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FINANCIAL ANALYSIS AND VALUATION OF TESLA INC.

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I hereby declare that I have compiled the paper independently and all works, important standpoints, and data by other authors have been properly referenced and the same paper has not been previously presented for grading.

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ABSTRACT

The success of many enterprises today is associated with the effectiveness of planning, determined by the quality of predictive assessments of the consequences of decisions made, namely, financial analysis and valuation is the theme of this work. The research problem lies within the fact, that Tesla Inc. was on the verge of bankruptcy in the first half of the year 2019 due, and in 2020 January Tesla was worth more than \$ 100 billion (Root, 2020). This extensive leap requires special attention and research in terms of predictability of further actions. The research question is: is a recent increase in the value supported by fundamentals and what should be expectations about the future fundamentals to support the current valuation of Tesla Inc.?

The research is based on the academic literature concerning the financial analysis of the company's performance and financial performance forecasting. Data analysis shows that since the company is an innovator and is growing very rapidly, there is not enough historical data to make reasonable forecasts of its activities. Even if the company's perpetual growth indeed achieves 3% per year for the following 5 years, the cash flows will possibly for all analyzed time. Based on the DCF model, the intrinsic value of the stock is 968.74 USD million, when the market value is 857,53 USD million (Δ 111,21 USD million), so the stock is underpriced.

It can be concluded that the current valuation of Tesla Inc. stock is based on a highly risky assumption that the company will grow due to the rise in popularity of electric cars and the solution for energy storage. But this assumption is not supported by the fundamentals. Even the market trend analysis is not indicative of this growth since electric cars were becoming more and more popular for several years, but Tesla was still losing money and investing more and more just to maintain the value of the equity on the books.

Keywords: financial analysis, valuation, Tesla

INTRODUCTION

The fact that entrepreneurship is an activity related to investing and generating income is obvious. Funds are invested today, and income will be extracted tomorrow. To assess the possible amount of income and the effectiveness of investments, it is necessary to determine not only the sequence of actions and calculate their expected result, but also the future state of the enterprise and the external environment, including the conditions for the sale of products and the behavior of competitors, the possible structure of assets and sources of financing, etc. And without these estimates, the calculations of the effectiveness of investment of funds will hardly satisfy the minimum requirements of reliability. Determining the future state of the enterprise and its environment based on prevailing trends is forecasting. The success of planning and, therefore, management of the enterprise will be fully determined by the quality of forecast estimates of the consequences of decisions made. This justifies the topic of the research.

The research problem lies within the fact, that Tesla Inc. was on the verge of bankruptcy in the first half of the year 2019 due to continuous major losses, recorded on the company financial reports (Collins, 2019). The current rise began in May 2019 - then the value of the share was \$ 185. In December, growth accelerated significantly, and in January Tesla was worth more than \$ 100 billion (Root, 2020). The company's report indicates that the year was a "turning point for the company" and achieving profit is not a statistical error, but the beginning of a new era (Tesla Inc., 2020).

It can be presumed that Tesla's share price and the value of the company in the coming months will grow even more. This may be facilitated by the growing demand for electric cars and batteries in Europe, where the authorities once again are increased pressure on automakers: since 2020, new environmental standards are applied in the territory of the European Union. All cars produced must emit no more than 95 grams of carbon dioxide into the atmosphere (European Commission, 2020). The new environmental standards are quite strict, and the fines for non-compliance are very substantial for car manufacturers. In total, due to slow response to changes, the automobile

segment may receive a fine of up to 32 billion euros, which exceeds the estimated profit by 100%, experts noted (Jato, 2019).

Due to a significant increase in stock prices, Tesla ranked second in terms of capitalization among all automobile manufacturers. In particular, the company was ahead of Volkswagen, General Motors, and Ford, which produce many more cars, respectively 11 million, 6.21 million, and 5.6 million units (Randewich, 2020). The objective of the research is to conduct a financial analysis of Tesla Inc.'s company in order to verify if the recent increase in the value is supported by fundamentals.

Research tasks are as follows:

1. To conduct a literature review on the theoretical aspects of the valuation of companies;
2. To conduct an analysis of the electric vehicle industry trends;
3. To conduct an analysis of the financial performance of Tesla Inc.;
4. To provide a valuation of Tesla Inc.;
5. To compare the results with the current valuation of Tesla Inc. and its share price and make conclusions.

The research question is: is a recent increase in the value supported by fundamentals and what should be expectations about the future fundamentals to support the current valuation of Tesla Inc.?

The research will be based on the academic literature concerning the financial analysis of the company's performance and financial performance forecasting.

The research will be based on quantitative methods of research – fundamental analysis of Tesla Inc., which includes industry trend analysis, credit rating analysis, financial statement analysis, financial ratio analysis, and net asset value calculation. The data will be obtained from publicly available financial statements of Tesla Inc. – annual reports of the company. The object of this research is Tesla Inc., whilst the subject – its financial performance and real asset value.

This thesis consists of an introduction, two main chapters, and a conclusion. The first chapter provides a review of theoretical literature on company valuation. It discusses objectives of business valuation, methods of business valuation and in particular, pay attention to the fundamental

analysis as a method to determine the true asset value of a business. The second chapter deals with the evaluation of the financial performance of Tesla Inc. It includes industry trend analysis, information about the company and financial analysis of the company, including credit rating analysis, analysis of financial statements, analysis of financial ratios and net asset value calculations to answer the research question and determine whether the recent increase in the value is supported by fundamentals and what should be expectations about the future fundamentals to support the current valuation of Tesla Inc.

1. COMPANY VALUATION: THEORETICAL DISCUSSION

Today, to make effective management decisions, owners and management of an enterprise often need information on business value. Other parties are also interested in conducting the business valuation, such as government agencies (control and audit and other bodies), credit organizations, insurance companies, suppliers, investors, and shareholders, as is most relevant to Tesla Inc.

Increasing the value of an enterprise is one of the indicators of growth in the income of its owners and shareholders. Therefore, the periodic conduct of business valuation can be used to analyze the effectiveness of enterprise management and its future chances for success and growth.

This chapter focuses on the theoretical discussion regarding company valuation principles. Academic articles concerning this subject are reviewed and analyzed. The chapter includes an overview of the aims of business valuation, the tasks that are required to complete it, as well as factors that are taken into account during the process of business valuation. Methods for business valuation are also discussed, including the most popular ones and paying particular attention to the fundamental analysis as a tool for determining the true asset value of the company, in line with the aim of this thesis.

1.1. Objectives of business valuation

According to Matschke *et al.* (2010), the results of business valuation, obtained based on the analysis of external and internal information, are necessary not only for negotiating sales; they play a significant role in choosing an enterprise development strategy: in the strategic planning process, it is important to assess the future income of an enterprise, its degree of stability and image value. To make informed management decisions, inflationary adjustment of financial reporting data is necessary, which is the basis for financial decisions and to justify investment projects for the acquisition and development of a business, the company management must have the information about the value of the entire enterprise or part of its assets Konchitchki (2011).

Therefore, knowing the basics of assessing the value of an enterprise and managing it, the ability to put into practice the results of such an assessment is the key to making effective management decisions, achieving the required profitability of an enterprise.

According to Buckley (2003), the issue of assessing the fundamental value of the share capital (equity) of companies whose shares are traded on the stock market is of great importance for both theory and practice of investment management. Most management decisions of a financial nature require an assessment of financial assets, investment projects, or companies in general (Buckley, 2003). Valuation of equity is necessary for several reasons, such as, first of all, the need for benchmarks for the value of the shares included in the portfolio to achieve effective investment management in the securities market (Fabozzi *et al.*, 2017). Another reason for valuation of equity is the need for managing the value of the company in the interests of shareholders, which encompasses managing according to the criteria of maximizing the value of share capital, which is the main task and central problem of senior corporate managers in the modern economy, according to Stanley (2018).

Hayes (2020) defines business valuation as “a general process of determining the economic value of a whole business or company unit. Business valuation can be used to determine the fair value of a business for a variety of reasons, including sale value, establishing partner ownership, taxation, and even divorce proceedings”. It can be said that business valuation is the definition of the value of an enterprise as a property complex capable of generating income for its owner.

The business valuation includes in-depth financial, organizational, and technological analysis of the enterprise, looking at past, present and forecast revenues, development prospects, and competitive environment in this market (Link and Boger, 1999). Thus, the value of a company is an objective indicator of the results of its activities, and determining the value of a business is extremely important for evaluating the effectiveness of managerial decisions aimed at increasing the value of a company.

