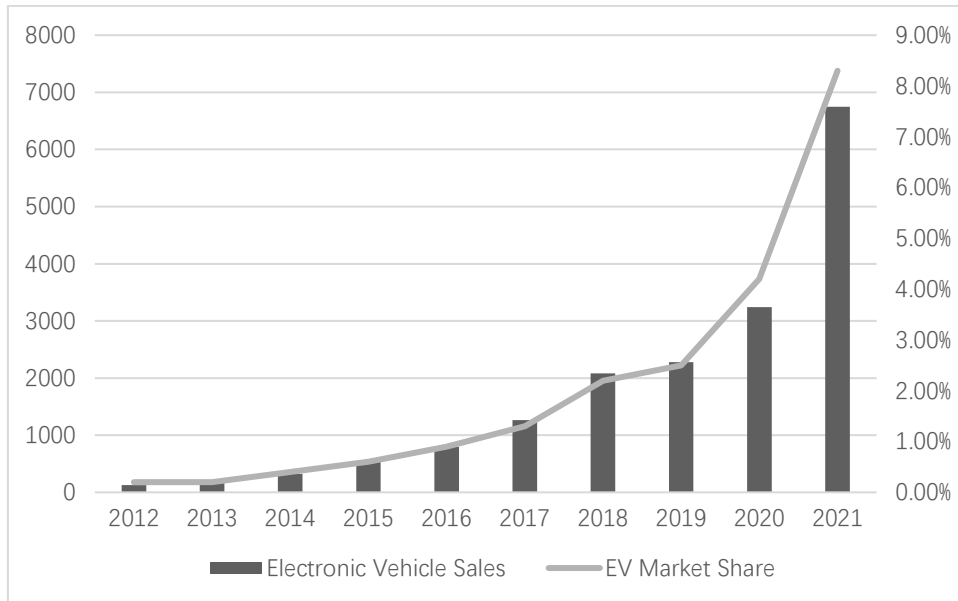


Fig. 1 Electronic Vehicle Sales and Market Shares

The automotive renewable is a rapidly growing one. As the chart above shows, the market for electronic vehicles witnessed a drastic increase over the past few years reaching 8.3%. With the current trend, I expect the market to grow even more soon.

3.1 Competitors

According to InsideEVs (2021), the world’s top 5 EV automotive companies ranked by sales are shown in the following charts.

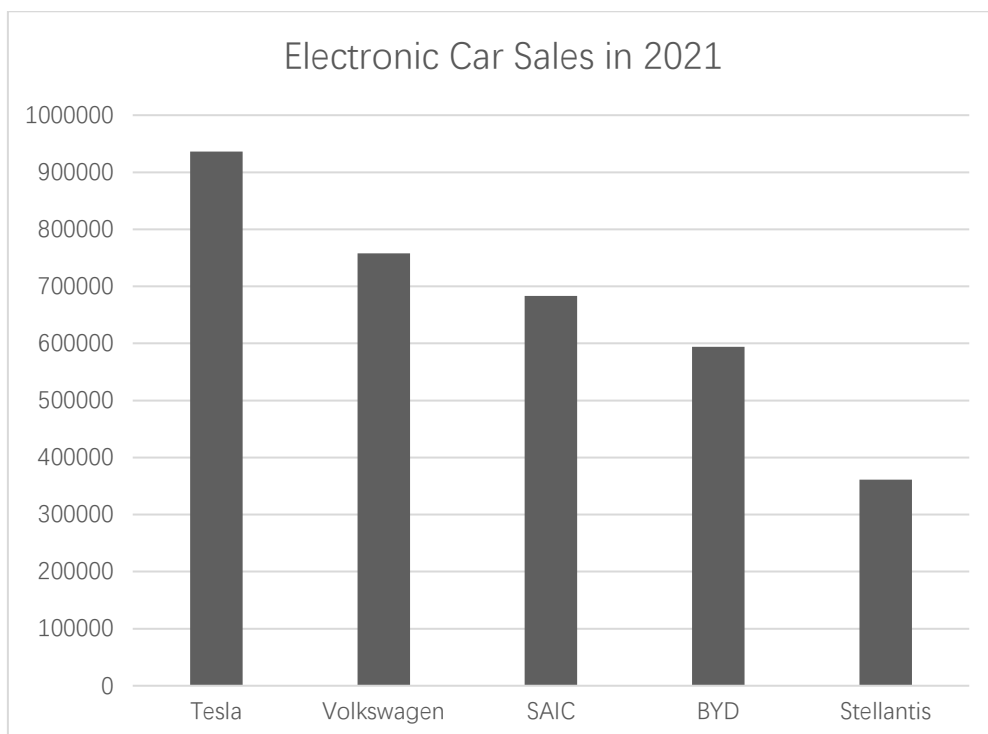


Fig. 2 Electronic Car sales of the Top 5 companies in 2021

Tesla, leading in the sales of electronic cars, had sales of 936,172. Following up are Volkswagen, SAIC-GM-Wuling (SAIC), BYD, Stellantis with sales of 757,994, 683,085, 593,878, and 360,953 consecutively, making them the main competitors for Tesla in the industry.

