



Universidade do Minho  
Escola de Economia e Gestão

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Equity Research - Tesla Inc.

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Projeto de Mestrado  
Mestrado em Finanças

Trabalho efetuado sob a orientação da  
Professora Florinda Silva

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## Resumo

O presente documento consiste num relatório de *Equity Research* sobre a empresa Tesla Inc. Este relatório segue o formato do instituto CFA, abordando vários aspetos financeiros da empresa como os riscos da mesma.

A Tesla Inc. é uma empresa norte-americana que detém dois segmentos de atividade. Primeiro, tem o segmento automóvel, onde apenas produz carros elétricos. E segundo, o segmento energético, onde apenas utiliza fontes de energias limpas. É a empresa do setor automóvel com maior valor de mercado que tem vindo a crescer exponencialmente nos últimos anos.

Neste relatório procura-se estimar o valor por ação da empresa através de dois métodos de avaliação, o método dos fluxos de caixa descontados e a avaliação relativa.

O valor estimado da ação para o ano de 2023 alcançado foi de \$105,58 pelo método dos fluxos de caixa descontados, e consequentemente a recomendação de venda da ação, avaliada em \$246,53, no dia 3 de outubro de 2023.

A avaliação relativa usando a empresa BYD como referência resulta em valores estimados de \$157,10 usando o índice Preço/Lucro e \$128,07 usando o índice EV/EBITDA, Valor da Empresa sobre o Lucro antes de Juros, Impostos, Depreciações e Amortizações.

**Palavras-chave:** Avaliação da empresa, fontes de energia limpa, sustentabilidade e grande crescimento.

## Abstract

The present document is an Equity Research Report of Tesla Inc. The report follows the CFA institute guidelines, analyzing various financial aspects of the company and its risks.

Tesla Inc. is an American company that operates in two different segments. Firstly, the automotive segment, only producing electric vehicles. And secondly, the energy segment, only using clean energy sources. It is the automaker with the highest Market Capitalization that has been growing exponentially in recent years.

In this report we seek to estimate the target price of Tesla, using two valuation methods, the DCF valuation and the Relative Valuation.

The target price estimated for 2023 was \$105.58 per share, using the DCF valuation, and consequently the recommendation to sell the stock, since it is traded at \$246.53, on October 3, 2023.

The Relative Valuation using BYD as reference results in target prices of \$157.10, using P/E ratio, and \$128.07 using the EV/EBITDA ratio, Enterprise Value to Earnings Before Interest, Taxes, Depreciations and Amortizations.

**Keywords:** Company's Valuation, clean energy sources, sustainability, and high growth

## Disclaimer

This Equity Research Report was prepared for academic purposes only by Pedro Miguel Perestrelo Pereira, a student of the Master in Finance at the University of Minho. The report was supervised by a faculty member acting merely as an academic mentor. Neither the author of this report nor the supervisor are certified investment advisors. This report should be read as a pure academic exercise of a master student. The information used to produce this report is generically available to the public from different sources and believed to be reliable by the student. The student is the sole responsible for the information used in this report, as well as the estimates and forecasts, application of valuation methods, and views expressed. The UMinho and its faculty members have no unique nor formal position on those matters and do not take responsibility for any consequences of the use of this report.



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## Investment Recommendation

Recommendation	Sell
Market price 03/10/2023	\$ 246.53
Target Price FY2023	\$ 105.58
Downside	57%
52-week high (19/07/2023)	\$ 299.29
52-week low (06/01/2023)	\$ 101.81
Market Cap (USD)(M)	\$780 046 238.88
Market Cap 2023 (USD)(M)	\$576 443 126.73
EV (USD)(M)	\$757 555 765.08
Shares Outstanding	3 164 102 701
EPS (LFY)	\$ 3.62

Table 1-Recommendation & Stock Data  
Source: Refinitiv Eikon & Own Estimates

My recommendation for Tesla is to sell the stock with a target price for 2023 of \$105.58/share, using the Discounted Cash Flows (DCF) valuation, a downside of 57% from the market price of \$246.53/share on October 3, 2023 (Table 1). Tesla continues to be the automaker with the highest Market capitalization (Market Cap) in the automotive market and the second bestselling Electric Vehicle (EV) brand, after the overtaking of BYD company in the 2<sup>nd</sup> quarter of 2022.



Figure 1-Stock Price History (Last 5 Years)  
Source: Refinitiv Eikon

While the recommendation is to sell Tesla stock, it stands apart from its market peers due to its revenue growth over the last five years, except for 2019 and 2020, which were affected by the COVID-19 pandemic. Although this high growth is expected to continue at least until 2030, recent and anticipated price cuts will likely result in lower future revenue growth rates and operating margins than initially projected.

These price cuts are being implemented to sustain high sales volumes, as Tesla faces increased competition, notably from BYD, which sold nearly 1.8 billion vehicles in the past year compared to Tesla's 1.3 billion.

Additionally, the growing number of new electric vehicle models from both established and emerging automakers, particularly Chinese companies like BYD, Li Auto, and NIO, leads me to believe that the market's valuation of Tesla has become overly optimistic.

## Basic Information

Tesla Inc., formerly Tesla Motors, is named after the Serbian inventor Nikola Tesla and was founded in 2003 by two American engineers and entrepreneurs Martin Eberhard and Marc Tarpenning.

The company strives to demonstrate that electric vehicles can be better, quicker, and more fun to drive than internal combusting engine cars.

Today, Elon Musk serves as the Chief Executive Officer (CEO) and co-founder of Tesla. The company operates in two different segments: automotive, exclusively producing electric vehicles, and energy, by generating and storage using only clean sources. Their mission is to accelerate the world 's transition to sustainable energy (Tesla Inc., 2022).

Tesla 's share is traded on The NASDAQ Global Select Market under the symbol of "TSLA" beginning on June 29, 2010, at a price of \$1.13 per share.

In recent years, Tesla has experienced an exponential growth in its stock price. This upward trend continues, with Tesla trading at \$246.53. The company ranks among the top ten most valuables companies and holds the distinction of being the most valuable automaker in terms of market capitalization (Table 2). This positions Tesla in direct competition with companies such as Mercedes, BMW, and Vivint Solar (Henriques, 2020).

Automakers	Market Cap (M)
1 Tesla Inc.	388 972
2 Toyota Motors	186 814
3 BYD Co Ltd	93 594
4 Mercedes Group AG	73 370
5 BMW AG	59 328

Table 2 - Top 5 Automakers Ranked by Market Capitalization at the end of 2022  
Source: Refinitiv Eikon

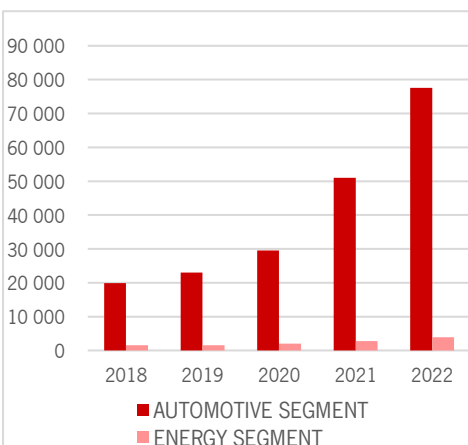


Figure 2 - Revenues Description  
Source: Refinitiv Eikon

## Business Description

The company operates in two segments: the automotive and the energy generation and storage.

### **Automotive segment**

The automotive segment generated on average near 95% of company's total revenue (Figure 2).

It includes the design, manufacturing, development, sales and leases of their fully electric vehicles, sales of automotive regulatory credits, services, and others.

The services & others includes the non-warranty after-sales vehicle services and parts, sales of used vehicles, retail merchandise, paid supercharging, and vehicle insurance revenues.

Tesla 's first car was launched in 2008 and called Tesla Roadster, a sports car which had its production ended in 2012.

After that, also in 2012, the company started the delivery of its second car, the Model S, which is still in production.

At the present time, the company manufacture four different models, the Model S, X, 3 and Y. The Model 3 is a four-door mid-sized sedan with a base price for mass-market appeal. The model Y is a compact sport SUV (Sport Utility Vehicle) on the Model 3 platform seating up to seven adults. As we see in Figure 3 these models are the bestselling ones.

The Models S and X are the oldest and the premium models, a full-size sedan, and a mid-size SUV, respectively, and the ones featuring the highest performance characteristics and longest ranges.

In the ending of the last year, Tesla started the production and deliveries of the Semi Tesla, its first commercial vehicle.

For the future, the company plans some new models as the Cybertruck and the new Tesla Roadster (second generation).

The automotive segment generates revenues by four different ways:

- By direct sales, selling cars through its website or the company-owned stores.
- By used cars sales, company's used vehicle business supports new vehicle sales by trading customers' used car, Tesla or other, for a new Tesla. The used car is then marketed directly by the company or by third parties. Vehicles returned from leases are also sold.
- By public charging, the company has a growing international network of Tesla Superchargers, co-located with its energy storage systems to reduce costs, and promote renewable energy. Since 2021, Tesla allowed the usage of its Superchargers from non-Tesla vehicles pursuing its mission to help the world's transition to sustainable energy.
- And, by In-App Upgrades, customers may purchase from Tesla app or from its vehicle interface additional paid options. This functionality will

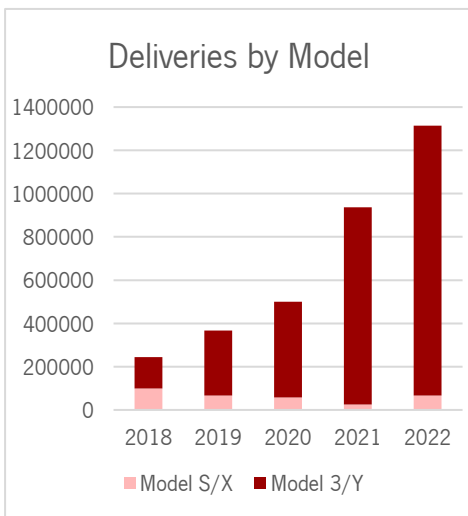


Figure 3 - Deliveries by Model  
Source: Tesla's Reports



allow Tesla to offer new options and feature on a subscription basis on the future.

## Energy Generation and Storage

Tesla's energy segment started in 2016 with the acquisition of SolarCity. In 2022 represented only almost 5% of Tesla's revenues (Figure 4) but has a big role in company's missions to accelerate the world's transition to sustainable energy.

The segment is divided in two groups: the energy generation and the energy storage products.

In the first group, Tesla sells retrofit solar energy systems, solar panels, and the Solar Roof, engineered to combine aesthetic appeal and durability with power generation using premium glass roof tiles.

In the second group, the company manufactures the Powerwall and the Megapack, two lithium-ion energy storage products. The Powerwall is used at a home or a small commercial facility, and, in the other hand, the Megapack has greater capacity and is used by commercial industry, utility and generation customers.

This segment includes the design, development, manufacture, installation, sales and leases of solar energy generation products and solar energy storage products and related services, and sales of solar energy incentives.

## Manufacturing

Tesla is a vertically integrated company, which means that almost every part of its manufacture process is made in the company.

The company has five industrial facilities in the US (Table 3), the Gigafactory Texas, the Gigafactory Nevada, the Fremont Factory, and the Gigafactory New York and the Megafactory, the ones not owned by Tesla. Here they manufacture and assemble vehicles parts and components, energy storage components and solar energy products and components.

Tesla owns two other manufacture facilities internationally (Table 3), the Gigafactory Berlin-Brandenburg, in Germany, and the Gigafactory Shanghai, in China. With these two facilities the company can reduce manufacturing and transportation costs and reduce the impact of unfavorable

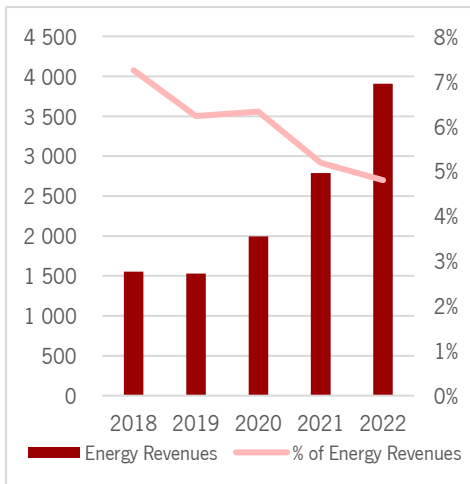


Figure 4 - Energy Segment Revenues and its weight on total revenues

Source: Refinitiv Eikon

Facilities	Location
Gigafactory Texas	Austin, Texas
Fremont Factory	Fremont, California
Gigafactory Nevada	Sparks, Nevada
Gigafactory New York	Buffalo, New York
Megafactory	Lathrop, California
Gigafactory Berlin-Brandenburg	Grunheide, Germany
Gigafactory Shanghai	Shanghai, China

Table 3- Manufacturing Facilities

Source: Tesla's 10-k Form

tariffs in those local markets. These factories are not yet at their full capacity but increasing production every year.