Due to the fact that the book value of assets is usually very different from their market value, according to Maditinos *et al.* (2011), the need for valuation is clearly seen when attracting investments and credit resources from one end and making investment decisions from the other end of business activities. Conducting a business valuation is also necessary during various types of enterprise restructuring, according to Gaughan (2010), such as liquidation, merger, acquisition, spin-off, etc. Another aim of business valuation is to satisfy the growing interest on the part of business owners to use the value of the intellectual property and intangible assets not reflected in accounting, such as brand name and goodwill (reputation of the company) (Maditinos *et al.*, 2011).

Therefore, the objectives of the business valuation can be summarised as follows:

- Improving the efficiency of enterprise management;
- Justification of the investment decision;
- Creation of business development plan (business plan);
- Restructuring of an enterprise (liquidation, merger, acquisition, spin-off);
- Determination of the value of enterprise securities, shares, shares of its capital;
- Determining the creditworthiness of the enterprise and the value of the collateral when lending;
- Determining the market value of the property for insurance;
- Determining the tax base of the enterprise;
- Revaluation of enterprise assets for accounting purposes;
- Repurchase of shares from shareholders;
- To substantiate a claim or appeal against a court decision;
- Determining the amount of rent when renting a business;
- Issue of securities.

Therefore it can be concluded that the procedure for determining the value of a business is very important for the effectiveness of making managerial decisions, especially when it comes to increasing the value of a company, as well as for potential and existing investors. The basic purpose of evaluating a business is to find a piece of accurate information about the company when decisions are needed on future investments, thus business valuation aims to identify the real market value of the assets (equity) of a company.

1.2. Methods of business valuation

Traditional methods of financial analysis used for business valuation are based on the calculation of financial ratios and only on the data of the financial statements of the enterprise. However, along with internal information in the process of assessing the value of an enterprise, it is necessary to analyze data characterizing the working conditions of an enterprise in the region, industry, and the economy as a whole.

According to Hayes (2020), “estimating the fair value of a business is an art and a science; there are several formal models that can be used, but choosing the right one and then the appropriate inputs can be somewhat subjective”.

Most used methods for business valuation, according to Hayes (2020), include:

1. Market Capitalization
2. Times Revenue Method
3. Earnings Multiplier
4. Discounted Cash Flow (DCF) Method
5. Book Value
6. Liquidation Value

Market capitalization is one of the easiest methods for evaluating the business. It involves information about the share price of an enterprise and the number of shares outstanding. The formula for market capitalization is the multiplication of the share price by the numbers of shares. According to Hooke (2010), however, this method is very basic and only provides information about the market value of a company, not about its real value.

Times revenue method involves the analysis of company revenues for a particular period of interest and, using a multiplier that is determined by looking at the economy and industry figures, the company value is calculated (Hayes, 2020).

Earnings multiplier is considered to be a more accurate method than the time's revenue method because it allows determining the real value of business more accurately, as instead of revenue it uses profits of the business for a certain period of time. This method implies the adjustment of company profits against the cash flow, allocated for possible investment with a certain interest rate and for a certain time period, which means, that this method is based on the adjustment of the P/E ratio with an interest rate, applicable to the project (Camilleri, 2015).

The discounted cash flow (DCF) method is based on similar principles to the earnings multiplier method and uses the forecasts of business cash flows with an adjustment to the current interest rates. This method can be considered more accurate since it also uses the inflation rate in the adjustment of the present value of the business (Larrabee and Voss, 2012).

A book value approach to business valuation looks at the value of equity of the shareholders based on the data from the company balance sheet and is calculated by reduction of the total assets of a company by its current and non-current liabilities (Hayes, 2020).

The liquidation value of a company is calculated by determining what amount of cash will the business receive if all its assets were sold and liabilities were paid (Hayes, 2020).

Hayes (2020) mentions other methods of business valuation, but it can be seen that none of these methods are useful for this current research of Tesla Inc., since this research is attempting to assess the real value of the company. Thus, the next section looks at the fundamental analysis as a tool to determine the true value of company assets.

1.3. Fundamental analysis as the method for determining the true asset value

According to Teplova (2011), fundamental analysis has a more solid conceptual basis and is applicable to almost all investment assets, both listed and unique. Fundamental analysis is widely used in the analysis of the stock market and issues of securities of companies. In addition, it is used in decision-making in the bond market, direct investment in the purchase of companies, and for the valuation of real estate (Teplova, 2011). Empirical support for fundamental analysis is based on the discussion of the inadequacy of attempts to build a relationship between future prices for financial assets and their past dynamics (Abarbanell and Bushee, 1997).

A classic work proving the futility of the efforts of technical analysis specialists is the study of Kendall and Hill (1953) on the economic time-series, in which the authors tried to identify patterns (cycles) in the movement of stock prices and goods of English companies over 22-time series. A brief conclusion from his work is that the price movement is unpredictable. In modern finance, Kendall and Hill's (1953) findings are commonly called a *random walk model*. The market price of an asset in the framework of this model changes randomly and does not depend on past dynamics (Jamali and Ester, 2009). According to this model, past and current share prices are useless for predicting future price behavior.

According to Teplova (2011), fundamental analysis is based on the following points.

1. The market price of any asset is determined by future benefits and the degree of risk of obtaining these benefits, as well as the ability of the investor to receive part of the benefits that correspond to the share of ownership. Therefore, in order to forecast a market price, it is necessary to estimate the fair value of this asset.
2. Future benefits and their level of risk largely depend on macroeconomic and industry factors, often called fundamental. Individual investors cannot influence fundamental factors.
3. The future benefits from the company, as well as the fairness of their division between investors, also depend on the internal factors (internal decisions) of the company – financial, corporate governance, etc. Internal decisions are more dynamic (for example, incompetent management can be replaced by professional management, effective corporate governance standards can be adopted and implemented), so the emerging market price and its short-term fluctuations depend to some extent on changes in internal factors.

The complexity of understanding and conducting fundamental analysis lies in the multidimensionality of the concept of the market value of an asset and in the variety of indicators characterizing a market valuation (Piotroski and So, 2012). According to Piotroski and So (2012), the key factors behind the differences are investment objectives and the amount of information available. Depending on the objectives of the investment (purchase of control over a company (business), purchase of a minority stake, strategic investment through the construction of an integrated company, lending, etc.) and the information available - public or closed (private or confidential) – different concepts can be used (Piotroski and So, 2012).

In the fundamental analysis, the attention of the analyst and investor is focused on the divergence at the current time of the estimated and observed estimates of the asset, and this comparison makes it possible to draw conclusions about the advisability or inappropriateness of investing (Menkoff, 2010).

According to Teplova (2011), in the fundamental analysis, several important concepts arise that characterize the price (market value) of a company or an individual investment asset:

1. Intrinsic (true value) is the estimated valuation of an asset for a typical investor in the current market environment based on the time-distributed benefits of owning it within the framework of the fundamental analysis logic. The key elements of this concept are: 1) all available information on the asset in question (both open and closed); 2) an impersonal

- position of an investor; 3) taking into account the risk of benefits associated with both the quality of the external environment and the internal opportunities for improving the asset.
2. Investment value – the estimated assessment of the benefits of investing in the analyzed asset (company) by a particular investor. This value takes into account both the actual benefits brought by the asset for any investor and the possible additional benefits of a combination of the existing and the net assets of the investor (for example, various synergy effects: savings on transaction costs, taxes, costs of financing sources, etc.). Most often, the investment value is discussed in the process of purchasing control over the company.
 3. Fundamental value – a calculated estimate of the time-distributed benefits of a generalized investor from the investment, as a rule, of financial capital in this company. Fundamental value is usually calculated for portfolio investments (minority packages).

The term "fair value", according to Teplova (2011), combines the previously considered concepts of fundamental, intrinsic, and investment value and is compared according to the logic of fundamental analysis with the market valuation.

Therefore, it can be concluded that fundamental valuation is based on publicly available information about the company. Moreover, analysts often use the same valuation algorithms to compare companies in the same industry. Thus, the difference between the fundamental value and the investment value lies both in the amount of information on which the valuation algorithm is implemented and for investment purposes. The traditional algorithm used to calculate fundamental value is the discounted cash flow (DCF) method. To calculate the investment value, the amount of information required is more than publicly available, it also includes internal information, for example, in the framework of management accounting.

All these definitions of a company's market value are based on the logic of fundamental analysis, i.e. on the assessment of investors' expectations regarding future benefits and their risk, therefore, they require a forecast of the net benefits of investing in years (time periods), expressed in cash and analysis of risks in obtaining these benefits (the probability of obtaining the expected result) and justification of compliance with these risks of the required return on investment.