3.2 SWOT Analysis

To analyze the condition of Tesla, I will use SWOT analysis to highlight the strength, weaknesses, opportunities, and threats.

Table 1. SWOT Analysis for Tesla Inc.

Strength	Weakness
1. Most Valuable Automotive Company 2. Increase in Delivery 3. Highly Innovative 4. Well-Established Reputation	1. Complex nature of software 2. Probable Inability to Meet Demand 3. Shortage of Batteries
Opportunity	Threats
1. Environmental friendly products 2. Promising Future of Market 3. FSD products 4. Global Trend of Renewable Energy	1. Increased Competition 2. Change in Policy

3.2.1 Strength

One of the most important strengths of Tesla is its market value, it is currently the most valuable automotive company. Tesla had generated a revenue of 53.8 billion dollars with 936,172 cars delivered to the customer in the fiscal year 2021. The strong performance of Tesla pushed its market capitalization to over 1 trillion dollars making it the most valuable automotive company.

The second advantage of Tesla is its increase in delivery. Although faced with challenges of the supply chain by pandemic and political issues, Tesla managed to almost double the delivery of its products.

Thirdly, innovation is among one of the core competitive advantages of Tesla. Tesla is a highly innovative company, it is able to develop products with novel technology and features. Tesla also owns the top-class design of its products. Therefore, the markets always expect the company to develop creative and useful products which lead to better branding and increased financial gains.

Finally, Tesla owns well-established reputation. Tesla owns a socially responsible brand image for caring for the sustainable development of society and dedication to technology related to clean energy. The products of Tesla are also of high quality, gaining the company high brand loyalty and continuous growth in the sales of its products.

3.2.2 Weakness

The complex nature of the software can be of great risks for Tesla's products. As Tesla's products are highly dependent on its powerful software system and related updates of the system, the stability of the software are of huge importance. However, the complexity of software makes it difficult to develop, and fault in the programs can relate to the damage of the brand.

Currently, Tesla may have problem meeting the demand of the market. Due to the complicated procedure of the production and probable delays due to safety or political issue, Tesla may be facing delays in delivery or the unbalance between supply and need.

Tesla may also face shortage of batteries. According to the CEO, Elon Musk, the production of Tesla may be stagnated due to the limited supply of batteries. The decrease of production rate can result in financial loss.

3.2.3 Opportunities

The environmental-friendly nature of products of Tesla can present a great opportunity for Tesla. As consumers are becoming more environmentally conscious, the preference for electric vehicles will be enhanced. Such trends can lead to an increase in sales of Tesla and the better of its brand image.

There is anticipated to be huge growth space for the market in which Tesla operates. According to EVVolumes, while the market size of electric cars has been growing rapidly, there is still considerable space for future growth. Meanwhile, as the chart below shows, Tesla owns existing products and customers, and it is still developing new products and gaining new customers. Therefore, I believe Tesla will keep on increasing its sales and financial income.

Table 2. Sources of Revenue of Tesla Analysis

New Products√ New Customers√	New Products√ Existing Customers√
Existing Products√ New Customers√	Existing Products√ Existing Customers√

The FSD product shows great potential. Tesla's autopilot technology has gained the company fame and attention for its excellent convenience and the potential change for society. The development and adoption of self-driving products can earn the company tremendous financial and reputational benefits.

The global trend of renewable energy is in favor of Tesla. With the rising environmental awareness and the shift to sustainable mobility of the government, an increase in the market size of electronic vehicles is anticipated which can be hugely beneficial to electronic cars company like Tesla.

Rise of oil price can boost the development of Tesla. With the outbreak of the Russo-Ukrainian War, the price has been rising. Such a trend can result in a shift in the preference for customers from gas cars to electronic cars, offering a great opportunity for Tesla to grow.

3.2.4 Threats

With the industry growing continuously, more competitors are now in the market which can pose threats to Tesla. As the preference for clean energy is rising, more and more research are done for automotive powered by renewable energy. Big car producer is making more and more electric cars, making all of them strong competitors of Tesla and intensifying the competition in the EV industry.

The change in policy may stagnate the growth of Tesla. There have been incentives for governments to support the development and distribution of electric vehicles in the U.S. and other countries, including tax exemptions, tax credits, and rebates. However, it is not sure how long will such favorable policies will remain. When the policy is reduced or eliminated, it will sure hurt the business of Tesla.

3.3 Key Ratios

3.3.1 Vertical Comparison

To better understand the current financial condition of Tesla, I conducted a vertical comparison of Tesla in the past 3 years, including profit margin, return on assets(ROA), debt to equity ratio, and current ratio.