Besides these seven manufacturing facilities, in March 2023 the CEO, Elon Musk, said the company will open a new Gigafactory in Mexico to expand its global footprint (Pulice & Beth Soloman, 2023). There are also rumors that Tesla is planning to build another factory in Europe (Landauro et al., 2023).

Although most of the components are made by its factories, Tesla developed close relationships with hundreds of suppliers of key parts, reducing the costs of components obtained from its supply chain and minimizing potential risks due to disruption of one of them. Other method to mitigate this risk is that they also keep stock of production's key parts.

### Industry Overview and Competitive positioning

#### **Automotive Industry**

In the last years, consumers have their choices more focused on sustainability, what can explain the rising in electric, and hybrid cars in the markets, becoming a new alternative to the internal combusting engine cars.

The automotive industry is going in a transition period in which new businesses and new opportunities are appearing in the sustainable part of the market. Year after year, electric vehicles and plug-in hybrids electric cars are rising in sales (Figure 5), market value, and weight in this industry, what makes analysts forecast this momentum to maintain at least until 2030 (Deloitte, 2020).

Following the market transition period, many manufacturers announced the transition of all or some of their fleets, within the next decade. Varying each other on timing deadlines, geographical coverage, segments covered, and technology adopted (Shen et al., 2023). Nowadays, customers can benefit from new government credits, incentives and policies promoting the usage of clean energy, and purchase of electric vehicles in almost every country.

For example, in the US, the Inflation Reduction Act (IRA) was designed to allocate funds to promote the usage and purchase of clean

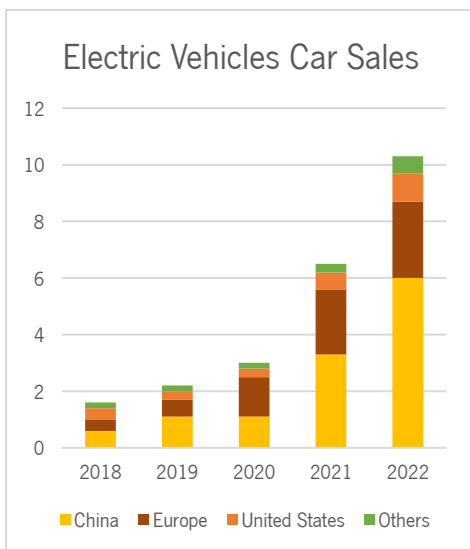


Figure 5 - Electric Vehicles Car Sales, 2018-2022 (in Millions)  
Source: International Energy Agency

energy. The purchase of an electric vehicle eligible for the IRA, as Tesla's Model 3 and Y can benefit the customer with tax credits up to \$7500. Today, this guidebook also includes the purchase of used EVs, with tax credits up to \$4000 or 30% of the sales price (whichever is lower), and home and commercial charging, deducting up to 30% or \$1000 and \$100000, respectively (Bistline et al., 2023).

EV models	Sales
1 - Tesla Model Y	786 000
2 - Tesla Model 3	596 000
3 - BYD Song	477 094
4 - Wuling Hongguang Mini EV	424 031
5 - BYD Qin Plus	315 216

Table 4 - Top 5 Bestselling EVs of 2022  
Source: Carlogos.org

In the plug-in EV market, even though Tesla's Model Y is the bestselling car and the Model 3 the second bestselling (Table 4), since the 2<sup>nd</sup> quarter of 2022, BYD, a Chinese automaker, overtook Tesla as the company with the highest sales, holding the biggest share of the market (Table 5).

EV Automotive Groups	Sales	Market Share
1 - BYD	1 857 549	18.40%
2 - Tesla	1 314 330	13%
3 - Volkswagen	831 844	8.20%
4 - SAIC	724 911	7.20%
5 - Geely-Volvo	606 114	6%

Table 5 - Top 5 EV Automotive Groups ranked by sales in 2022  
Source: InsideEVs

Besides BYD, in the last years the EV market saw the emergence of new companies only commercializing electric vehicles, as Lucid Motors and Rivian in the US, and NIO and Li Auto in China, which is the country with the highest number of EV sales and with the biggest market share.

From these new companies the ones with higher production and sales are the Chinese ones, because the Chinese Government is boosting the transition to electric vehicles seeking to make the country one of the world's leaders of climate policies. To do so, the Government implemented new policies and subsidies promoting EV purchasing, and defined strict patterns in terms of vehicle emissions, forcing automakers to invest in electric vehicle technologies. Apart from that, the growth of charging facilities all over the country also boosted this transition (China2Brazil, 2023).

### Energy industry

In the energy industry, it can also be noticed a growth in the renewable energies, as we can see in the Renewable Energy Highlights (Figure 6), from The International Renewable Energy Agency (IRENA, 2023), that shows an expansion in the solar energy capacity. This growth can be explained by the fact that the consumers' sentiment is changing towards a more sustainable energy source.

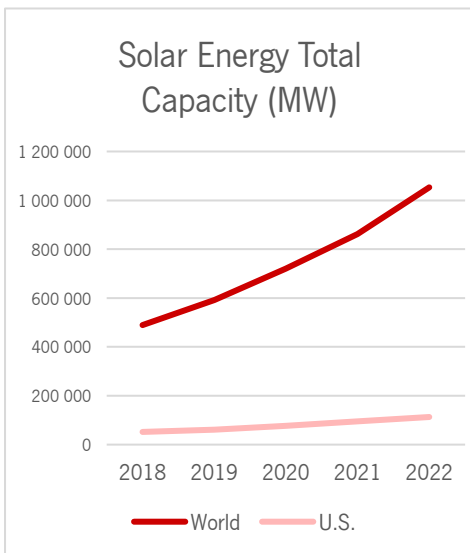


Figure 6- Solar Energy Total Capacity (MW)  
Source: Renewable Energy Capacity Statistics (IRENA)

As well as in the automotive market the usage of clean energy also benefits from a lot of government laws and policies, promoting their purchase.

In a way to fulfill its mission to help the world accelerate the transition to sustainable energy, Tesla entered in the energy market with the acquisition of SolarCity, in 2016, expanding beyond the automotive industry in a strategic move that could create benefits between the two segments and keeping its business only in clean energy sources.

With this acquisition, Tesla became one of the three main companies in the US residential solar energy market way ahead of its two competitors, but since 2019, Tesla's share in this market is in decline, positioning it in the third position, due to a change in the Tesla sales strategy (Hoze, 2021a).

### Competitive positioning

To better understand the competitive position of the firm I developed the five forces of Porter model, analyzing each five competitive forces (Table 6):

#### Threat of new entrants: High

It is very difficult to enter in the automotive market, the capital value in the factories is too big to consider. Unless you can focus on a product that carries a good margin and people are willing to pay for, that was what Tesla did back in 2008 with the Tesla roadster.

Nowadays, due to the mentality change towards sustainability, the threats of new entrants in the EV market are increasing with many internal combusting car manufacturers releasing their own EVs, priced at the same or at a lower price than Tesla ones.

While others try to enter in this market, Tesla benefits with its first mover position, focusing on the manufacture of the existing models reducing costs, lowering prices, and building their network of charging spots.

#### Threat of Substitutes: High

The substitutes of Tesla's cars are the internal combusting engine cars (ICE). The growth of the EV market will depend on the lasting of this transition period that is affecting the automotive market.

EV cars face a lack in infrastructures, as the number of charging stations in comparison with gas stations (Figure 7), and EV cars tend to take longer to refuel and to be sold at a premium price over their substitutes.

Five Forces of Porter	
Threat of new Entrants	Medium
Threat of Substitutes	High
Bargaining power of consumers	Low
Bargaining power of suppliers	Low
Competitive rivalry	High

Table 6 - Five Forces of Porter  
Source: Own Assumptions

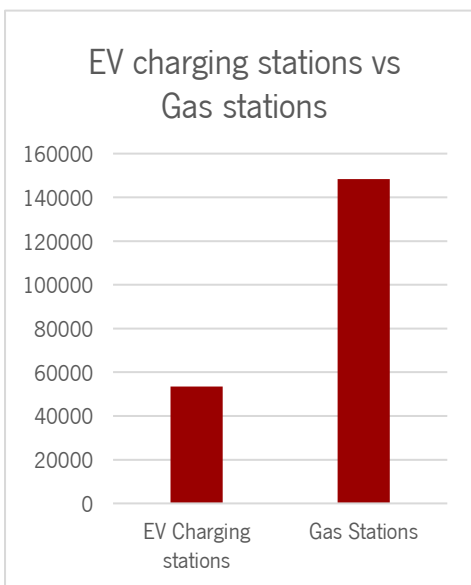


Figure 7 - EV Charging Stations vs Gas Station in the US in 2022  
Source: Statista

Recently, customers witnessed a constant increase in fuel prices (Figure 8), which is expected to continue and makes them search for alternatives to avoid it, such as the electric vehicles, bikes, and other modes of transport.

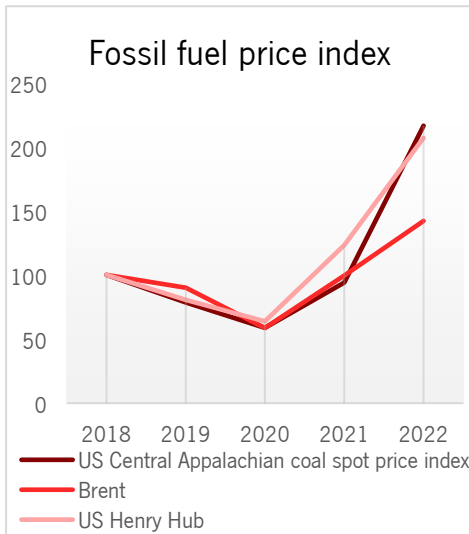


Figure 8 - Fossil Fuels Price index, 2018 to 2022  
Source: Energy Institute Statistical Review of World Energy

Governments are contributing for the EV market growth with laws, policies and tax incentives promoting the purchase of EVs, some of them even plan on banning the sale of ICEs. Although to fully change a country fleet to EV will take some time since for example in the European Union the average vehicle fleet age is 12 years (European Automobile Manufacturers' Association, 2023).

Public transports and ride sharing companies as Uber and Lift are a big threat on bigger cities, because the consumer does not have to take the main cost of the fuel or the depreciation of the car.

After the pandemic, many people are still working from home and shopping online (Figure 9), thus reducing the demand to travel.

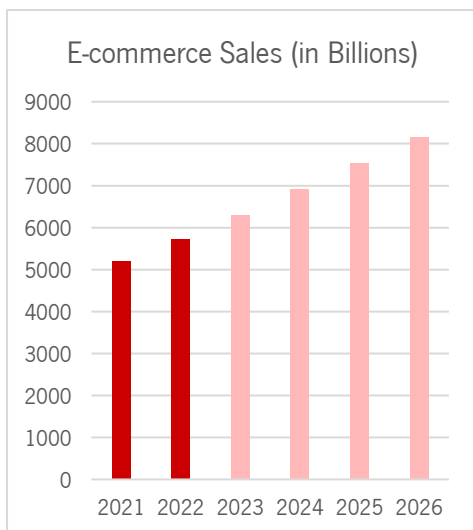


Figure 9 - E-commerce Sales (in Billions) from 2021 to 2026  
Source: Forbes

#### Bargaining power of consumers: LOW

Tesla sells cars without any big competitor with the same quality and the same price. So, Tesla sells every car with no demand problem, buyers don't have any bargaining power.

Despite this the company tries every day to decrease its prices, by reducing costs and increasing production efficiency.

#### Bargaining power of suppliers: HIGH

Nowadays, Tesla is a vertically integrated producer, so most production processes are made in-house, which means the company only seek for components on their suppliers.

This improves the company bargaining power since it is much easier to buy only components than a complete technology.

Despite this, Tesla, in its 2022 annual report refers that the company has hundreds of suppliers, some of them single-source suppliers which represents a risk to the company's production (Tesla Inc., 2022).