2. EVALUATION OF FINANCIAL PERFORMANCE OF TESLA INC.

This chapter deals with the evaluation of the financial performance of Tesla Inc., using fundamental analysis to determine the real asset value and to provide a forecast of the future financial performance of the company, according to the aim of this thesis. This part is also aimed at answering the research question and determining whether a recent increase in the value is supported by fundamentals and what should be expectations about the future fundamentals to support the current valuation of Tesla Inc.

The chapter begins with the industry analysis and forecasts, provided by experts, provides the information about Tesla Inc. and finally, details the financial analysis of the company and DCF (discounted cash flow) forecast for the next 5 years.

2.1. Industry analysis

In order to evaluate the possible future development of Tesla Inc., it is important to analyze the industry the company operates within. Tesla Inc. is a company, famous for its electric vehicles and electrical energy storage solutions. The analysis of the global electric vehicle market and its trends is presented in this paragraph.

The number of electric vehicles in the world is growing. Many analysts believe that a new era is beginning in which electric cars will mark the end of the oil era. At the same time, despite the growing popularity of this alternative mode of transport, the age of “black gold” will continue for a long time, the other side is sure. Oil production technologies are becoming more advanced, while the shortcomings of electric cars do not allow the market to fully accept them.

Growth predicted by BloombergNEF experts far exceeds forecasts for the US and China, the two largest electric car markets. In three years, any resident of the EU will be able to choose from 150 models of electric cars.

China's electric transport market may even decline in 2020, according to a BloombergNEF report, due to reduced government subsidies. And so that the growth of electric car sales in North America does not stop, Tesla Inc. must maintain interest in Model 3 in anticipation of the release of the Model Y crossover, Electrek reports. Moreover, in Europe, experts predict market growth immediately by 35%.

In the next three years, the number of electric car models available to residents of the European Union will reach 150, the authors of the report write.

Next year, new models from Audi, Byton, BMW, Ford, Polestar, Rivian, Volkswagen, and Volvo should appear on the American market. However, the owners will not receive them right away, so that the real sales will begin only by the end of 2020. At the same time, the dispute between the Trump administration and the California authorities on the rules of fuel economy creates additional instability in the market.

Meanwhile, the European Union is confident that car manufacturers must either produce environmentally friendly cars in the indicated volume or pay heavy fines. Under the new EU rules, next year, the average CO2 emissions of products produced by the car company should be equivalent to 92.3 km per gallon (3.7 L) of fuel. This figure will gradually increase until it reaches 148 km per gallon. This measure encourages manufacturers to immediately begin electrification. On the other hand, to stimulate the growth of the electric vehicle market, in Germany, France, and, to a lesser extent, the United Kingdom, compensation is provided for buyers, which reduces the price of an electric car by up to 6,000 euros.

According to IHS Markit analysts, in 2020 over 350,000 new electric cars will be sold in the United States. This is only 2% of the total number of vehicles purchased. The best-selling electric car model in the United States last year was the Tesla Model 3.

The year 2020 is set up to be “the year of the electric car” in Europe, according to Jolly (2019). The Guardian reports that “*The number of electric vehicle (EV) models available to European buyers will jump from fewer than 100 to 175 by the end of 2020, according to data firm IHS Markit. By 2025 there will be more than 330, based on an analysis of company announcements.*” (The Guardian, 2019).

According to Statista, in the year 2026, the electric vehicle market is set to grow almost fivefold from the figures of the year 2019.

The global electric vehicle market, therefore, is forecasted to reach the size of 567.2 USD billion, which is almost 5 times higher than in 2019, ensured by around 15.6% annual growth (Statista, 2020a). This assumption means that it is possible that Tesla Inc.'s valuation, provided in the introduction to this thesis is accurate.

According to Wagner (2020), the country with the highest share of electric vehicles amongst the population in the world is Norway with nearly 50% of newly registered electric vehicles out of all new registrations in 2018 and almost 7% of all country's vehicles being electric. Norway's success in the adoption of the electric fleet is partially due to the government incentives, the same as in Germany and France, as noted above, and also wide availability of electric vehicle chargers, which makes owning an electric car possible, according to Wagner (2020).

Figure 1 shows the breakdown of the electric vehicle market by market segment for 2020 and a forecast.

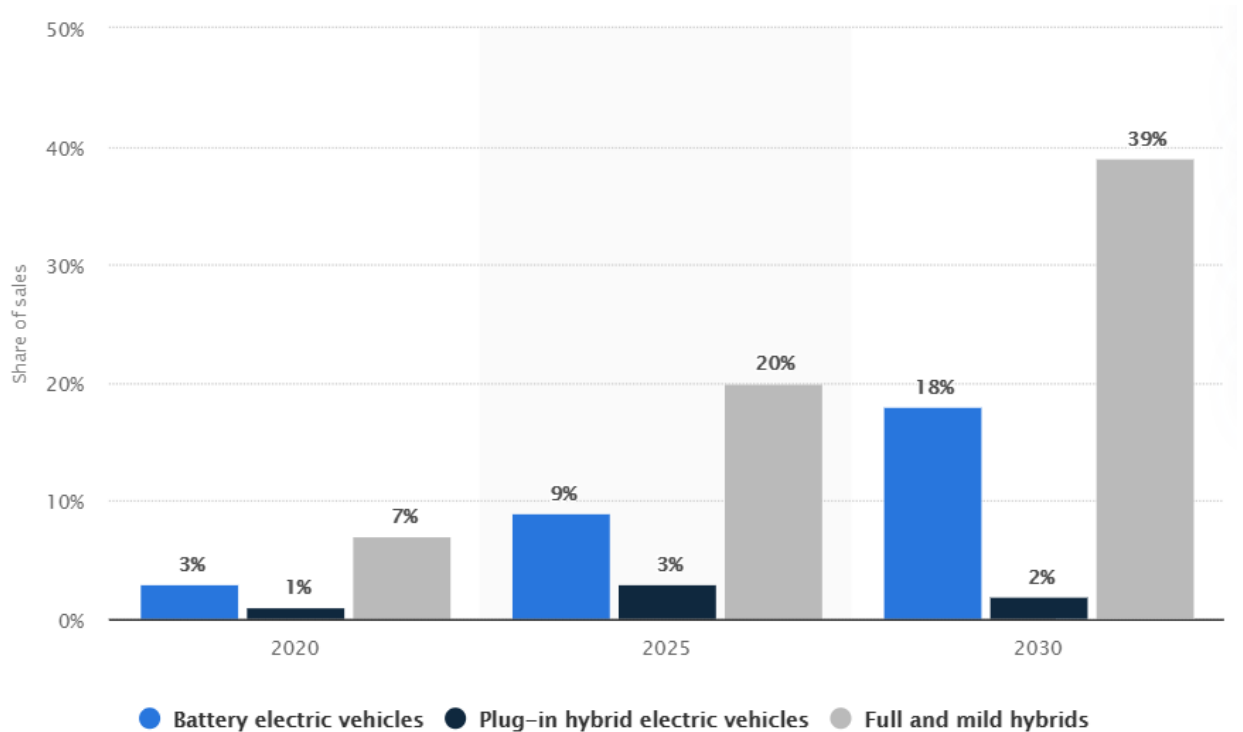


Figure 1. Electric vehicle sales as a percentage of car sales worldwide between 2020 and 2030, by segment.

Source: Statista (2020b)

Thus, in 2020 3% of electric vehicles sold were battery electric vehicles, 1% - plug-in hybrid electric vehicles, and 7% - full and mild hybrids. The forecast shows that in 2025 the same battery electric vehicles will increase to 9% share in the total sales of vehicles, whilst the sales of plug-in hybrids will rise to 3% and the share of full and mild hybrids – to 20%. By the year 2030, however, the share of sales of plug-in electric vehicles will drop to 2% of the total sales, the share of sales of battery electric vehicles will double compared to the year 2025 and reach 18% of total sales and the share of sales of full and mild hybrids will grow rapidly to 39% of total sales – almost double from the figures of the year 2025.

It can be concluded that the market of electric vehicles is growing and these vehicles are becoming more popular, which is supported by governments of many developed countries, who provide subsidies to purchase electric vehicles and also charge higher taxes and even fines for operating a standard fuel vehicle with High CO₂ emissions. This means that there is a favorable market environment for Tesla Inc.'s development and growth in value.

The next section of the thesis will look at the Tesla Inc. company and provide basic information about it.

2.2. Information about Tesla Inc.

Tesla company was established in 2003 and its founders were engineers, who were passionate about creating comfortable and useable electric vehicles. At the time, electric vehicles were slower, not as comfortable and fun to drive, as the traditional petrol and diesel-fuelled vehicles. The Tesla team has achieved its goal and today, the company factories are not only manufacturing electric vehicles, but they also provide solutions for electricity generation and storage. The main idea and mission of the company are to relieve the world from relying on fossil fuels in order to achieve sustainability (Tesla Inc., 2020).