Table 3. Key Financial Ratio of Tesla 2019-2021

	2019	2020	2021
Profit Margin	-3.51%	2.29%	10.25%
Return on Assets	-2.70%	1.66%	7.14%
Debt to Equity Ratio	1.56	0.42	0.17
Current Ratio	1.14	1.88	1.38

As is shown above, in the case of profit margin and ROA, both of the two ratios saw a considerable increase in the past 3 years. After the milestone of a turn from loss to profit in 2020, ROA and profit margin both increased drastically respectively from 2.29% to 10.25% and from 1.66% to 7.14%. Showing that the company has been making huge progress and finally making a profit, and the efficiency of the management has been improved over time.

During the same period, the liquidity ratio has dropped to 1.38 which is a relative health ratio for the company after rising to 1.88 in 2020. Meanwhile, the debt to equity ratio has decreased drastically from 1.56 in 2019 to 0.17 in 2021, marking the better long-term financial condition of the company and more protected rights and interests of creditors.

In conclusion, the financial condition of Tesla has been improving over the 3 years in terms of profitability and stability.

3.3.2 Horizontal Comparison

To evaluate the performance compared to its competitors, I also conducted a horizontal comparison.

Table 4. Key Financial Ratio Horizontal Comparison

	Profit Margin	Return on Assets	Debt to Equity	Current Ratio
Tesla	10.25%	7.14%	0.17	1.38
Volkswagen	7.23%	2.98%	1.22	1.18
SAIC	3.30%	1.95%	0.20	1.19
BYD	1.66%	1.05%	0.57	1.03
Stellantis	9.50%	8.02%	0.62	1.15

As the table shows, Tesla has the highest profit margin among its competitors and the second-highest ROA of 7.14% just slightly lower than the 8.02% of Stellantis. Therefore, the profitability of the company is considered pretty high and impressive. In terms of debt-to-equity ratio, the company has the lowest figure which means the company's solvency is assured. Finally, for the current ratio, Tesla is the highest in the chart, but the figure is not far more than the figure of the other companies.

Through the horizontal comparison, we can see that Tesla is really competitive in its financial performance when compared with its main competitors.

4. Valuation

In this part, I use the relative method for the valuation of the stocks with P/E ratios from Yahoo Finance.

Table 5. P/E Ratio horizontal comparison

	Trailing P/E	Forward P/E
Tesla	165.28	81.97
Volkswagen	6.77	7.57
SAIC	8.81	7.26
BYD	169.78	82.64
Stellantis	4.54	4.00

Based on the P/E ratio, Tesla's stock is much less profitable compared to Volkswagen, SAIC, and Stellantis. With a trailing P/E ratio of 165.28, Tesla is the second highest in the chart, just slightly lower than the figure of BYD with the ratio of 169.78.

In the near future, Tesla is still going to be a much less profitable choice for investment compared to most of its competitors. However, the decline in its P/E ratio will be one of the largest with only approximately half of the figure in the past 12 months. This decrease in the ratio is pretty similar to the change anticipated for BYD, which is predicted to have a P/E ratio of 82.64 in the next year.

Although having a noticeably higher P/E ratio than Volkswagen, SAIC, and Stellantis, the price of Tesla's stock is not necessarily overvalued. Different from Tesla having electric cars as its main business operation, Volkswagen, SAIC, and Stellantis all produce and sell different products like gas vehicles, which makes them an inappropriate object of comparison for Tesla in terms of P/E ratio.

According to the previous report by Electrive (2021), the majority of the sales of BYD are attributed to electronic vehicles, making the company similar to Tesla. When comparing the P/E ratio of these 2 companies, we can see close figures and nearly identical trends for the near future.

Although the stock of Tesla is currently less profitable than lots of its competitors when only considering companies with electric cars as their main business, the P/E ratio for Tesla shows a similar level of current and future profitability. Besides, considering the company itself is the highest in profit margin among the main competitors and had its management effectiveness greatly improved, I believe the price for Tesla is not overvalued. The anticipated drastic decline of the P/E ratio in the next year also shows that Tesla is on an upward trend with great potential.

5. Conclusion

Tesla has just started making a profit and it is already a company with one of the largest market values in the world all thanks to its advanced technology and great brand image. Tesla is now increasing its investment in capital and R&D section, keeps strengthening its competitive advantages. And its mission statement to accelerate the adoption of renewable energy helped to enhance its already well-accepted brand.

With the improvement in consumers' environmental awareness and the shift in policy to reduce carbon emission, huge space is created for Tesla to grow. The ongoing war and other political issues also accelerate the change of preference of the audience.

However, in the short term, there are chances that Tesla can be negatively impacted by the poor quality of its product and the dysfunction of software. There are also chances that the supply chain of Tesla is interrupted by a pandemic or other unexpected events and result in delays in delivery which damage the brand and its financial position.

Even though there are weaknesses and threats to the business of Tesla, it is currently likely that Tesla has a bright future. Because while its core advantages cannot be easily replicated, most of the weaknesses and threats for the company can be common for lots of businesses. The company may be negatively impacted by the risks in the short term, but in the long run, Tesla is very likely to thrive.

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