## Competitive rivalry: HIGH

Although Tesla still takes advantages of its first mover position, with model Y and 3 being in the top 3 bestselling plug-in electric vehicles, since the 2nd quarter of 2022, BYD (acronym to Build Your Dreams) overtook Tesla as the bestselling EV brand and as the company with the biggest market share, turning it into the biggest competitor in this market (Figure 10).

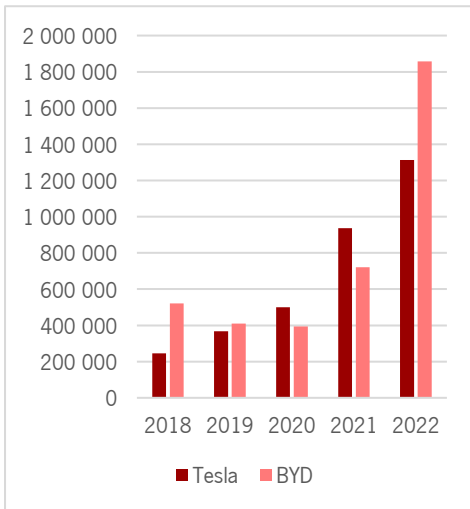


Figure 10 - Tesla vs BYD Sales  
Source: Tesla 10k Form and Statista

Tesla focus also on competing with the internal combusting car automakers, with cars that are better to the environment.

## Investment Summary

Using DCF valuation methodology, Tesla's 2023 stock target price is \$105.58 representing a downside of 57% contrasting with the share market price of \$246.53. This downside is explained because of the price cuts announced by Tesla this year and to the next year, and the increasing competitions from new automakers, which only commercialize EVs and from many established automakers, that plan to become 100% electric within the next decade.

The price cuts (Figure 11) shows a favoring of volume sales instead of margin what makes the future cash flows not as high as expected before, with Elon Musk saying "We're the only ones making cars that technically could sell for zero profits now and yield tremendous profits in future through autonomy" (Waters, 2023).

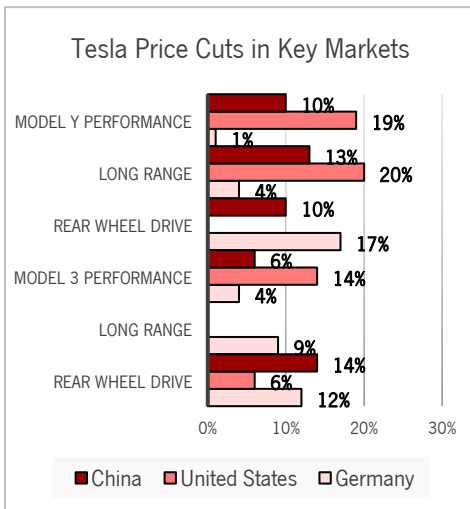


Figure 11 - Tesla Price cuts in key markets in its bestselling models  
Source: Reuters

The entrance in the EV market will bring more competitiveness to the market and customers will have a larger number of choices, some selling at lower prices than Tesla's models.

Tesla's revenue forecasts still show a high growth rate because the company is still increasing their production efficiency and capacity, investing in their manufacture facilities, especially in the ones that are not yet at their full production capacity. The plans to build other manufacture facilities also supports the high growth rate since Tesla will be able to raise its production and consequently its sales volume.

This investment also represents an increase of Tesla's Capital Expenditures (CAPEX) which contributes to lower Free Cash Flows to the Firm (FCFF) and decrease the target price.

Tesla operates in two different segments, the automotive and the energy segment, using only clean energy sources, a positive aspect in the consumers' point of view which is turning towards sustainability.

The automotive segment is the one which generates more cash flows to the firm, representing near 94% of its revenues (Figure 12), which makes me assume Tesla as an automaker that stand out for their technologies and innovations. With only four models, as today, Tesla prefers to offer more quality than quantity.

After 2016, at the time of acquisition of SolarCity, Tesla began their energy segment, seeking to fulfill its mission to help the world accelerate the transition to sustainable energy.

This acquisition also generated advantages for the automotive segment, with the possibility to join both energy generation and storage products with EVs and chargers creating little sustainable ecosystems.

This segment also helped increasing the production efficiency, the research on this segment boosted the production and helped create new key parts on the EV production.

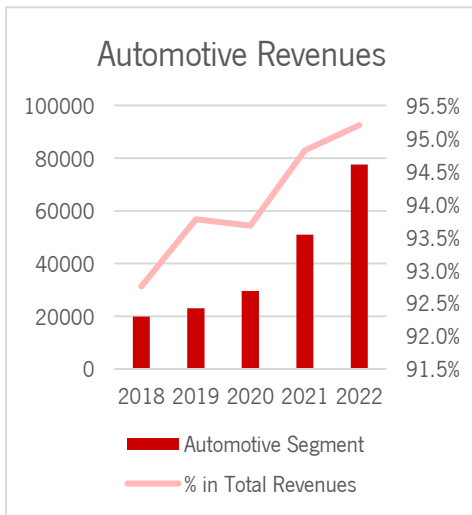


Figure 12 - Automotive Segment Revenues and its % in Total Revenues  
Source: Tesla's 10-k Forms

## Valuation

To evaluate the firm, I used two different valuation methods: the Discounted Cash Flow (DCF) and the Relative valuation.

### DCF Valuation

The DCF method is considered the “most accurate and flexible method for valuing projects, divisions, and companies” (Koller et al., 2010) This approach determines the value of an asset by forecasting its future cash flows. Therefore, the value of the company is determined by its capacity to generate cash flows. The cash flows are forecasted under different assumptions about how the company will perform during the explicit forecast period, the period until the company achieves its stable growth, in this case

from 2023 to 2030 and the terminal value, the expected value beyond the explicit forecast period, in this case after 2030.

To use this valuation method there are two approaches that can be used, the Free Cash Flow to Equity (FCFE) and the Free Cash Flow to Firm (FCFF), the one calculated.

### Assumptions

To sustain the cash flows valuation, we defined a discount rate, the Weighted Average Cost of Capital (WACC), and six assumptions, revenues, CAPEX, depreciations, Earnings Before Interest and Taxes (EBIT), tax rate, and Terminal Value which served as base to all the forecasts.

Risk-free rate	3.88%
ERP	7.47%
Beta	1.126
Marginal Tax Rate	25%
Pre-tax Cost of Debt	5,60%
Kd	4,20%
Ke	12.29%
D/E ratio	6,93%
WACC	11.76%

Table 7 - WACC Estimation  
Source: Own estimates

### WACC

To calculate the WACC the cost of debt is multiplied by the weight of debt in the company plus the cost of equity multiplied by its weight (Table 7).

The cost of equity (Ke) was computed using the Capital Asset Pricing Model (CAPM) formula. The U.S. 10-year bond was used as the benchmark and the Equity Risk Premium (ERP) was calculated using professor Damodaran (2023) data about ERP of countries where Tesla sells in adjusting them as a percentage of sales, (Table 8).

The Beta ( $\beta$ ) was calculated by the Bottom-up Beta approach using the industry average  $\beta$  from both industries Tesla works in, downloaded from professor Damodaran (2023a) database of industry averages. Reaching an unlevered beta of 1.07 and a levered beta of 1.126.

The cost of debt was computed using the interest expenses and total debt from the Tesla financial statements and calculated a weighted average from the last 5 years, reaching a value of 5.6% for the pre-tax cost of debt. Using the marginal tax rate for US companies of 25% (Damodaran, 2023b), we computed the after-tax cost of debt (Kd) of 4.20%.

The WACC resulted in a value of 11.76%.

	Revenues	Weight
USA	40553	49,78%
China	18145	22,27%
Rest of World	22764	27,94%
Total	81 462	100,00%

Table 8 - 2022 Revenues Weight in Each Country  
Source: Tesla's 10-k Form



### Revenues

The revenues were forecasted as a total and not from each segment since Tesla's revenues come mostly from its automotive segment.

The revenues are forecasted to grow 27% and 29% in the first two years, and then slowly decreasing this rate until reaching a stable growth rate of 2.7% after 2030 (Figure 13).

These revenue forecasts are based on the consensus of other analysts' forecasts taken from Refinitiv Eikon DataStream, and adjusted at my point of view, considering different news and decisions that can affect future growth rates.

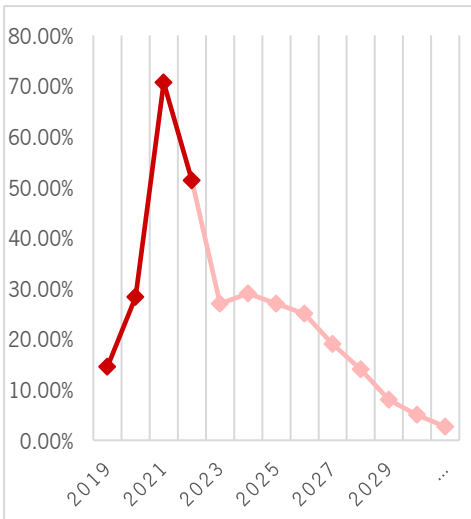


Figure 13 - Revenues Growth Rates  
Source: Refinitiv Eikon and Own Estimates

The forecasted growth rates for 2023FY and 2024FY are lower than the growth rates from the last 3 years and like the ones during the COVID crisis, due to the price cuts of Tesla's main source of revenues, the EVs. On the other hand, they are higher than the consensus' rates, which were 22% and 23% respectively, what can be explained by the investment Tesla is making to ramp out the production in the Gigafactory Berlin-Brandenburg and Gigafactory Texas. These investments can support the growth rate increase from 2023 to the next year, that will benefit from bigger production capacity at lower production costs offsetting part of the price cuts taken.

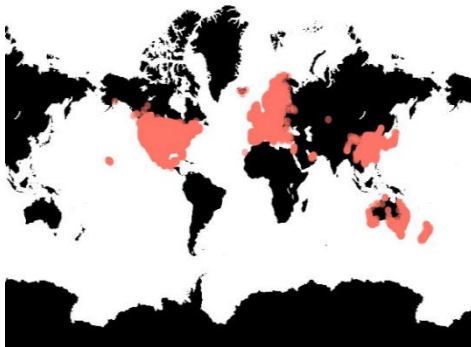


Figure 14 - Tesla Charging Stations in 2022  
Source: The Business of Business

The number of Tesla's Charging stations internationally (Figure 14) is growing every year, and sustains the high growth since now every EV, Tesla, and non-Tesla, can use it.

### EBIT

The assumption to calculate the EBIT was the operating margin.

This margin, as we can see in Figure 15, in the last 3 years had an exponential growth from 6.32% in 2018 to 12.12% in 2021 and to 16.73% in 2023. This margin increased due to the high revenue growth and lower production cost, especially in the battery production as Tesla started to produce it in its facilities.

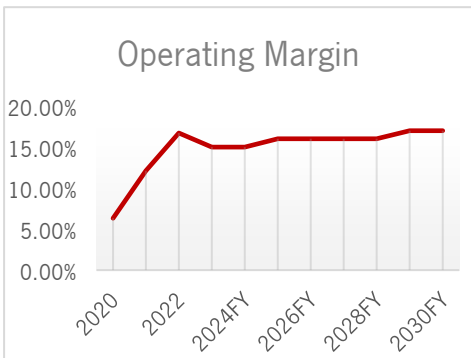


Figure 15 - Operating Margin 2018-2030FY  
Source: Own Estimates

For the first two forecasted years, 2023 and 2024, the assumption was based on the price cuts of Tesla that shows company favoring sales volume instead of operating margin, with Tesla being able to sell at a zero margin and yield tremendous profit in the future according to its CEO

(Waters, 2023). This explains the decrease of the operating margin in the first two years from 16.7% in 2022 to 15%.

In 2025 is expected an increasing on the margin to 16% since the company expects to reach full production capacity at least in one of the two Gigafactories still growing, and then increasing the margin to 17% in 2029 maintaining this margin for the rest of the period, very close to 2022 margin value (Figure 15).

### CAPEX

For the Capex, after analyzing all the available data, the forecasts are based on the consensus from Refinitiv Eikon with higher values than the ones from the last five years, as we can see in Figure 16, since Tesla is a young company in a market that is growing year after year, that distributes no dividends, so the company has a reinvestment rate of 100%.

The company expects to invest in its manufacture facilities to ramp out its production until 2025 as well as work to increase production efficiency in the other ones.