The CEO of Tesla Inc. currently is Elon Musk, who is known worldwide as a pioneer in engineering solutions and innovation and the company's main investor, who provided financial support to the company's projects.

The first official project presentation of the brand took place in 2006, when the Tesla Roadster sports car, the world's first model of an electric car of this type, was presented at the Santa Monica (California) motor show. Tesla Roadster itself in the initial design was sold from the beginning of 2008 until 2012, then it was replaced by a modification of the Tesla Model S, which was distinguished by an improved design and serious improvements to the design and the technical part (Tesla Inc., 2020).

The concept of the S model was shown in 2009 at the California auto show. The plans of "Tesla Motors Ltd" initially was the release of 10,000 units, then they were increased to 25,000 cars per year. In 2012, official sales of the Tesla Model S began around the world, and in the fall the car received the prestigious Motor Trend 2013 Car of the Year award (Tesla Inc., 2020).

In 2012, Tesla Motors showed the concept of the Tesla Model X crossover, based on the Model S platform, which went into production next year, and in 2014 their delivery begins for prepaid customers (Tesla Inc., 2020).

Also, the approach is another model, called the BlueStar. It will be a compact electric car, the price of which against the background of its predecessor Tesla Model S looks much nicer - the company plans to sell it for only \$ 30,000 for a high-quality and fast electric car as standard. It is almost half the price of previous Tesla cars (Tesla Inc., 2020).

In 2015, the Tesla Model S P85D was released - an updated electric car from a world-famous manufacturer. The new model looks exactly like the Tesla Model S but has numerous improvements. For starters, this is all-wheel drive, and just tremendous speed and power. The electric car produces an impressive 691 liters. from. and 687 n / m of torque, accelerating to 100 kilometers per hour in just 3.2 seconds (Tesla Inc., 2020).

In 2015, Tesla also expanded its product line with Model X, which was the safest, the quickest, and most capable sports car at the time in history with 5-star safety scores in every safety category used by National Highway Traffic Safety Administration in the USA. In 2016, the company has introduced Model 3, aimed at a lower-income segment, which began production in 2017 and a truck Tesla Semi, aiming at being more energy efficient and able to save up to 20000 USD cost in fuel over 1 million miles traveled (Tesla Inc., 2020).

Tesla Inc. share prices rose by almost 80% from the beginning of 2020 and this increased the wealth of Elon Musk, who owns 1/5 of the company, by \$ 4.7 billion (Root, 2020). One of the catalysts for this major share price rise, as noted by the experts, is the profit made by a joint venture for the production of batteries with Panasonic at the Gigafactory site. It manufactures batteries and was previously unprofitable due to production problems (Inagaki, 2020). Another reason for this success is rising vehicle sales, which have prompted financial analysts, such as Argus Research and ARK Investment Management to raise price targets for Tesla shares and update their valuation of the company, based on their growth potential, as noted by Khlebnikov (2020).

Current issue considerations

Considering the current issue of the effects of the measures taken to prevent the spread of COVID-19 on the world economy, it is interesting to note that in the first quarter of 2020, the performance of Tesla Inc. became the highest compared to the same period of all past years.

Despite the negative impact of the coronavirus pandemic on the global economy, the American electric vehicle manufacturer Tesla in the first quarter of 2020 managed to produce even more cars than planned, namely: 102 672. According to Friday, April 3, the German online publication heise.de, production Tesla's performance in the first quarter of 2020 was its highest compared to the same period of all past years.

At the same time, the Tesla plant in Shanghai, according to the concern itself, showed a record level of production, despite adverse conditions.

As for the level of sales, according to the automaker himself, from January 1 to March 31, 2020, he managed to sell 88,400 electric vehicles. For comparison: in the first quarter of 2019, 63,000 cars were sold.

After representatives of the concern announced an increase in their production indicators on April 2, Tesla's shares rose in price by 10 percent. The electric car, the most often off the assembly line in the first quarter of 2020, was Model 3, with which Tesla expects to conquer the mass market. In the first three months of 2020, 87,282 of these cars were assembled.

The story of the company shows confident success and continuous improvements to their products, innovation, and creation of value for both, consumers, stakeholders, and the environment.

2.3. Financial analysis of Tesla Inc.

This chapter deals with the financial analysis of Tesla Inc. in order to determine whether the current valuation of the company is supported by the fundamentals or not and to determine the real value of the Tesla Inc. stock.

The quantitative fundamental analysis principle is applied to study the value of Tesla Inc. stock. The first part of the fundamental analysis, from the macro perspective, has already been completed in the previous sections of the second chapter of the thesis and it was found, that the economic and market conditions are favorable to Tesla Inc. and support the high valuation of the company stock.

The following steps of the fundamental analysis of Tesla Inc., that will be covered in this current section are:

- The credit rating analysis of the stock issuer (Tesla Inc.);
- The analysis of financial statements of the company that includes revenue growth, net earnings, return on equity, profit margins, and other financial ratios;
- Determining the Net Asset Value of Tesla Inc. and its estimated net stock price, based on this value;
- Making conclusions about the possibilities of future growth of the company based on the financial performance for the past years.

Credit rating analysis of Tesla Inc.

According to Moody's (2020), the current long term rating of Tesla Inc., as of 20 August, 2019 is B3 (LT Corporate Family ratings) and the company is not on the debt watch (see figure 2). Explanations to the meanings of Moody's long term ratings can be found in appendix 1.



Figure 2. Tesla Inc. LT Corporate Family rating history from 2017 to 2020. Source: Moody's (2020)

The company has received a B2 rating on 7 August 2017, but has been downgraded to B3 on 27 March 2018 and confirmed the rating of B3 again on 20 August 2019. This means that Tesla Inc. is a non-investable company with high credit risk and the investment into the company will be considered highly speculative.

The probability of default risk rating changes is shown in figure 3.

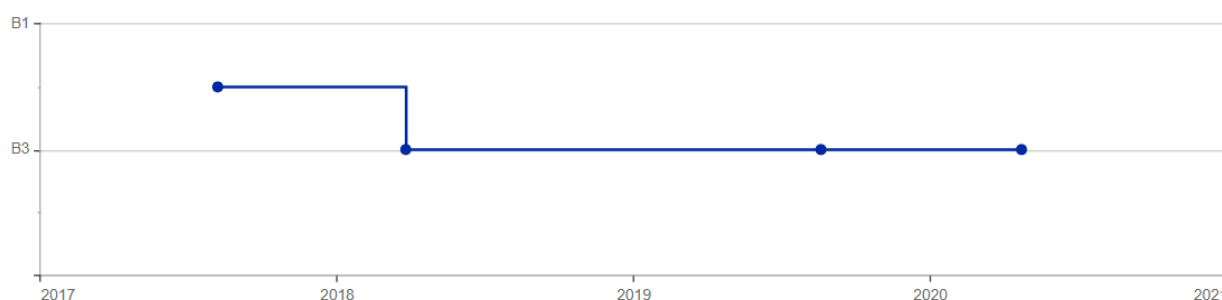


Figure 3. Tesla Inc. Probability of Default risk rating history from 2017 to 2020.
Source: Moody's (2020)

Thus, the company was graded B2-PD on 7 August 2017, downgraded to B3-PD on 27 March 2018 and affirmed the rating on 20 August 2020, which means that the company currently is a subject of high default risk and the investment in the company stock is highly speculative.

The short term rating of the company, as of 20 August 2019 is SGL-3 and Tesla Inc. is not on the debt watch in the short term either (see figure 4).

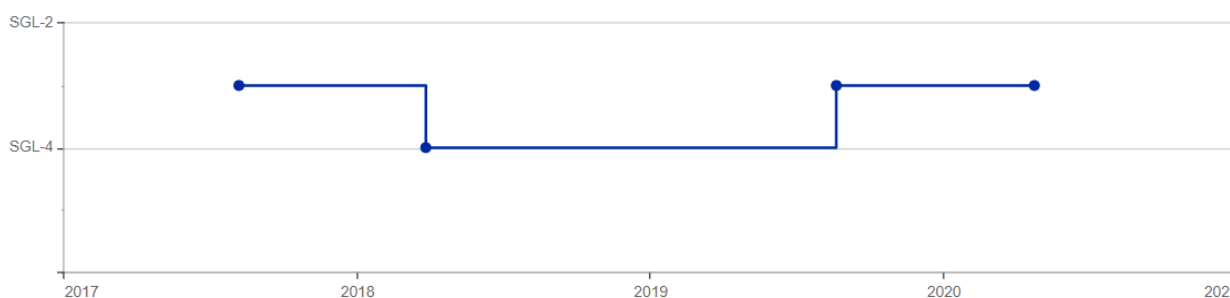


Figure 4. Tesla Inc. Speculative grades liquidity rating history from 2017 to 2020.
Source: Moody's (2020)

Thus, Tesla Inc. was rated SGL-3 on 7 August 2017, downgraded to SGL-4 on 27 March 2018 and upgraded back to SGL-3 again on 20 August 2020, which is an indicator of some improvement. SGL-3 rating, however, is still not very positive and means that the company relies on external

resources and finance to meet their financial obligations. However it means that the liquidity of the company is still adequate, but with a very modest cushion that can cause issues with access to funding lines.