Besides these investments, the plans and announcement of the new Gigafactory in Mexico, which rumors to start in 2025 (Pulice & Beth Soloman, 2023), justifies the raise in CAPEX in 2026 and the next years.

There is also rumors that Tesla is planning to build another facility in Europe, more specifically in Spain or Portugal, but there is not yet a confirmed decision (Landauro et al., 2023)

### Terminal Value

For the Terminal Value, we used 2.7% as the stable growth rate for the years after 2030, based on the GDP growth forecasts for the next 5 years of the countries where Tesla sells in, downloaded from the International Monetary Fund website (Table 9).

As professor Damodaran (2003) says there is no firm that can grow forever at a rate higher than the growth rate of the economy, so the stable growth rate cannot be higher than the economy growth rate, but professor also says that a company that operates not only in the domestic market but

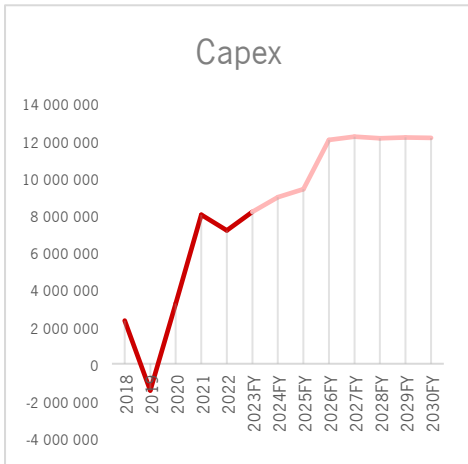


Figure 16 - CAPEX Historic and Forecasts  
Source: Refinitiv Eikon and Own Estimates

	REAL GDP FOR 2028F	REVENUES WEIGHT (2022)	WEIGHTED GDP
United States	2.1%	49.8%	1.0%
China	3.4%	22.3%	0.8%
Rest of World	3.1%	27.9%	0.9%
<b>WEIGHTED AVERAGE GDP</b>			<b>2.7%</b>

Table 9 - Terminal Values Estimates  
Source: Own Estimates

multi-nationally can have a growth rate a bit higher since considering only the domestic growth rate will limit the values.

So, as Tesla sells in many countries, the growth rate used for the Terminal Value is higher than the US GDP growth rate forecasted for 2028 that was 2.1%. The stable growth rate was computed adjusting the GDP growth rate from each country where Tesla sells in as percentage of sales.

With these calculations, we reached a stable growth rate of 2.7% and a Terminal value of \$ \$459 437 millions.

WACC	11.76%
Terminal Value (M)	\$ 459 437
Firm Value (M)	\$ 313 205
Market Cap (M)	\$ 334 077
Shares Outstanding (M)	3 164
Target Price 2023	\$ 105.58

Table 10 - DCF Estimates  
Source: Own Estimates

### Target Price

After computed the discount rate, the WACC, and defined the assumptions, we were able to compute the net change of Working Capital (more detailed on Appendix 8) and the Depreciations (Appendix 9).

With all the components, we calculated the FCFFs and the Terminal Value and discount them to their present value reaching a share target price for 2023 of \$105.58 (Table 10) (all the calculations more detailed on appendix 10).

### Relative Valuation

The DCF valuation method uses forecasted Cash Flows, which can be based in historical data, what can be a limitation in calculating Tesla's value, since it is a young company that only became public in 2016.

Cornell & Damodaran (2014) argue that valuing a young company has challenges since in its firsts years the net income can be negative, due to the small operating revenues contrasting with the large investment expenses used to ramp out the growth of the company.

So, we used another method, the market multiples method.

Therefore, to calculate the target price using the Relative Valuation we must select a group of similar companies and compare the values of those companies with the ones of the valued company.

Firstly, we selected thirteen Tesla peers, eleven automakers that are commercializing their own EV models, and two competitors in the energy segment (Table 11).

<b>Tesla Peers</b>
<b>Tesla Inc</b>
Ford Motor Co
Mercedes Benz Group AG
Volkswagen AG
General Motors Co
Stellantis NV
BYD
Toyota Motor Corp
Bayerische Motoren Werke AG
Geely Automobile Holdings Ltd
Volvo AB
Hyundai Motor Co
SunPower Corp
Sunrun Inc

Table 11 - Tesla Peers  
Source: Refinitiv Eikon

Calculating the target price using this large number of peers did not give feasible results, as some of them do not have similar features to Tesla (more detailed in Appendix 11).

So, to reach a more accurate target price of 2023 for Tesla, we calculated the Price to Earnings (P/E) ratio and Enterprise Value to EBITDA (EV/EBITDA) ratio using the 2023 forecasts and comparing it with only one peer from the list in Table 11.

The peer selected was BYD, the Chinese automaker is the one more similar to Tesla, as it also only operates in the EV market, and shows high growth in the last years becoming the best-selling EV brand and the one with the biggest market share, as discussed above, over Tesla.

	P/E	EV/EBITDA
TESLA'S EPS	\$ 3.66	
EBITDA per SHARE		\$ 6.69
<b>TARGET PRICE</b>	<b>\$157.10</b>	<b>\$128.07</b>

Table 12 - Relative Valuation Estimates  
Source: Own Estimates

This company is, as Tesla, making important investments to increase EVs share in the global automotive market.

After this selection, we downloaded BYD's P/E ratio and EV/EBITDA ratio and Tesla's Earnings per Share (EPS) and EBITDA per share resulting in a target price of \$157.10, using P/E ratio, and \$128.07 using the EV/EBITDA ratio (Table 12).

This valuation method has some limitations, since Tesla do not have in this moment similar companies in the market, and even choosing the most similar one, BYD is not similar enough to make the relative target price as accurate as the DCF target price.

### Sensitivity Analysis

To perform the Sensitivity Analysis, we used four different variables the revenues growth rates and operating margin, and WACC and stable growth rate.

The first two variables are evaluated in 5 different scenarios, from very optimistic to pessimistic in the revenue growth rate and from very high to very low in the operating margin, as we can see in more detail in Appendix 11.

In the worst-case scenario, the target price would be \$49.74 a downside of 79.8% and in the best-case scenario the target price would be \$260.89 an upside of 5.8%.

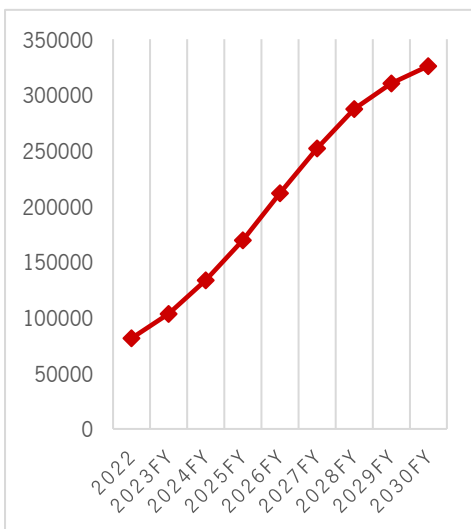


Figure 17 - Revenues Forecasts  
Source: Own Estimates

Analyzing all 25 scenarios, the target price would be higher than the market price only in the best-case scenario.

The middle combination is the expected target price of the DCF valuation with a target share price of \$105.58 a downside of 57%.

SHARE PRICE		Operating Margin					SHARE PRICE		Operating Margin				
		Very Low	Low	Expected	High	Very High			Very Low	Low	Expected	High	Very High
\$246.53							\$246,53						
Revenues Growth	Pessimist	49.63	58.61	67.58	81.05	94.51	Revenues Growth	Pessimist	-79.9%	-76.2%	-72.6%	-67.1%	-61.7%
	Cautious	62.18	73.36	84.54	101.32	118.09		Cautious	-74.8%	-70.2%	-65.7%	-58.9%	-52.1%
	Expected	77.72	91.65	<b>105.58</b>	126.48	147.37		Expected	-68.5%	-62.8%	-57.2%	-48.7%	-40.2%
	Optimistic	104.17	122.77	141.36	169.26	197.15		Optimistic	-57.7%	-50.2%	-42.7%	-31.3%	-20.0%
	Very Optimistic	138.87	163.62	188.37	225.49	262.61		Very Optimistic	-43.7%	-33.6%	-23.6%	-8.5%	6.5%

Table 13 - Sensitivity Analysis using Revenue Growth Rates and Operating Margin Source: Own Estimates

The other two variables were evaluated in 7 scenarios each, apart from the expected three more pessimistic and three more optimistic, as we can see in Table 15.

In the worst-case scenario, the target price is \$72.02, a 70.8% downside, and in the best-case scenario the target price is \$289.91 an upside of 17.6%, and is the only scenario from the 49 calculated, where the target price is higher than.

SHARE PRICE		WACC							SHARE PRICE		WACC						
		8.76%	9.76%	10.76%	11.76%	12.76%	13.76%	14.76%			10.26%	10.76%	11.26%	11.76%	12.26%	12.76%	13.26%
\$246,53									\$246,53								
Stable Growth rate	1.2%	138.74	120.86	106.82	95.49	86.26	78.55	72.02	Stable Growth rate	1.2%	-43.7%	-51.0%	-56.7%	-61.3%	-65.0%	-68.1%	-70.8%
	1.7%	146.02	126.19	110.84	98.60	88.71	80.50	73.61		1.7%	-40.8%	-48.8%	-55.0%	-60.0%	-64.0%	-67.3%	-70.1%
	2.2%	154.41	132.22	115.33	102.02	91.39	82.63	75.33		2.2%	-37.4%	-46.4%	-53.2%	-58.6%	-62.9%	-66.5%	-69.4%
	2.7%	163.54	138.66	120.05	<b>105.58</b>	94.14	84.80	77.07		2.7%	-33.7%	-43.8%	-51.3%	<b>-57.2%</b>	-61.8%	-65.6%	-68.7%
	3.7%	189.53	156.31	132.62	114.86	101.20	90.29	81.41		3.2%	-23.1%	-36.6%	-46.2%	-53.4%	-59.0%	-63.4%	-67.0%
	4.7%	227.36	180.30	148.90	126.45	109.77	96.80	86.47		3.7%	-7.8%	-26.9%	-39.6%	-48.7%	-55.5%	-60.7%	-64.9%
	5.7%	<b>289.91</b>	216.10	171.62	141.86	120.76	104.92	92.65		4.2%	<b>17.6%</b>	-12.3%	-30.4%	-42.5%	-51.0%	-57.4%	-62.4%

Table 14 - Sensitivity Analysis using WACC and Stable Growth Rate Source: Own Estimates

From the analysis of Tables 13 and 14 we conclude that nowadays the market is too optimistic about Tesla stock price.

### Financial Analysis

In the last five years Tesla showed high revenues growth rates, in the last two years its revenues grew 70,7% and 51,4%. There were two years where the revenues did not grow with a high growth rate as expected, in 2019 and 2020, due to the COVID-crisis, as we can see more detailed in the appendix 1.

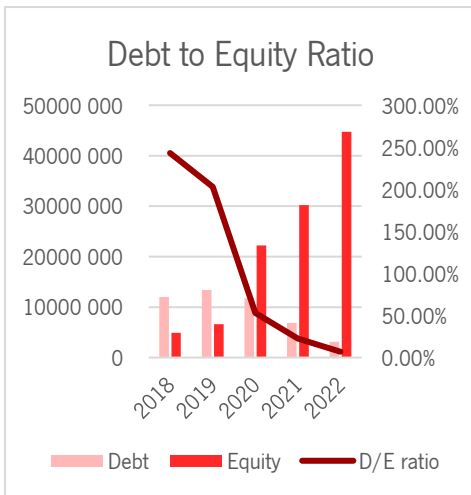


Figure 18 - Debt to Equity ratio  
Source: Refinitiv Eikon

The forecast is to continue this high growth period, for the next years, but with lower rates reaching more than \$300 billion on sales in 2030 (Figure 17).

In 2018 and 2019, Tesla showed in the financial statement negative earnings, due to the early stage of the company.

In those years its capacity of generating cash flows could not support the financing expenses, using debt as company's major financing with a Debt-to-equity (D/E) ratio of 2.43 in these years, what means that shareholder's equity was less than half of total debt (Figure 18).

After 2019, this value turned positive and keeps increasing every year, expecting to grow until near 38 billion, which is 3 times 2022 net income. The D/E ratio since 2018 is decreasing reaching in the last year a value of 7%, due to debt decrease and equity growth, which demonstrates equity as the major financing source.

### Liquidity Ratios

Tesla in the last five years has shown good indicators in terms of liquidity, especially after 2020, where both the current assets and liquid assets values were higher than the current liabilities.

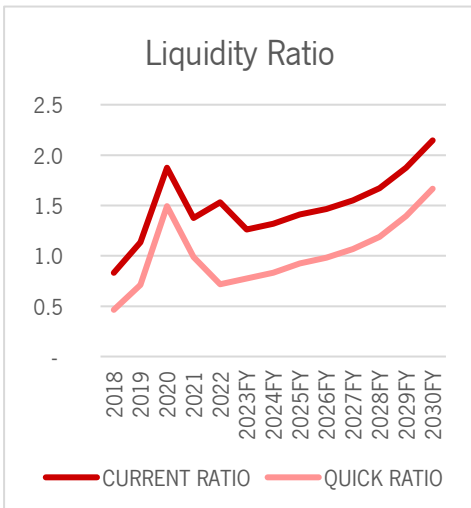


Figure 19 - Liquidity Ratios  
Source: Own estimates

As we can see in Figure 19, both liquidity ratios used, the Current ratio and the Quick Ratio, were higher than 1 in 2020 and 2021 and after 2026, what means that Tesla in those years can meet its short-term obligations.

### Profitability Ratios

Computing Return on Assets (ROA), Return on Equity (ROE) and EBITDA growth rate (Table 15) the values show good profitability indicators.

In the forecasted years, the ROA and ROE are averaging 12.3% and 21.7% respectively, so in the next years Tesla will maintain good profitability standards.

Profitability Ratios	Average (FY)
ROA	12.3%
ROE	21.7%
EBITDA Growth	18.9%

Table 15 - Profitability Ratios Averages  
Source: Own Estimates

### Efficiency Ratios

In terms of efficiency, Tesla had a good inventory turnover of 6.5 in the last year what means that in a year the company was able to sell and restock the inventory once every two months (Figure 20).

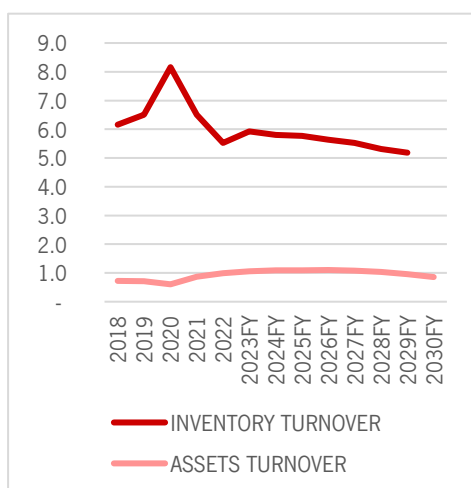


Figure 20 - Efficiency Ratios  
Source: Own Estimates

Using historical and forecasted data, Tesla’s asset turnover, after 2022, is lower than 1 only in 2030 (Figure 20). This ratio measures how efficiently a company is using its assets to generate revenues, so a ratio lower than 1 usually suggest that the assets usage to produce revenue is not efficient.

### Investment Risk

Tesla in its 2022 annual report identified risk factors that can affect its business, financial condition, and future results, dividing them in four distinct types: the risks related to the ability to grow its business, the operating risks, risks related to government laws and operations, and risks related to the ownership of their stock.

#### **Risks related to the ability to grow its business**

The ability to grow Tesla’s business endangers company’s stock price.

The possibility that the company will not be able to grow as expected and as announced by its CEO in company’s press releases can negatively affect its stock price, since investors will not be willing to pay the high price at which the stock is traded, losing trust in the company and in its plans to the future.

Delays in launching their new products, and in ramping the production can harm Tesla as a brand and in terms of stock price. This have already happened in past years in the initial ramp outs of two models, Model X and 3, due to difficulties with suppliers.

The biggest risks related to the ability of growing its business, are the fact that company’s growth and success mostly depend on consumers’ demand for Tesla vehicles, and the increasing number of new and established companies entering the EV market represents a strong competition to the company.

These two risk factors can be related since nowadays consumers have their choices towards sustainability, seeking clean energy sources. This is a positive point for the EV market increasing sales and its global automotive market share, for Tesla this can be negative in different rates since consumers have a higher number of choices in the market (Figure 21).

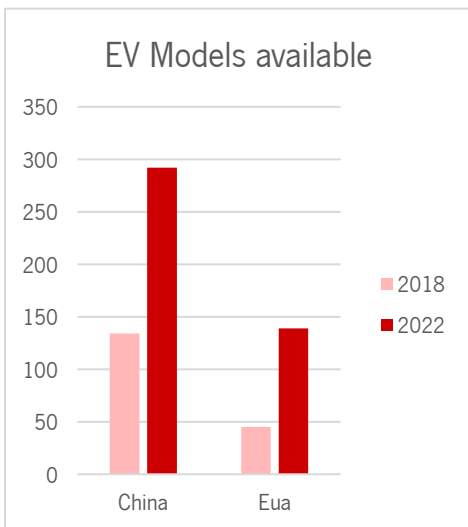


Figure 21 - EV Models Available in 2018 and 2023 in the two most important markets of Tesla revenues  
Source: IEA

Nowadays, the consumers are still suffering from the pandemic crisis and from the world crisis potentialized by the Ukraine-Russia war, what can make them more conservative when shopping.

### Operating risks

As a manufacture company, Tesla is subject to some risk factors that are common to manufacture companies, as the risk of manufacture inefficiency, the risk of components containing defects or malfunctions, the risks of union activities that can harm production standards, the risk of early obsolescence of manufacturing equipment, among others.

There are also risk factors that are more specific to the firm, as the Gigafactory in New York that request many yearly obligations to the company that can be unable to comply with.

This contract allowed Tesla to build and to use the factory, and in the other hand it must reach employment targets and spend \$5billion in different types of expenses in the State New York. The break of this contract could harm Tesla production capacity and consequently its business.

Lastly, there is the risk of fluctuation on exchange rates which Tesla is exposed because it has business all around the world.

### Risks related to government laws and operations

The EV market is getting support by the Governments through laws, policies, incentives, or tax credits to the adoption of the electric vehicles. This risk factor can positively affect the company since it can push consumers to adopt EVs, more specifically Tesla vehicles.

In response to the increasing threat of cybercrime, governments are enacting stricter laws aimed at enhancing data protection and privacy. Tesla offers consumers the ability to subscribe to various services by sharing their private information through the app or vehicle interface. However, this raises concerns about the potential vulnerability of Tesla's database to cyberattacks, which could have adverse effects on the company's brand and business.

### Risks related the ownership of their stock

The biggest risk related to the ownership of Tesla stock is the stock high volatility, as we see from the difference between the 52-week low stock price and the high one (Figure 22). This volatility results from the risk of

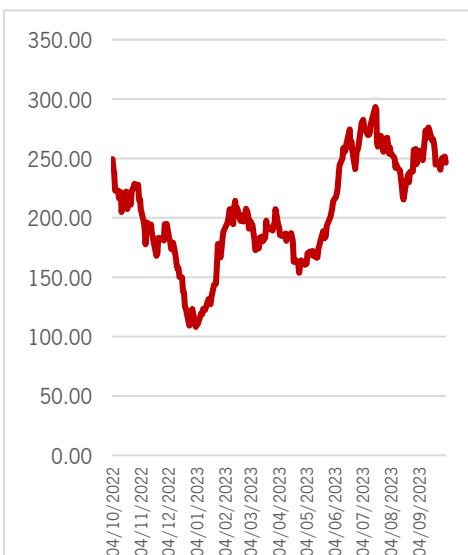


Figure 22 - Last 52-week Price History  
Source: Refinitiv Eikon



significant changes in its financial results, due to fluctuations in its operating costs.

## Environment, Social & Governance

### Environment

Tesla mission is to help the world accelerate to sustainable energy. To do so Tesla operates in two different segments, the automotive and energy segment, with products that only request clean energy sources and no fossil fuels.

In 2022, Tesla's carbon emissions came mostly from its supply chain since Tesla in its factories tries to create a sustainable ecosystem.

Tesla in its Impact report 2022 has a plan to help the world transition to sustainability by 2050, defining growth rates for different clean energy sources usage, as solar & wind energy, and electric vehicles production. In this report, the company affirms that a Tesla for personal use solar charged or grid charged gram of CO2 emissions for mile driven are four times lower than the average emissions from internal combusting engine cars.

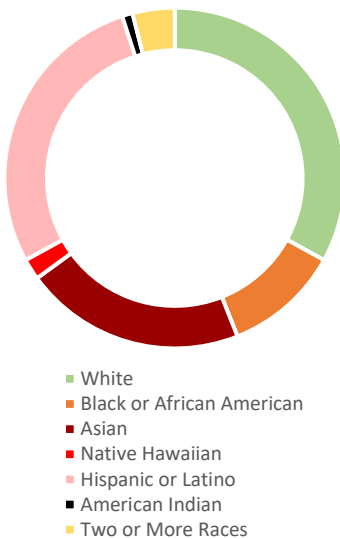


Figure 23 - Employees' Groups  
Source: Tesla's Impact Report 2022

### Social

Since 2019, Tesla grew almost 30 000 employees yearly, to scale their production towards the transition to sustainability.

Is a majority-minority company, or in other words a company where majority of the employees are from minorities, that throughout the years had a lot of roadblocks to achieve the equally opportunity in the U.S., with 68% of the employees and 34% of their directors and vice presidents from these groups (Figure 23).

Educating all employees to report any form of discrimination, in a way to create an environment where all people enjoy going to work every day.

Their leadership is 70% from employees within the firm, what makes every employee work near an example of a successful progression.

### Governance

Tesla's board is divided in four committees, having only one director in all four, Robin Denholm. The four committees are:

- The **Audit Committee**, that reviews all the accounting and financial reporting processes as well as in its financial statements providing the Board an oversight in this actions;

- The **Compensation Committee**, that discharges the Board the responsibilities in the compensation policies, plans, and benefits programs, and review the human management practices related to Tesla's talent;

- the **Disclosure Committee**, takes care of the applicable legal requirements governing the company, and the executive officer's public disclosure, and their public statements;

- The **Nominating and Corporate Governance Committee**, which is responsible for reviewing and making recommendations on matters concerning the corporate governance, board composition, and identification, evaluation, and nomination of board candidates. Apart from that they also review annually the principles of Corporate Governance Guidelines, and the Code of Business Ethics.