Credit rating analysis of Tesla Inc. has shown that the company is unstable, heavily relies on external funding (namely, the cash inflows provided by Elon Musk) and investment into Tesla Inc. is highly speculative and has high credit risk. The company has a high default risk.

Financial statement and ratio analysis of Tesla Inc.

The financial statements of Tesla Inc. are presented in appendix 2. The financial statements, considered within this analysis are: the balance of the company, income statement, and cash flow statement.

Horizontal analysis (analysis of growth and trends) of the main lines of the balance sheet of Tesla Inc. is shown in appendix 3. It can be seen from table 1 in appendix 3 that assets of Tesla Inc. have been continuously growing for the last five years: the major growth is recorded in 2016, compared to 2015 figures (181%). It is also evident that the current assets of the company have also been growing every year from 2015. Looking at the net property, plant, and equipment, it can be noted that its value has grown by 190% in 2016, in 2017 the growth slowed to just over 36% and the value of net property plant and equipment in 2019 stayed almost the same as in 2017.

The consistent growth of total liabilities is evident for the last five years. Looking at the common equity it can be noted that it has grown by 339% in 2016, then slightly dropped by just over 10% and grown again in 2018 and 2019 by 16% and 34% respectively. However it can also be seen that retained earnings of the company have been negative for the last five years and the negative figure is becoming larger, reaching 6,083 USD millions in 2019, which is just under the total value of the common equity of Tesla Inc. (6,618 USD millions) as can be seen in the balance sheet of the company shown in appendix 2. This means that the company achieves the positive value of its common equity by the constant inflow of external investment at the amount almost double of the value of the common equity every year for the last five years, in order to maintain the perceived value of Tesla Inc. on the books, which is also evident from the company balance sheet (see appendix 2).

It is also important to assess the structure of the main lines of the balance sheet of Tesla Inc., using vertical analysis (see table 2 in appendix 3).

It can be seen from table 2 in appendix 3 that the largest share of the company's assets is property, plant, and equipment – non-current assets, which take 59% of assets in 2019. However, it can also be seen that their share has been becoming smaller for the last five years. Current assets make up about a third of the company's assets for the last five years.

Looking at the liabilities, it can be seen that the total company debt in 2019 was over 76% of company total liabilities and equity, which is a reduction from 87% in 2015, but still a very large number. It is also evident that yearly inflows of external investments make up the value of about a third of the company's assets.

A horizontal analysis of the main lines of the income statement of Tesla Inc. is shown in table 3, appendix 3. It can be seen from table 3 that sales of Tesla Inc. have been considerably increased from 2016 to 2018 and grown by a smaller margin in 2019 than in 2018 (15% rather than 83% in 2018). This indicates the slowdown in sales and puts the future of the company at risk. Looking at the COGS (cost of goods sold), this value was also growing in a similar manner to sales, followed also by the growth for the gross income of the company, which in 2019 has only grown by 0,67%, because the growth of COGS was greater than the growth of sales. These are rather negative indicators for the future potential of the company. SGA (selling, general and administrative) expenses, on the other hand, have reduced in 2019, after four years of growth. Due to this reduction, Tesla Inc. shows a positive EBIT in 2019, whilst for the four years before that, it was negative. Pretax and net income growth calculations are not very informative and may be misleading, due to the negative figures, year on year from 2015 to 2019 (see table 3). Therefore, the company has been losing money every year for the last five years and the losses of 2019 were smaller than the losses of 2018 by 12%, perhaps, only because of the reduction of SGA expenses. Vertical analysis of the main lines of the income statement of Tesla Inc. is shown in table 4, appendix 3. It can be seen from Table 4 that the largest part of the sales of Tesla Inc. is COGS, which grew from 77% in 2015 to 83% in 2019. The share of SGA has reduced from 41% in 2015 to 16% in 2019. Interest expense makes up around 3-4% of company sales value for the last five years. Pretax income and net income are negative for the last five years and the share of losses has considerably reduced from 2015 to 2019, which could mean that the company may have a chance to recover, but it is not definitive.

The following tables show the main financial ratio analysis of Tesla Inc. Table 5 shows liquidity ratios for the last five years.

Table 5. Liquidity ratios of Tesla Inc., 2016-2019, %

Ratio	Formula	2019	2018	2017	2016	2015
Current ratio	Current assets / current liabilities	1.13	0.83	0.86	1.07	0.99
Quick ratio	(current assets - inventory) / current liabilities	0.80	0.52	0.56	0.72	0.54
Free current assets	Current assets - Short-term debt	1,436	-1,686	-1,104	432	-29

Source: author's calculations from WSJ Markets, 2020 data

It can be seen from Table 5 that the company is liquid: it is able to pay off its current liabilities with its current assets. The quick ratio indicator has also improved from 0,54 in 2015 to 0,8 in 2019. The company in 2019 has free current assets, which is also indicated by a current ratio over 1. Table 6 shows the turnover ratios for the last five years.

Table 6. Turnover ratios of Tesla Inc., 2016-2019, %

Ratio	Formula	2019	2018	2017	2016
Inventory turnover	COGS / Average inventory	6.15	6.48	4.41	3.26
Accounts receivable turnover	Net sales / average accounts receivable	21.63	29.32	23.19	20.96
Assets turnover ratio	Net sales / average total assets	0.77	0.74	0.46	0.46

Source: author's calculations from WSJ Markets, 2020 data

It can be seen from table 6 that turnover ratios of the company are quite high: Inventory turns over more than 6 times in 2019, which is an increase from just over 3 times in 2016; accounts receivable turn over almost 22 times in 2019 – an increase from 21 times in 2016 but a decrease from more than 29 times in 2018. Assets turn over 0,77 times in 2019, which is an increase from 0,46 times in 2016.

Table 7 shows capital structure ratios for the last five years.

Table 7. Capital structure ratios of Tesla Inc., 2016-2019, %

Ratio	Formula	2019	2018	2017	2016	2015
Total assets to equity ratio	Equity / Assets	0.24	0.21	0.20	0.26	0.13
Debt to equity ratio	Liabilities / Equity	3.23	3.71	4.09	2.84	6.44
Long-term assets to equity ratio	Non-current assets / equity	2.74	3.39	3.92	2.78	4.88

Source: author's calculations from WSJ Markets, 2020 data

It can be seen from Table 7 that the total assets to equity ratio of Tesla Inc. is very high and has been as high as 7,44 in 2015, reducing to 4,23 in 2019, which means that company assets are over 4 times greater than its equity and indicates that the company has taken out a substantial debt to remain in business. Looking at the debt to equity ratio, it can also be seen that it is very high and proves the above assertion of high debt to remain in business. Long-term assets to equity ratio are based on a theory that a company must finance its long-term investments with its own equity. It can be seen that this is not the case with Tesla Inc., as the non-current assets of the company are almost 3 times higher than its equity in 2019, which means that the company has financed about two-thirds of its long-term investment with debt. This means that the company is unstable and at risk of bankruptcy.

And finally, table 8 shows profitability ratios for the last five years, which, as is evident from the above analysis of the company's balance sheet and income statement, will be negative.

Table 8. Profitability ratios of Tesla Inc., 2016-2019, %

Ratio	Formula	2019	2018	2017	2016	2015
Gross profit margin	Gross profit or loss / Net turnover * 100%	-3.51%	-4.55%	16.68%	-9.64%	21.97%
Return on equity (ROE)	Net income / Equity * 100%	10.63%	15.46%	34.82%	11.43%	82.01%
Return on assets (ROA)	Net income / Assets * 100%	-2.51%	-3.28%	-6.84%	-2.98%	11.02%

Source: author's calculations from WSJ Markets, 2020 data

It can be seen from Table 8 that the return ratios are negative due to the net losses of the company for the last five years. There is an improvement in the ratios however in 2019, the loss is smaller relative to the company's sales, equity, and asset values.