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## Appendices

### Appendix 1 – Balance Sheet

	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
Reporting Unit	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
<b>Assets</b>									
Cash and Short-Term Investments	22 185 000	23 676 543	33 256 759	47 744 459	63 795 194	83 671 534	107 991 620	139 867 635	177 088 490
Cash & Equivalents	16 253 000	23 676 543	33 256 759	47 744 459	63 795 194	83 671 534	107 991 620	139 867 635	177 088 490
Short Term Investments	5 932 000	0	0	0	0	0	0	0	0
Accounts Receivable - Trade, Net	2 952 000	4 752 273	6 130 432	7 785 648	9 732 060	11 581 152	13 202 513	14 258 714	14 971 650
Total Receivables, Net	2 952 000	4 752 273	6 130 432	7 785 648	9 732 060	11 581 152	13 202 513	14 258 714	14 971 650
Total Inventory	12 839 000	14 157 084	18 262 638	23 193 550	28 991 938	34 500 406	39 330 463	42 476 900	44 600 745
Prepaid Expenses	2 647 000	3 170 654	4 090 143	5 194 482	6 493 103	7 726 792	8 808 543	9 513 226	9 988 888
Other Current Assets, Total	294 000	467 418	602 969	765 771	957 214	1 139 084	1 298 556	1 402 440	1 472 562
Total Current Assets	40 917 000	46 223 971	62 342 941	84 683 911	109 969 508	138 618 969	170 631 694	207 518 916	248 122 335
<b>Property, Plant, and Equipment</b>									
Property/Plant/Equipment, Total - Gross	48 134 000	56 303 000	65 262 000	74 651 000	86 691 000	98 905 000	111 032 000	123 202 500	135 351 250
Property/Plant/Equipment, Total - Net	36 635 000	44 491 608	51 571 165	58 990 516	68 504 733	78 156 448	87 739 414	97 356 754	106 956 907
Goodwill, Net	194 000	494 382	637 753	809 946	1 012 433	1 204 795	1 373 466	1 483 344	1 557 511
Intangibles, Net	215 000	916 524	1 182 316	1 501 541	1 876 927	2 233 543	2 546 239	2 749 938	2 887 435
Long Term Investments	184 000	531 122	685 147	870 137	1 087 671	1 294 329	1 475 535	1 593 577	1 673 256
Note Receivable - Long Term	0	0	0	0	0	0	0	0	0
Other Long-Term Assets, Total	4 193 000	4 736 508	6 110 095	7 759 821	9 699 776	11 542 734	13 158 716	14 211 414	14 921 984
Total Assets	82 338 000	97 394 115	122 529 418	154 615 872	192 151 048	233 050 817	276 925 064	324 913 943	376 119 428
<b>Liabilities</b>									
Accounts Payable	15 255 000	18 155 873	23 421 076	29 744 767	37 180 959	44 245 341	50 439 688	54 474 863	57 198 607
Accrued Expenses	5 553 000	7 995 049	10 313 613	13 098 288	16 372 861	19 483 704	22 211 423	23 988 337	25 187 753
Notes Payable/Short Term Debt	0	0	0	0	0	0	0	0	0
Current Port. of LT Debt/Capital Leases	1 502 000	698 954	878 659	1 104 568	1 388 558	1 745 564	2 194 359	2 758 541	3 467 778
Other Current liabilities, Total	4 399 000	9 801 105	12 643 426	16 057 151	20 071 439	23 885 012	27 228 914	29 407 227	30 877 588
Total Current Liabilities	26 709 000	36 650 981	47 256 774	60 004 774	75 013 816	89 359 621	102 074 384	110 628 968	116 731 726
<b>Long-Term Liabilities</b>									
Total Long-Term Debt	1 597 000	2 105 140	2 646 383	3 326 783	4 182 118	5 257 365	6 609 063	8 308 291	10 444 400
Total Debt	3 099 000	2 804 094	3 525 042	4 431 351	5 570 676	7 002 929	8 803 422	11 066 832	13 912 177
Deferred Income Tax	82 000	0	0	0	0	0	0	0	0
Minority Interest	1 194 000	1 384 872	1 383 774	1 362 129	1 343 755	1 333 706	1 361 647	1 357 003	1 351 648
Other Liabilities, Total	8 052 000	5 203 440	5 438 088	5 746 106	6 002 727	6 088 472	5 695 767	5 794 232	5 865 461
Total Liabilities	37 634 000	45 344 434	56 725 020	70 439 792	86 542 416	102 039 164	115 740 861	126 088 493	134 393 234
<b>Shareholders' Equity</b>									
Common Stock, Total	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
Additional Paid-In Capital	32 177 000	40 449 890	50 849 787	63 923 557	80 358 668	101 019 339	126 991 987	159 642 350	200 687 308
Retained Earnings (Accumulated Deficit)	12 885 000	11 594 435	14 947 139	20 236 957	25 304 485	30 069 139	34 212 808	39 208 880	41 071 317
Other Equity, Total	(361 000)	2 356	4 471	12 566	(57 521)	(79 826)	(23 591)	(28 780)	(35 430)
Total Equity	44 704 000	52 049 681	65 804 398	84 176 080	105 608 632	131 011 652	161 184 204	198 825 450	241 726 194
Total Liabilities & Shareholders' Equity	82 338 000	97 394 115	122 529 418	154 615 872	192 151 048	233 050 817	276 925 064	324 913 943	376 119 428

## Appendix 2 – Common-Size Balance Sheet

	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
<b>Assets</b>									
Cash and Short-Term Investments	27%	24%	27%	31%	33%	36%	39%	43%	47%
Cash & Equivalents	20%	24%	27%	31%	33%	36%	39%	43%	47%
Short Term Investments	7%	0%	0%	0%	0%	0%	0%	0%	0%
Accounts Receivable - Trade, Net	4%	5%	5%	5%	5%	5%	5%	4%	4%
Total Receivables, Net	4%	5%	5%	5%	5%	5%	5%	4%	4%
Total Inventory	16%	15%	15%	15%	15%	15%	14%	13%	12%
Prepaid Expenses	3%	3%	3%	3%	3%	3%	3%	3%	3%
Other Current Assets, Total	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Current Assets	50%	47%	51%	55%	57%	59%	62%	64%	66%
<b>Property, Plant, and Equipment</b>									
Property/Plant/Equipment, Total - Gross	58%	58%	53%	48%	45%	42%	40%	38%	36%
Property/Plant/Equipment, Total - Net	44%	46%	42%	38%	36%	34%	32%	30%	28%
Goodwill, Net	0%	1%	1%	1%	1%	1%	0%	0%	0%
Intangibles, Net	0%	1%	1%	1%	1%	1%	1%	1%	1%
Long Term Investments	0%	1%	1%	1%	1%	1%	1%	0%	0%
Note Receivable - Long Term	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other Long-Term Assets, Total	5%	5%	5%	5%	5%	5%	5%	4%	4%
Total Assets	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Liabilities</b>									
Accounts Payable	19%	19%	19%	19%	19%	19%	18%	17%	15%
Accrued Expenses	7%	8%	8%	8%	9%	8%	8%	7%	7%
Notes Payable/Short Term Debt	0%	0%	0%	0%	0%	0%	0%	0%	0%
Current Port. of LT Debt/Capital Leases	2%	1%	1%	1%	1%	1%	1%	1%	1%
Other Current liabilities, Total	5%	10%	10%	10%	10%	10%	10%	9%	8%
Total Current Liabilities	32%	38%	39%	39%	39%	38%	37%	34%	31%
<b>Long-Term Liabilities</b>									
Total Long-Term Debt	2%	2%	2%	2%	2%	2%	2%	3%	3%
Total Debt	4%	3%	3%	3%	3%	3%	3%	3%	4%
Deferred Income Tax	0%	0%	0%	0%	0%	0%	0%	0%	0%
Minority Interest	1%	1%	1%	1%	1%	1%	0%	0%	0%
Other Liabilities, Total	10%	5%	4%	4%	3%	3%	2%	2%	2%
Total Liabilities	46%	47%	46%	46%	45%	44%	42%	39%	36%
<b>Shareholders' Equity</b>									
Common Stock, Total	0%	0%	0%	0%	0%	0%	0%	0%	0%
Additional Paid-In Capital	39%	42%	42%	41%	42%	43%	46%	49%	53%
Retained Earnings (Accumulated Deficit)	16%	12%	12%	13%	13%	13%	12%	12%	11%
Other Equity, Total	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Equity	54%	53%	54%	54%	55%	56%	58%	61%	64%
Total Liabilities & Shareholders' Equity	100%	100%	100%	100%	100%	100%	100%	100%	100%

## Appendix 3 – Income Statement

	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
Reporting Unit	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
Revenue	81 462 000	103 456 740	133 459 195	169 493 177	211 866 471	252 121 101	287 418 055	310 411 500	325 932 075
Cost of Revenue, Total	60 465 000	74 498 447	96 102 997	120 355 875	150 444 843	179 029 364	204 093 475	217 316 838	228 182 679
Gross Profit	20 997 000	28 958 293	37 356 197	49 137 302	61 421 628	73 091 737	83 324 581	93 094 662	97 749 395
Selling/General/Admin. Expenses, Total	3 946 000	8 305 540	10 714 147	13 606 967	17 008 709	20 240 363	23 074 014	24 919 935	26 165 932
Research & Development	3 075 000	4 842 023	6 246 210	7 932 686	9 915 858	11 799 871	13 451 853	14 528 001	15 254 401
Interest/Investment Income - Operating	(28 000)	(75 821)	(97 809)	(124 217)	(155 272)	(184 773)	(210 642)	(227 493)	(238 868)
Unusual Expense (Income)	372 000	368 039	474 770	602 958	753 698	896 900	1 022 466	1 104 264	1 159 477
Total Operating Expense	67 830 000	87 938 229	113 440 315	142 374 269	177 967 836	211 781 725	241 431 166	257 641 545	270 523 622
Operating Income (EBIT)	13 632 000	15 518 511	20 018 879	27 118 908	33 898 635	40 339 376	45 986 889	52 769 955	55 408 453
Interest Expense, Net Non-Operating	(167 000)	(156 945)	(197 296)	(248 022)	(311 790)	(391 952)	(492 726)	(619 408)	(778 662)
Interest/Invest Income - Non-Operating	208 000	79 007	89 601	89 122	123 746	117 895	99 874	104 048	106 937
Interest Inc. (Exp.), Net-Non-Op., Total	41 000	(77 938)	(107 695)	(158 900)	(188 044)	(274 057)	(392 852)	(515 361)	(671 725)
Other, Net	46 000	18 673	18 335	22 602	28 722	26 866	23 040	23 913	25 028
Net Income Before Taxes (EBT)	13 719 000	15 459 246	19 929 519	26 982 610	33 739 314	40 092 185	45 617 077	52 278 507	54 761 756
Provision for Income Taxes	1 132 000	3 864 812	4 982 380	6 745 652	8 434 828	10 023 046	11 404 269	13 069 627	13 690 439
Net Income After Taxes	12 587 000	11 594 435	14 947 139	20 236 957	25 304 485	30 069 139	34 212 808	39 208 880	41 071 317
Minority Interest	(4 000)	0	0	0	0	0	0	0	0
Net Income	12 583 000	11 594 435	14 947 139	20 236 957	25 304 485	30 069 139	34 212 808	39 208 880	41 071 317

## Appendix 4 – Common-Size Income Statement

	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Revenue, Total	74%	72%	72%	71%	71%	71%	71%	70%	70%
Gross Profit	26%	28%	28%	29%	29%	29%	29%	30%	30%
Selling/General/Admin. Expenses, Total	5%	8%	8%	8%	8%	8%	8%	8%	8%
Research & Development	4%	5%	5%	5%	5%	5%	5%	5%	5%
Interest/Investment Income - Operating	0%	0%	0%	0%	0%	0%	0%	0%	0%
Unusual Expense (Income)	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Operating Expense	83%	85%	85%	84%	84%	84%	84%	83%	83%
Operating Income (EBIT)	17%	15%	15%	16%	16%	16%	16%	17%	17%
Interest Expense, Net Non-Operating	0%	0%	0%	0%	0%	0%	0%	0%	0%
Interest/Invest Income - Non-Operating	0%	0%	0%	0%	0%	0%	0%	0%	0%
Interest Inc.(Exp.),Net-Non-Op., Total	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other, Net	0%	0%	0%	0%	0%	0%	0%	0%	0%
Net Income Before Taxes (EBT)	17%	15%	15%	16%	16%	16%	16%	17%	17%
Provision for Income Taxes	1%	4%	4%	4%	4%	4%	4%	4%	4%
Net Income After Taxes	15%	11%	11%	12%	12%	12%	12%	13%	13%
Minority Interest	0%	0%	0%	0%	0%	0%	0%	0%	0%
Net Income	15%	11%	11%	12%	12%	12%	12%	13%	13%