Discounted cash flow modeling (DCF forecast)

The following forecast has been calculated based on the latest financial statements of Tesla Inc. and the following assumptions:

Tax rate: 21% (according to Trading Economics (2020) global macro models and analyst's expectations).

Discount rate:

Calculated using WACC formula below:

$$\text{WACC} = E/V \times C_e + D/V \times C_d \times (1-T) \quad (2.1)$$

Where:

E = Value of equity

D = Value of debt

C_e = Cost of equity

C_d = Cost of debt

V = Overall capital (E+D)

T = Tax rate

Cost of debt = interest expense of 685 USD million = 3% (see Tesla 2019 annual report).

The cost of equity can be calculated by using the CAPM (Capital Asset Pricing Model) or the Dividend Capitalization Model (for companies that pay out dividends). Since Tesla Inc. has no dividends, the CAPM will be used.

CAPM Formula:

$$ER_i = R_f + \beta_i \times (ER_m - R_f) \quad (2.2)$$

Where:

ER_i = Expected return of investment

R_f = Risk-free rate of return

β_i = Beta of the investment

(ER_m - R_f) = Market risk premium

The risk-free rate has the lowest value of 2.5% and the highest of 3%, the average value of 2.75% will be used.

Selected Beta has a range of 0.82 - 0.98, so the average value of 0.90 will be used.

The market risk premium range is 5.5% to 6.0%, so so the average value of 5.75% will be used.

Cost of Equity (2019, Tesla Inc.) = $0,0275 + 0,90 * 0,0575 = 0,07925$ or 7,925%

$V = \text{Overall capital (E+D)} = 8110 + 26199 = 34309$ USD mln.

Equity linked cost of capital = $E/V * C_e = 8110 / 34309 * 0,07925 = 0,0187$ or 1,87%

The debt component = $D/V * C_d * (1-T) = (26199/34309) * 0,03 * (1-0,21) = 0,00181 = 1.81\%$

WACC (2019, Tesla Inc.) = $1,87\% + 1.81\% = 3,68\%$

$$\text{EV} = (\text{market capitalization}) + (\text{value of debt}) + (\text{minority interest}) + (\text{preferred shares}) - (\text{cash and cash equivalents}) \quad (1.3)$$

EV (2019, Tesla Inc.) = $151782 + 26199 - 6514 = 171467$ USD million

EBITDA = 2234 USD million

EV/EBITDA multiple (2019, Tesla Inc.) = $171467/2234 = 76,75x$

$$\text{CapEx} = \Delta \text{PP\&E} + \text{Current Depreciation} \quad (1.4)$$

According to GuruFocus, the free cash flow for 2019 was +968 USD million, with CapEx of 1437 USD million:

Free Cash Flow (A: Dec. 2019) = Cash Flow from Operations + Capital Expenditure
= 2405 + -1437
= 968

$\Delta \text{PP\&E}$ (2019, Tesla Inc.) = 508 USD million (calculated using balance sheet)

CapEx (2019, Tesla Inc.) = $508 + 2154 = 2662$ USD million (with amortization).

It can be concluded that the share of amortization in the Depreciation & Amortization Expense is $2154 - 1437 = 717$ USD million.

CapEx (2019, Tesla Inc.) = $508 + 2154 - 717 = 1437$ USD million

Assumptions for DCF calculations and calculations table can be seen in appendix 4.

Thus, if the company's perpetual growth indeed achieves 60% per year for the following 5 years, the cash flows will possibly be positive at the end of the year 2024.

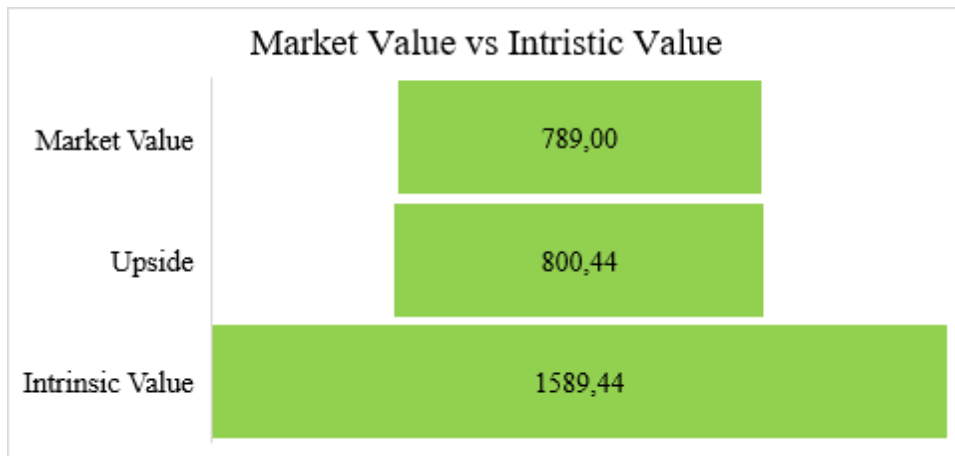


Figure 5. Value of Tesla Inc.
Source: author's calculations

Based on the above model, the intrinsic value of the stock is 1589.44 USD million, when the market value is 789 USD million (Δ 800.44 USD million), so the stock is underpriced. Since the company is a limited liability company, however, this shows that the investment in Tesla Inc. stock is highly risky and has no physical grounds to it, only positive forecasts of the industry.

Considering the growth of the industry of EVs as discussed earlier in the thesis, it is unusual to observe an EV company to make continuous and very large losses. One could assume that the problem is internal, rather than external. Therefore, further research is required in order to determine the reason for losses of Tesla Inc., which could be related to such factors as a product, marketing, target customer preferences, management, strategic views, etc.

CONCLUSION

The research question was: is the recent increase in the value is supported by fundamentals and what should be expectations about the future fundamentals to support the current valuation of Tesla Inc.?

The answer to the research question is: no, it is not. Since the company is an innovator and is growing very rapidly, there is not enough historical data to make reasonable forecasts of its activities. Only if the company's perpetual growth indeed achieves 60% per year (an average of revenue growth for the past five years, used in the calculation for the DCF model) for the following 5 years, the cash flows will possibly be positive at the end of the year 2024.

Based on the DCF model, the intrinsic value of the stock is 1589.44 USD million, when the market value is 789 USD million (Δ 800,44 USD million), so the stock is underpriced.

Considering the growth of the industry of EVs as discussed earlier in the thesis, it is unusual to observe an EV company to make continuous and very large losses. One could assume that the problem is internal, rather than external. Therefore, further research is required in order to determine the reason for the losses of Tesla Inc., which could be related to such factors as the product, marketing, target customer preferences, management, strategic views, etc.

It can be concluded that the current valuation of Tesla Inc. stock is based on a highly risky assumption that the company will grow due to the rise in popularity of electric cars and the solution for energy storage. But this assumption is not supported by the fundamentals. Even the market trend analysis is not indicative of this growth since electric cars were becoming more and more popular for several years, but Tesla was still losing money and investing more and more just to maintain the value of the equity on the books.

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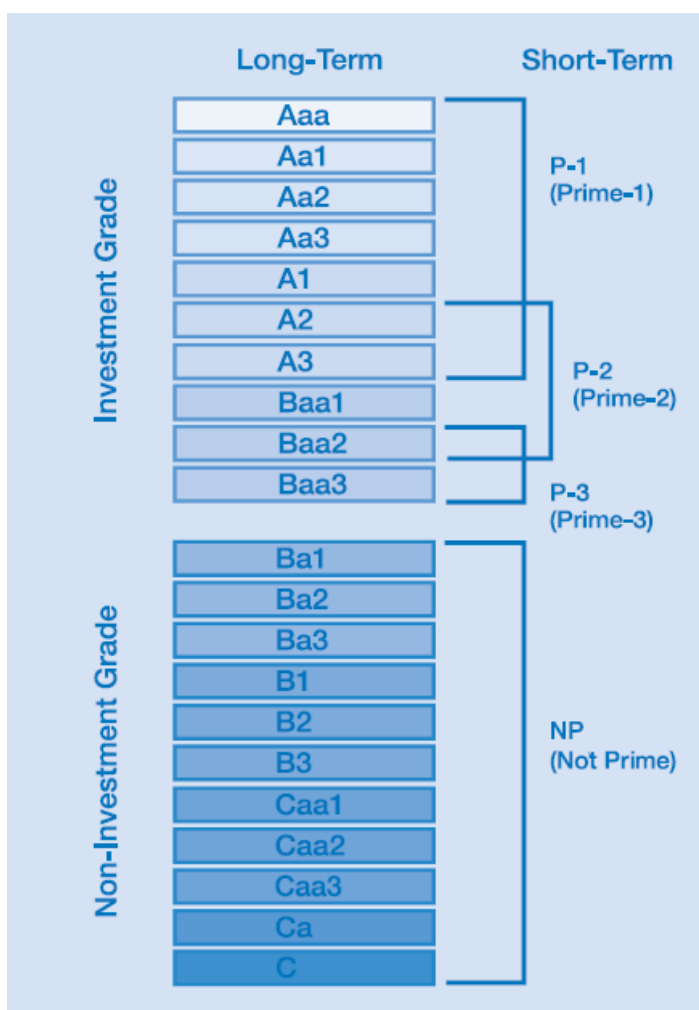
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APPENDICES