## Appendix 5 – Cash Flow Statement

	2021	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
Reporting Unit	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
<b>Cash Flow-Operating Activities</b>										
Net Income/Starting Line	5 644 000	12 587 000	11 594 435	14 947 139	20 236 957	25 304 485	30 069 139	34 212 808	39 208 880	41 071 317
Depreciation/Depletion	2 911 000	3 747 000	5 641 523	6 617 504	7 666 878	8 990 370	10 317 197	11 607 564	12 830 683	14 008 644
Non-Cash Items	2 424 000	2 298 000	1 974 677	2 129 335	2 280 202	2 221 243	2 180 691	2 157 230	2 193 740	2 206 621
Changes in Working Capital	518 000	(3 908 000)	6 126 553	4 067 039	4 894 730	5 774 179	5 572 685	5 022 122	3 543 378	2 720 194
Accounts Receivable	(130 000)	(1 124 000)	(1 800 273)	(1 378 159)	(1 655 217)	(1 946 412)	(1 849 091)	(1 621 361)	(1 056 201)	(712 936)
Inventories	(1 709 000)	(6 465 000)	(1 318 084)	(4 105 554)	(4 930 912)	(5 798 388)	(5 508 468)	(4 830 057)	(3 146 437)	(2 123 845)
Prepaid Expenses	(271 000)	(1 417 000)	(523 654)	(919 490)	(1 104 339)	(1 298 621)	(1 233 689)	(1 081 751)	(704 683)	(475 661)
Other Assets	(3 405 000)	(4 121 000)	(173 418)	(135 551)	(162 802)	(191 443)	(181 871)	(159 472)	(103 884)	(70 122)
Payable/Accrued	4 578 000	6 029 000	5 342 922	7 583 767	9 108 366	10 710 764	10 175 226	8 922 066	5 812 089	3 923 160
Other Liabilities	1 455 000	3 190 000	4 599 060	3 022 026	3 639 633	4 298 278	4 170 580	3 792 696	2 742 495	2 179 598
Cash from Operating Activities	11 497 000	14 724 000	25 337 188	27 761 018	35 078 768	42 290 277	48 139 713	52 999 723	57 776 682	60 006 777
<b>Cash Flow-Investing Activities</b>										
Capital Expenditures	(8 014 000)	(7 172 000)	(8 169 000)	(8 959 000)	(9 389 000)	(12 040 000)	(12 214 000)	(12 127 000)	(12 170 500)	(12 148 750)
Other Investing Cash Flow Items, Total	146 000	(4 801 000)	0	0	0	0	0	0	0	0
Cash from Investing Activities	(7 868 000)	(11 973 000)	(8 169 000)	(8 959 000)	(9 389 000)	(12 040 000)	(12 214 000)	(12 127 000)	(12 170 500)	(12 148 750)
<b>Cash Flow-Financing Activities</b>										
Financing Cash Flow Items	(178 000)	(202 000)	(194 020)	(270 604)	(213 925)	(211 710)	(218 452)	(221 742)	(227 286)	(218 623)
Issuance (Retirement) of Stock, Net	707 000	541 000	624 000	582 500	603 250	592 875	598 063	595 469	596 766	596 117
Issuance (Retirement) of Debt, Net	(5 732 000)	(3 866 000)	(294 906)	720 948	906 308	1 139 326	1 432 253	1 800 493	2 263 410	2 845 345
Cash from Financing Activities	(5 203 000)	(3 527 000)	135 074	1 032 844	1 295 634	1 520 491	1 811 863	2 174 220	2 632 889	3 222 840
Foreign Exchange Effects	(183 000)	(444 000)	0	0	0	0	0	0	0	0
Net Change in Cash	(1 757 000)	(1 220 000)	17 303 262	19 834 862	26 985 402	31 770 768	37 737 576	43 046 942	48 239 071	51 080 866
Net Cash - Beginning Balance	19 901 000	18 144 000	16 924 000	34 227 262	54 062 124	81 047 526	112 818 294	150 555 870	193 602 812	241 841 883
Net Cash - Ending Balance	18 144 000	16 924 000	34 227 262	54 062 124	81 047 526	112 818 294	150 555 870	193 602 812	241 841 883	292 922 749



## Appendix 6 – Balance Sheet Assumptions

	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY	Assumptions
<b>Current Assets</b>									
Accounts Receivable - Trade, Net	4 752 273	6 130 432	7 785 648	9 732 060	11 581 152	13 202 513	14 258 714	14 971 650	Appendix 7: Changes in Working Capital Calculations
Total Receivables, Net	4 752 273	6 130 432	7 785 648	9 732 060	11 581 152	13 202 513	14 258 714	14 971 650	Appendix 7: Changes in Working Capital Calculations
Total Inventory	14 157 084	18 262 638	23 193 550	28 991 938	34 500 406	39 330 463	42 476 900	44 600 745	Appendix 7: Changes in Working Capital Calculations
Prepaid Expenses	3 170 654	4 090 143	5 194 482	6 493 103	7 726 792	8 808 543	9 513 226	9 988 888	Appendix 7: Changes in Working Capital Calculations
Other Current Assets, Total	467 418	602 969	765 771	957 214	1 139 084	1 298 556	1 402 440	1 472 562	Appendix 7: Changes in Working Capital Calculations
<b>Non-Current Assets</b>									
Property/Plant/Equipment, Total - Gross	56 303 000	65 262 000	74 651 000	86 691 000	98 905 000	111 032 000	123 202 500	135 351 250	PP&Egross t = PP&Egross t-1 + CAPEXt
Property/Plant/Equipment, Total - Net	44 491 608	51 571 165	58 990 516	68 504 733	78 156 448	87 739 414	97 356 754	106 956 907	PP&Enet t = PP&Egross t - Depreciations
Goodwill, Net	494 382	637 753	809 946	1 012 433	1 204 795	1 373 466	1 483 344	1 557 511	Average Goodwill as % of sales (2018-2022): 0.48%
Intangibles, Net	916 524	1 182 316	1 501 541	1 876 927	2 233 543	2 546 239	2 749 938	2 887 435	Average Intangibles as % of sales (2018-2022): 0.89%
Long Term Investments	531 122	685 147	870 137	1 087 671	1 294 329	1 475 535	1 593 577	1 673 256	Average LT Investments as % of sales (2018-2022): 0.51%
Note Receivable - Long Term	0	0	0	0	0	0	0	0	Assumed as 0 as in the last 3 years (2020-2022)
Other Long-Term Assets, Total	4 736 508	6 110 095	7 759 821	9 699 776	11 542 734	13 158 716	14 211 414	14 921 984	Average other LT Assets as % of sales (2018-2022): 4.58%
<b>Current Liabilities</b>									
Accounts Payable	18 155 873	23 421 076	29 744 767	37 180 959	44 245 341	50 439 688	54 474 863	57 198 607	Average Payables as % of sales (2018-2022): 17.55%
Accrued Expenses	7 995 049	10 313 613	13 098 288	16 372 861	19 483 704	22 211 423	23 988 337	25 187 753	Average Accrued Expenses as % of sales (2018-2022): 7.73%
Current Port. of LT Debt/Capital Leases	698 954	878 659	1 104 568	1 388 558	1 745 564	2 194 359	2 758 541	3 467 778	Average as % of total debt (2018-2022): 24.93%
Other Current liabilities, Total	9 801 105	12 643 426	16 057 151	20 071 439	23 885 012	27 228 914	29 407 227	30 877 588	Average Other Current Liabilities as % of sales (2018-2022): 9.47%
<b>Non-Current Liabilities</b>									
Total Long-Term Debt	2 105 140	2 646 383	3 326 783	4 182 118	5 257 365	6 609 063	8 308 291	10 444 400	Average LT debt as % of total debt (2018-2022): 75.07%
Total Debt	2 804 094	3 525 042	4 431 351	5 570 676	7 002 929	8 803 422	11 066 832	13 912 177	Maintaining the D/E ratio equal until 2030
Deferred Income Tax	0	0	0	0	0	0	0	0	Assumed as 0 because of the low value and high difficult to forecast
Minority Interest	1 384 872	1 383 774	1 362 129	1 343 755	1 333 706	1 361 647	1 357 003	1 351 648	Average from the Last 5 years
Other Liabilities, Total	5 203 440	5 438 088	5 746 106	6 002 727	6 088 472	5 695 767	5 794 232	5 865 461	Average from the Last 5 years
<b>Shareholders' Equity</b>									
Common Stock, Total	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	Assumed the same value of the last 2 years
Additional Paid-In Capital	40 449 890	50 849 787	63 923 557	80 358 668	101 019 339	126 991 987	159 642 350	200 687 308	YbY growth equal to CAGR 2018-2022
Retained Earnings (Accumulated Deficit)	11 594 435	14 947 139	20 236 957	25 304 485	30 069 139	34 212 808	39 208 880	41 071 317	Equal to the Net Income
Other Equity, Total	2 356	4 471	12 566	(57 521)	(79 826)	(23 591)	(28 780)	(35 430)	Average of Last 5 Years

## Appendix 7 – Income Statement Assumptions

	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY	Assumptions
Revenue	103 456 740	133 459 195	169 493 177	211 866 471	252 121 101	287 418 055	310 411 500	325 932 075	Forecasted based on Consensus and adjusted to own opinion because of news and company's decisions
Cost of Revenue, Total	74 498 447	96 102 997	120 355 875	150 444 843	179 029 364	204 093 475	217 316 838	228 182 679	Cost of Revenue= Op. Expenses - Others op. Expenses
Selling/General/Admin. Expenses, Total	8 305 540	10 714 147	13 606 967	17 008 709	20 240 363	23 074 014	24 919 935	26 165 932	Average as % of sales (2018-2022): 8.03%
Research & Development	4 842 023	6 246 210	7 932 686	9 915 858	11 799 871	13 451 853	14 528 001	15 254 401	Average R&D as % of sales (2018-2022): 4.68%
Interest/Investment Income - Operating	(75 821)	(97 809)	(124 217)	(155 272)	(184 773)	(210 642)	(227 493)	(238 868)	Average Int./Inv. Income as % of sales (2018-2022): -0.07%
Unusual Expense (Income)	368 039	474 770	602 958	753 698	896 900	1 022 466	1 104 264	1 159 477	Average Unusual Expenses as % of sales (2018-2022): 0.36%
Operating Income (EBIT)	15 518 511	20 018 879	27 118 908	33 898 635	40 339 376	45 986 889	52 769 955	55 408 453	EBIT t = Revenues t * Operating Margin t
Interest Expense, Net Non-Operating	(156 945)	(197 296)	(248 022)	(311 790)	(391 952)	(492 726)	(619 408)	(778 662)	Interest Expenses t = Total Debt t * Cost of Debt
Interest/Invest Income - Non-Operating	79 007	89 601	89 122	123 746	117 895	99 874	104 048	106 937	Average from the last 5 years. Too difficult to forecast.
Interest Inc.(Exp.),Net-Non-Op., Total	(77 938)	(107 695)	(158 900)	(188 044)	(274 057)	(392 852)	(515 361)	(671 725)	Sum of the two Components above
Other, Net	18 673	18 335	22 602	28 722	26 866	23 040	23 913	25 028	Average from the last 5 years. Too difficult to forecast
Provision for Income Taxes	3 864 812	4 982 380	6 745 652	8 434 828	10 023 046	11 404 269	13 069 627	13 690 439	EBT t * Marginal Tax Rate
Minority Interest	0	0	0	0	0	0	0	0	Assumed as 0. To low and Difficult to forecast.

## Appendix 8 – Changes in Working Capital Calculations

	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY	% of sales
Accounts Receivable - Trade, Net	2 952 000	4 752 273	6 130 432	7 785 648	9 732 060	11 581 152	13 202 513	14 258 714	14 971 650	4.59%
Total Inventory	12 839 000	14 157 084	18 262 638	23 193 550	28 991 938	34 500 406	39 330 463	42 476 900	44 600 745	13.68%
Prepaid Expenses	2 647 000	3 170 654	4 090 143	5 194 482	6 493 103	7 726 792	8 808 543	9 513 226	9 988 888	3.06%
Other Current Assets, Total	294 000	467 418	602 969	765 771	957 214	1 139 084	1 298 556	1 402 440	1 472 562	0.45%
Accounts Payable	15 255 000	18 155 873	23 421 076	29 744 767	37 180 959	44 245 341	50 439 688	54 474 863	57 198 607	17.55%
Accrued Expenses	5 553 000	7 995 049	10 313 613	13 098 288	16 372 861	19 483 704	22 211 423	23 988 337	25 187 753	7.73%
Current Port. of LT Debt/Capital Leases	1 502 000	698 954	878 659	1 104 568	1 388 558	1 745 564	2 194 359	2 758 541	3 467 778	
Other Current liabilities, Total	4 399 000	9 801 105	12 643 426	16 057 151	20 071 439	23 885 012	27 228 914	29 407 227	30 877 588	9.47%
<b>Changes in Working Capital</b>	<b>(3 908 000)</b>	<b>6 126 553</b>	<b>4 067 039</b>	<b>4 894 730</b>	<b>5 774 179</b>	<b>5 572 685</b>	<b>5 022 122</b>	<b>3 543 378</b>	<b>2 720 194</b>	
Accounts Receivable	(1 124 000)	(1 800 273)	(1 378 159)	(1 655 217)	(1 946 412)	(1 849 091)	(1 621 361)	(1 056 201)	(712 936)	
Inventories	(6 465 000)	(1 318 084)	(4 105 554)	(4 930 912)	(5 798 388)	(5 508 468)	(4 830 057)	(3 146 437)	(2 123 845)	
Prepaid Expenses	(1 417 000)	(523 654)	(919 490)	(1 104 339)	(1 298 621)	(1 233 689)	(1 081 751)	(704 683)	(475 661)	
Other Assets	(4 121 000)	(173 418)	(135 551)	(162 802)	(191 443)	(181 871)	(159 472)	(103 884)	(70 122)	
Payable/Accrued	6 029 000	5 342 922	7 583 767	9 108 366	10 710 764	10 175 226	8 922 066	5 812 089	3 923 160	
Other Liabilities	3 190 000	4 599 060	3 022 026	3 639 633	4 298 278	4 170 580	3 792 696	2 742 495	2 179 598	

To calculate the changes in Working Capital, each component used was forecasted as a percentage of sales, using each average weight from the last five years, as we can see in the table, except for the Current Portion of LT Debt/Capital Leases. The Notes Payables as were 0 for the last five years we assumed it will continue that way.