Appendix 1. Moody's long-term ratings



Source: Moody's (2020)

SGL Rating Scale

SGL-1	Issuers rated SGL-1 possess very good liquidity. They are most likely to have the capacity to meet their obligations over the coming 12 months through internal resources without relying on external sources of committed financing.
SGL-2	Issuers rated SGL-2 possess good liquidity. They are likely to meet their obligations over the coming 12 months through internal resources but may rely on external sources of committed financing. The issuer's ability to access committed sources of financing is highly likely based on Moody's evaluation of near-term covenant compliance.
SGL-3	Issuers rated SGL-3 possess adequate liquidity. They are expected to rely on external sources of committed financing. Based on its evaluation of near-term covenant compliance, Moody's believes there is only a modest cushion, and the issuer may require covenant relief in order to maintain orderly access to funding lines.
SGL-4	Issuers rated SGL-4 possess weak liquidity. They rely on external sources of financing and the availability of that financing is, in Moody's opinion, highly uncertain.

PDR Scale

Aaa-PD	Corporate families rated Aaa-PD are judged to be of the highest quality, subject to the lowest level of default risk.
Aa-PD	Corporate families rated Aa-PD are judged to be of high quality and are subject to very low default risk.
A-PD	Corporate families rated A-PD are judged to be upper-medium grade and are subject to low default risk.
Baa-PD	Corporate families rated Baa-PD are judged to be medium-grade and subject to moderate default risk and as such may possess certain speculative characteristics.
Ba-PD	Corporate families rated Ba-PD are judged to be speculative and are subject to substantial default risk.
B-PD	Corporate families rated B-PD are considered speculative and are subject to high default risk.
Caa-PD	Corporate families rated Caa-PD are judged to be speculative of poor standing, subject to very high default risk, and may be in default on some but not all of their long-term debt obligations.
Ca-PD	Corporate families rated Ca-PD are highly speculative and are likely in, or very near, default on some but not all of their long-term debt obligations.
C-PD	Corporate families rated C-PD are the lowest rated and are typically in default on some but not all of their long-term debt obligations.
D-PD	Corporate families rated D are in default on all of their long-term debt obligations.

LONG-TERM RATING	SHORT-TERM RATING
Aaa Aa1 Aa2 Aa3 A1 A2 A3	Prime-1
Baa1 Baa2 Baa3	
Ba1, Ba2, Ba3 B1, B2, B3, Caa1, Caa2, Caa3 Ca, C	Not Prime

Appendix 2. Financial statements of Tesla Inc.

Balance sheet (Source: WSJ Markets, 2020)

Assets					
The fiscal year is January-December. All values USD Millions.	2019	2018	2017	2016	2015
Cash & Short Term Investments	6,514	3,878	3,523	3,499	1,220
Cash Only	6,514	3,878	3,523	3,499	1,220
Cash & Short Term Investments Growth	67.97%	10.07%	0.70%	186.89%	-
Cash & ST Investments / Total Assets	18.99%	13.04%	12.30%	15.44%	15.12%
Total Accounts Receivable	1,324	949	515	499	169
Accounts Receivables, Net	1,324	949	515	499	169
Accounts Receivables, Gross	1,324	949	515	499	169
Accounts Receivable Growth	39.51%	84.14%	3.25%	195.41%	-
Accounts Receivable Turnover	18.56	22.61	22.82	14.02	23.95
Inventories	3,552	3,113	2,264	2,067	1,278
Finished Goods	1,356	1,582	1,014	1,017	477
Work in Progress	362	297	243	234	164
Raw Materials	1,834	1,235	1,006	817	637
Other Current Assets	713	366	268	194	115
Miscellaneous Current Assets	713	366	268	194	115
Total Current Assets	12,103	8,306	6,571	6,259	2,782
Net Property, Plant & Equipment	20,199	19,691	20,492	15,037	5,195
Property, Plant & Equipment - Gross	25,062	22,886	22,436	16,055	5,766
Buildings	3,024	4,047	2,517	1,079	522
Machinery & Equipment	1,493	1,398	1,256	795	551
Construction in Progress	764	807	2,542	2,147	693
Computer Software and Equipment	595	487	395	276	176
Leased Property	2,853	2,090	4,117	3,134	1,791
Other Property, Plant & Equipment	15,115	14,057	11,609	8,623	2,033
Accumulated Depreciation	4,863	3,195	1,944	1,018	571
Total Investments and Advances	270	398	442	268	32
Other Long-Term Investments	270	398	442	268	32
Long-Term Note Receivable	393	422	457	506	-
Intangible Assets	537	351	422	376	13
Net Goodwill	198	68	60	-	-
Net Other Intangibles	339	282	362	376	13
Other Assets	807	572	273	217	47
Deferred Charges	-	-	-	1	0
Tangible Other Assets	807	572	273	217	47
Total Assets	34,309	29,740	28,655	22,664	8,068
Assets - Total - Growth	15.36%	3.78%	26.44%	180.92%	-
Asset Turnover	0.77	-	-	-	-
Return On Average Assets	-2.69%	-	-	-	-

Liabilities & Shareholders' Equity					
All values USD Millions.	2019	2018	2017	2016	2015
ST Debt & Current Portion LT Debt	2,070	2,711	979	1,206	629
Short Term Debt	228	-	-	-	-
Current Portion of Long Term Debt	1,842	2,711	979	1,206	629
Accounts Payable	3,771	3,404	2,390	1,860	916
Accounts Payable Growth	10.77%	42.43%	28.48%	103.06%	-
Income Tax Payable	611	349	186	153	101
Other Current Liabilities	4,215	3,528	4,120	2,608	1,164
Accrued Payroll	466	449	378	219	87
Miscellaneous Current Liabilities	3,749	3,079	3,742	2,389	1,078
Total Current Liabilities	10,667	9,992	7,675	5,827	2,811
Current Ratio	1.13	0.83	0.86	1.07	0.99
Quick Ratio	0.8	0.52	0.56	0.72	0.54
Cash Ratio	0.61	0.39	0.46	0.6	0.43
Long-Term Debt	12,627	11,116	11,152	7,386	2,270
Long-Term Debt excl. Capitalized Leases	10,402	8,410	8,829	5,901	2,068
Non-Convertible Debt	10,402	8,410	8,829	5,901	2,068
Capitalized Lease Obligations	1,269	2,706	2,323	1,485	201
Provision for Risks & Charges	581	413	2,309	2,210	1,294
Other Liabilities	2,324	1,905	1,887	1,336	610
Other Liabilities (excl. Deferred Income)	1,117	855	662	447	146
Deferred Income	1,207	1,050	1,225	889	463
Total Liabilities	26,199	23,426	23,023	16,759	6,984
Total Liabilities / Total Assets	76.36%	78.77%	80.34%	73.95%	86.57%
Common Equity (Total)	6,618	4,923	4,237	4,753	1,084
Common Stock Par/Carry Value	-	0	0	0	0
Additional Paid-In Capital/Capital Surplus	12,737	10,249	9,178	7,774	3,409
Retained Earnings	-6,083	-5,318	-4,974	-2,997	-2,322
Other Appropriated Reserves	-36	-8	33	-24	-4
Common Equity / Total Assets	19.29%	16.55%	14.79%	20.97%	13.43%
Total Shareholders' Equity	6,618	4,923	4,237	4,753	1,084
Total Shareholders' Equity / Total Assets	19.29%	16.55%	14.79%	20.97%	13.43%
Accumulated Minority Interest	1,492	1,390	1,395	1,152	-
Total Equity	8,110	6,314	5,632	5,905	1,084
Liabilities & Shareholders' Equity	34,309	29,740	28,655	22,664	8,068

Income statement (Source: WSJ Markets, 2020)