The Current Portion of LT Debt/Capital Leases was forecasted as a percentage of total debt, using the average of the last five years which was 24.93%. Total debt is forecasted to maintain D/E ratio of 2022 during the forecasted years as we can see in the appendix 4.

After forecasting each component, were calculated the changes from the year before and summed all to reach the Net Change in Working Capital.

## Appendix 9 – Depreciations Assumptions

	2021	2022	2023FY	2024FY	2025FY	2026FY	2027FY	2028FY	2029FY	2030FY
LONG TERM ASSETS	35 031 000	41 421 000	62 981 536	73 877 311	85 592 446	100 367 807	115 180 400	129 585 956	143 240 773	156 391 436
DEPRECIATIONS	2 911 000	3 747 000	5 641 523	6 617 504	7 666 878	8 990 370	10 317 197	11 607 564	12 830 683	14 008 644
AVERAGE	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%

To forecast the depreciations was calculated a weighted average percentage of depreciation from the last five years and obtained the value of 8.96%, and that value was kept for the forecasted years.

## Appendix 10 – DCF Valuation Estimates

	2023	2024	2025	2026	2027	2028	2029	2030
REVENUES	\$ 103 456 740	\$ 133 459 195	\$ 169 493 177	\$ 211 866 471	\$ 252 121 101	\$ 287 418 055	\$ 310 411 500	\$ 325 932 075
GROW YbY	27.00%	29.00%	27.00%	25.00%	19.00%	14.00%	8.00%	5.00%
OPERATING EXPENSES	\$ 87 938 229	\$ 113 440 315	\$ 142 374 269	\$ 177 967 836	\$ 211 781 725	\$ 241 431 166	\$ 257 641 545	\$ 270 523 622
GROW YbY	29.65%	29.00%	25.51%	25.00%	19.00%	14.00%	6.71%	5.00%
<b>EBIT</b>	<b>\$ 15 518 511</b>	<b>\$20 018 879</b>	<b>\$27 118 908</b>	<b>\$33 898 635</b>	<b>\$40 339 376</b>	<b>\$45 986 889</b>	<b>\$52 769 955</b>	<b>\$ 55 408 453</b>
OPERATING MARGIN	15.00%	15.00%	16.00%	16.00%	16.00%	16.00%	17.00%	17.00%
TAX RATE	25.00%	25%	25%	25%	25%	25%	25%	25%
<b>EBIT*(1-tax rate)</b>	<b>\$ 11 638 883</b>	<b>\$15 014 159</b>	<b>\$20 339 181</b>	<b>\$25 423 977</b>	<b>\$30 254 532</b>	<b>\$34 490 167</b>	<b>\$39 577 466</b>	<b>\$ 41 556 340</b>
DEPRECIATION	\$ 5 641 523	\$ 6 617 504	\$ 7 666 878	\$ 8 990 370	\$ 10 317 197	\$ 11 607 564	\$ 12 830 683	\$ 14 008 644
<b>CF FROM OPERATIONS</b>	<b>\$ 17 280 406</b>	<b>\$21 631 663</b>	<b>\$28 006 060</b>	<b>\$34 414 347</b>	<b>\$40 571 729</b>	<b>\$46 097 730</b>	<b>\$52 408 150</b>	<b>\$ 55 564 984</b>
CAPEX	\$ 8 169 000	\$ 8 959 000	\$ 9 389 000	\$ 12 040 000	\$ 12 214 000	\$ 12 127 000	\$ 12 170 500	\$ 12 148 750
CHANGE IN WC	\$ 6 126 553	\$ 4 067 039	\$ 4 894 730	\$ 5 774 179	\$ 5 572 685	\$ 5 022 122	\$ 3 543 378	\$ 2 720 194
FCFF	\$ 2 984 853	\$ 8 605 625	\$ 13 722 329	\$ 16 600 167	\$ 22 785 043	\$ 28 948 608	\$ 36 694 271	\$ 40 696 040
PV OF FCFF	<b>\$ 2 984 853</b>	<b>\$ 7 699 871</b>	<b>\$10 985 755</b>	<b>\$11 890 923</b>	<b>\$14 603 401</b>	<b>\$16 600 948</b>	<b>\$18 828 014</b>	<b>\$ 229 610 962</b>
FIRM VALUE	\$ 313 204 728							<b>\$ 459 436 766</b>
DEBT MV	\$ 2 804 094							<b>Terminal Value</b>
CASH AND CASH EQUIVALEN	\$ 23 676 543							
NET DEBT	\$ -20 872 449							
EQUITY VALUE	\$ 334 077 177 017							
#SHARES	3 164 102 701		\$ 780 046	MARKET CAP (IN MILLIONS)				
TARGET PRICE 2023FY	\$ 105.58	<	\$ 246.53	SHARE PRICE 03/10				
	<b>DOWNSIDE</b>	<b>-57%</b>						

## Appendix 11 – Relative Valuation Estimates

Company Name	Price Close 24/09/2023	Net Income Before Extraordinary Items	Total Common Shares Outstanding (Millions)	Current P/E Excl Extra, LFY	Current EV	EBITDA (Millions)	Current EV/EBITDA LFY
<b>Tesla Inc</b>	\$ 244.88	\$11 594 434 695.22	3 164	28.87	\$ 334 692 695 471.02	\$21 160.03	15.82
Ford Motor Co	\$ 12.43	\$-1 981 000 000.00	4 139	-	\$150 091 664 232.86	\$18 649.00	7.75
Mercedes Benz Group AG	\$ 71.72	\$15 519 049 657.53	1 070	4.97	\$177 971 644 713.62	\$33 802.44	5.09
Volkswagen AG	\$ 121.94	\$16 527 183 219.18	501	3.86	\$275 084 544 796.10	\$53 549.98	4.25
General Motors Co	\$ 32.58	\$ 9 935 000 000.00	1 400	5.31	\$134 556 994 445.94	\$24 271.00	5.47
Stellantis NV	\$ 19.48	\$17 978 381 849.32	3 144	3.44	\$ 36 364 765 930.06	\$32 552.44	1.15
<b>BYD</b>	\$ 33.58	\$ 2 410 028 417.33	2 906	42.87	\$116 812 601 903.55	\$ 5 924.43	19.15
Toyota Motor Corp	\$ 187.10	\$18 460 109 948.04	13 565	15.47	\$650 320 780 909.54	\$37 756.10	13.33
Bayerische Motoren Werke AG	\$ 105.74	\$19 200 556 506.85	646	3.64	\$165 536 283 970.25	\$24 373.93	5.89
Geely Automobile Holdings Ltd	\$ 1.22	\$ 762 679 493.13	10 057	17.60	\$ 9 845 301 454.50	\$ 1 502.71	6.78
Volvo AB	\$ 20.40	\$ 3 143 988 162.72	2 033	14.23	\$ 74 422 317 569.72	\$ 6 761.85	8.40
Hyundai Motor Co	\$ 143.55	\$ 5 840 468 864.00	261	6.73	\$121 643 884 552.39	\$11 958.31	9.08
SunPower Corp	\$ 6.37	\$ 102 358 000.00	174	10.87	\$ 1 367 859 173.59	\$ 34.42	32.70
Sunrun Inc	\$ 12.89	\$ 173 377 000.00	214	16.29	\$ 13 394 657 471.73	\$ -187.06	-

	P/E	EV/EBITDA
AVERAGE	12.11	9.92
MEDIAN	8.80	7.27
TESLA'S EPS	\$ 3.66	
EBITDA per SHARE		\$ 6.69
TARGET PRICE(AV)	\$ 44.36	\$ 66.34
<b>TARGET PRICE (MED)</b>	<b>\$ 32.25</b>	<b>\$ 48.59</b>

Here we have the relative Valuation using all the thirteen peers selected and as we can see the target prices obtained were too low and not accurate since there are companies in the list that are considered as Tesla competitors, but do not have similar financial data. And that is main limitation of this valuation.

To compute the target price for 2023, we selected the highlighted company in the list that is the most similar one to Tesla in different aspects. BYD only produces Electric Vehicles, as Tesla, and in 2022 became the company with more EVs sold and with highest market share, overtaking Tesla.

	P/E	EV/EBITDA
TESLA'S EPS	\$ 3.66	
EBITDA per SHARE		\$ 6.69
<b>TARGET PRICE (MED)</b>	<b>\$157.10</b>	<b>\$128.07</b>

After downloading BYD's multiples and calculated Tesla EPS and EBITDA per share we reached a target price of \$157.10 using the P/E ratio and \$128.07 using the EV/EBITDA ratio.

## Appendix 12 – Sensitivity Analysis

SHARE PRICE \$246.53		Operating Margin				
		Very Low	Low	Expected	High	Very High
Revenues Growth	Pessimist	49.63	58.61	67.58	81.05	94.51
	Cautious	62.18	73.36	84.54	101.32	118.09
	Expected	77.72	91.65	<b>105.58</b>	126.48	147.37
	Optimistic	104.17	122.77	141.36	169.26	197.15
	Very Optimistic	138.87	163.62	188.37	225.49	262.61

SHARE PRICE \$246,53		Operating Margin				
		Very Low	Low	Expected	High	Very High
Revenues Growth	Pessimist	-79.9%	-76.2%	-72.6%	-67.1%	-61.7%
	Cautious	-74.8%	-70.2%	-65.7%	-58.9%	-52.1%
	Expected	-68.5%	-62.8%	-57.2%	-48.7%	-40.2%
	Optimistic	-57.7%	-50.2%	-42.7%	-31.3%	-20.0%
	Very Optimistic	-43.7%	-33.6%	-23.6%	-8.5%	6.5%

Scenarios	2023	2024	2025	2026	2027	2028	2029	2030	Terminal Value
<b>Revenue Growth Rates</b>									
Pessimist	17%	19%	19%	17%	13%	8%	4%	3.0%	1.7%
Cautious	22%	24%	23%	21%	16%	11%	6%	4.0%	2.2%
<b>Expected</b>	<b>27%</b>	<b>29%</b>	<b>27%</b>	<b>25%</b>	<b>19%</b>	<b>14%</b>	<b>8%</b>	<b>5.0%</b>	<b>2.7%</b>
Optimistic	34%	36%	33%	31%	23%	17%	10%	6.0%	3.2%
Very Optimistic	41%	43%	39%	37%	27%	20%	12%	7.0%	3.7%
<b>Operating Margin</b>									
Very Low	11%	11%	12%	12%	12%	12%	13%	13%	
Low	13%	13%	14%	14%	14%	14%	15%	15%	
<b>Expected</b>	<b>15%</b>	<b>15%</b>	<b>16%</b>	<b>16%</b>	<b>16%</b>	<b>16%</b>	<b>17%</b>	<b>17%</b>	
High	18%	18%	19%	19%	19%	19%	20%	20%	
Very High	21%	21%	22%	22%	22%	22%	23%	23%	

The table above shows the 5 scenarios for each variable.

In the first half of the table, we have the revenue growth rates scenarios. In the first two years, the difference between each scenario is 5% for the more pessimistic scenarios and 7% to the optimistic ones since are the most volatile ones, as the company is still in the high growth stage, so the growth can be very high or very low.

Going to 2030, in the worst scenarios the difference decreases to 4% and 3%, years 2025 and 2026, and 2027 and 2028, respectively. In the last two years the difference is 2% and 1%, for the Terminal Value the difference is only 0.5% since the stable growth rate is the one that most affects the valuation, and a big difference could limit the analysis.

To the more optimistic scenarios the differences are 6% for 2025 and 2026, 4% for 2027, 3% for 2028, 2% for 2029, 1% for 2030 and 0.5% for the stable growth.

The operating margin scenarios have differences between each other of 2%, because in my opinion in the best-case scenario Tesla will not surpass the operating margin of 21%, a high value for an automaker, and in the worst-case scenario the company should not have an operating margin lower than 11%.