The fiscal year is January-December. All values USD Millions.	2019	2018	2017	2016	2015
Sales/Revenue	24,578	21,461	11,759	7,000	4,046
Sales Growth	14.52%	82.51%	67.98%	73.01%	-
Cost of Goods Sold (COGS) incl. D&A	20,509	17,419	9,542	5,446	3,123
COGS excluding D&A	18,355	15,518	7,906	4,499	2,700
Depreciation & Amortization Expense	2,154	1,901	1,636	947	423
Depreciation	-	-	-	477	-
Amortization of Intangibles	-	-	-	470	-
COGS Growth	17.74%	82.56%	75.22%	74.40%	-
Gross Income	4,069	4,042	2,217	1,554	924
Gross Income Growth	0.67%	82.33%	42.62%	68.31%	-
Gross Profit Margin	16.56%	-	-	-	-
SG&A Expense	3,989	4,295	3,855	2,245	1,640
Research & Development	1,343	1,460	1,378	834	718
Other SG&A	2,646	2,834	2,477	1,410	922
SGA Growth	-7.12%	11.42%	71.70%	36.87%	-
EBIT	80	-253	-1,638	-691	-
Unusual Expense	189	114	-7	-74	-
Non Operating Income/Expense	85	0	-127	60	-42
Non-Operating Interest Income	44	25	20	9	2
Interest Expense	685	663	471	199	119
Interest Expense Growth	3.31%	40.70%	137.04%	67.28%	-
Gross Interest Expense	716	718	596	246	160
Interest Capitalized	31	55	125	47	42
Pre-tax Income	-665	-1,005	-2,209	-746	-876
Pretax Income Growth	33.81%	54.52%	-195.98%	14.76%	-
Pretax Margin	-2.71%	-	-	-	-
Income Tax	110	58	32	27	13
Income Tax - Current Domestic	5	2	-8	1	1
Income Tax - Current Foreign	86	24	43	54	10
Income Tax - Deferred Domestic	-4	-	-	-	-
Income Tax - Deferred Foreign	23	32	-4	-28	2
Consolidated Net Income	-775	-1,063	-2,241	-773	-889
Minority Interest Expense	87	-86	-279	-98	-
Net Income	-862	-976	-1,961	-675	-889
Net Income Growth	11.69%	50.23%	-190.61%	24.05%	-
Net Margin	-3.51%	-	-	-	-
Net Income After Extraordinaries	-862	-976	-1,961	-675	-889
Net Income Available to Common	-862	-976	-1,961	-675	-889
EPS (Basic)	-4.87	-5.72	-11.83	-4.68	-6.93
EPS (Basic) Growth	14.92%	51.61%	-152.78%	32.47%	-
Basic Shares Outstanding	177	171	166	144	128
EPS (Diluted)	-4.87	-5.72	-11.83	-4.68	-6.93
EPS (Diluted) Growth	14.92%	51.63%	-152.84%	32.48%	-
Diluted Shares Outstanding	177	171	166	144	128
EBITDA	2,234	1,648	-2	257	-294
EBITDA Growth	35.54%	98032.86%	-100.66%	187.25%	-
EBITDA Margin	9.09%	-	-	-	-
EBIT	80	-253	-1,638	-691	-

Appendix 3. Analysis of financial statements of Tesla Inc.

Table 1. Horizontal analysis of the balance sheet of Tesla Inc., 2016-2019, %

	2019	2018	2017	2016
Cash & Short-Term Investments Growth	67.97%	10.07%	0.70%	186.89%
Accounts Receivable Growth	39.51%	84.14%	3.25%	195.41%
Inventories Growth	14.10%	37.50%	9.53%	61.74%
Total current assets Growth	45.71%	26.40%	4.98%	124.98%
Net Property, Plant & Equipment Growth	2.58%	-3.91%	36.28%	189.45%
Total Investments and Advances Growth	-32.16%	-9.95%	64.93%	737.50%
Intangible Assets Growth	52.99%	-16.82%	12.23%	2792.31%
Assets - Total - Growth	15.36%	3.78%	26.44%	180.92%
Total Current Liabilities Growth	6.76%	30.19%	31.71%	107.29%
Long-Term Debt Growth	13.59%	-0.32%	50.99%	225.37%
Total Liabilities Growth	11.84%	1.75%	37.38%	139.96%
Common Equity (Total) Growth	34.43%	16.19%	-10.86%	338.47%
Additional Paid-In Capital/Capital Surplus Growth	24.28%	11.67%	18.06%	128.04%
Retained Earnings Negative Growth	-14.39%	-6.92%	-65.97%	-29.07%
Total Equity Growth	28.44%	12.11%	-4.62%	444.74%

*Fiscal year is January – December

Source: author's compilation and calculations from WSJ Markets, 2020 data

Table 2. Vertical analysis of the balance sheet of Tesla Inc., 2015-2019, %

	2019	2018	2017	2016	2015
Cash & Short Term Investments	18.99%	13.04%	12.29%	15.44%	15.12%
Accounts Receivable	3.86%	3.19%	1.80%	2.20%	2.09%
Inventories	10.35%	10.47%	7.90%	9.12%	15.84%
Total current assets	35.28%	27.93%	22.93%	27.62%	34.48%
Net Property, Plant & Equipment	58.87%	66.21%	71.51%	66.35%	64.39%
Total Investments and Advances	0.79%	1.34%	1.54%	1.18%	0.40%
Intangible Assets	1.57%	1.18%	1.47%	1.66%	0.16%
Assets - Total	100.00%	100.00%	100.00%	100.00%	100.00%
Total Current Liabilities	31.09%	33.60%	26.78%	25.71%	34.84%
Long-Term Debt	36.80%	37.38%	38.92%	32.59%	28.14%
Total Liabilities	76.36%	78.77%	80.35%	73.95%	86.56%
Common Equity (Total)	19.29%	16.55%	14.79%	20.97%	13.44%
Additional Paid-In Capital/Capital Surplus	37.12%	34.46%	32.03%	34.30%	42.25%
Retained Earnings Negative	-17.73%	-17.88%	-17.36%	-13.22%	-28.78%
Total Equity	23.64%	21.23%	19.65%	26.05%	13.44%

Source: author's calculations from WSJ Markets, 2020 data

Table 3. Horizontal analysis of the income statement of Tesla Inc., 2016-2019, %

	2019	2018	2017	2016	2015
Sales Growth	14.52%	82.51%	67.98%	73.01%	-
COGS Growth	17.74%	82.56%	75.22%	74.40%	-
Gross Income Growth	0.67%	82.33%	42.62%	68.31%	-
SGA Growth	-7.12%	11.42%	71.70%	36.87%	-
EBIT Growth	131.62%	-84.55%	-137.05%	-3.49%	-
Interest Expense Growth	3.31%	40.70%	137.04%	67.28%	-
Pretax Income	-665	-1,005	-2,209	-746	-876
Pretax Income Growth	33.81%	54.52%	-195.98%	14.76%	-
Net Income	-862	-976	-1,961	-675	-889
Net Income Growth	11.69%	50.23%	-190.61%	24.05%	-

Source: author's compilation and calculations from WSJ Markets, 2020 data

Table 4. Vertical analysis of the income statement of Tesla Inc., 2016-2019, %

	2019	2018	2017	2016	2015
Sales	100.00%	100.00%	100.00%	100.00%	100.00%
COGS	83.44%	81.17%	81.15%	77.80%	77.19%
Gross Income	16.56%	18.83%	18.85%	22.20%	22.84%
SGA	16.23%	20.01%	32.78%	32.07%	40.53%
EBIT	0.33%	-1.18%	-13.93%	-9.87%	-17.70%
Interest Expense	2.79%	3.09%	4.01%	2.84%	2.94%
Pretax Income	-2.71%	-4.68%	-18.79%	-10.66%	-21.65%
Net Income	-3.51%	-4.55%	-16.68%	-9.64%	-21.97%

Source: author's calculations from WSJ Markets, 2020 data

Appendix 4. DCF calculations

WACC (discount rate)		3,68%					
year	2019	2020	2021	2022	2023	2024	Terminal value
year	0	1	2	3	4	5	
Future free cash flows (growth rate 20% per year and assuming 3% perpetual growth)	1 013,0	1 215,6	1 458,7	1 750,5	2 100,6	2 520,7	381 807,1
Discount coefficient		1,0456	1,0933	1,1431	1,1953	1,2498	1,2498
Discounted free cash flow	1 013	1 163	1 334	1 531	1 757	2 017	305 503

growth
1
growth
2

20%

3,00%

1 2 3 4 5

Value of the company

314 319

- Debt

26 199

+ Cash

6 514

Equity value

294 634

million, or 122.3B

of shares

185370000

--> per share
PRICE

1 589

Current market value (Mcap) is

145 800 million

--> current market price

789

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