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MÁSTER UNIVERSITARIO EN FINANZAS

TESLA VALUATION THESIS

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1. Abstract

In this thesis, the main reasons and motivations for enabling a valuation process are disclosed, as well as it is the definition and specification of the different valuation methods, commonly used for similar companies and sectors, such as the Discounted Cash Flow, the Multiples and the Price to Earnings Ratio methods. It is important to take in consideration that the value of the company may change depending on the method used to evaluate the company. The same way, the different tools needed in order to understand either the economic situation, the sector insights and performance, or the company economic and financial information, will be provided during the development of this thesis.

The determination of the value is a critical factor for the company so it is the main driver in terms of investment allocation.

The aim of this project is to develop the valuation methodology needed to determine the value of the company Tesla Motors. The valuation methodology will be based on the utilization of multiples from the sector and similar companies and the discounted cash flow, all to determine the final value of the share of the company and make the decision of either buy, hold or sell.

2. Introduction

The process of evaluating a company is one of the most important ones in terms of company's operation and investment strategies. Establishing the value of a company is essential in order to implement new segments or activities, develop a new business model, negotiating new financing terms or even to operate in the stock market. The same way, this calculated value is essential in order to be able to measure the value creation for the shareholder.

The process of evaluating a company could be defined as the process by which a company's wealth and activities are valued as well as its expectations of future income.

In this thesis, the valuation of Tesla Motors is developed according to the financial Multiples method, based on similar companies and the average of the sector, and the Discounted Cash Flows method, based on the projections of the company for future cash flows and wealth distribution. For this purpose, all the financial information and the future projections of the company have been taken directly from Tesla Motors itself as well as the Securities Exchange Commission (SEC). These two institutions provide this thesis with trustable information as well as additional data from similar companies and sector insights. The financial statements as well as the economic-financial information are properly developed in this document and will be useful in order to understand the current situation of the company and its future projections.

In addition, the PER multiple method is properly defined and employed in the development of the valuation of Tesla Motors.



The company studied, Tesla Motors Inc., was founded in 2003 in Silicon Valley, California by Elon Musk, Martin Eberhard and JB Straubel. Tesla Motors design, manufacture and sell electric cars, components for electric car propulsion and electric battery storage systems.

Among the development of this thesis, the external environment surrounding the company is properly defined so it is a sector with a high changeability and innovation growth. Regarding recent reports from reliable sources such as Mackency and Deloitte about future trends and Mobility Technologies, electric vehicles, car sharing and Saas based companies will lead the future of transportation itself. Tesla is not an exception, even though is one of the largest electric car manufacturers all around the world, Tesla has problems related to the usage and utilization of the generated cash flows and losses management. In addition, recently high amount of discussions is being hold regarding Tesla cars and the different disadvantages they have.

The aim of this project is to establish an objective price of a Tesla Motors share, using for this purpose the different valuation methods previously described and heading to the final objective of this thesis, determining if a share of Tesla Motors is over-valuated or under-valuated.

The project is organized following this scheme: In first place, the different valuation method is properly defined and explained as well the way to use them in nowadays companies. In second place, the company itself, the sector surrounding it, and its different activities and operations are described. Afterwards, a proper analysis of projections and the different calculations needed for reaching the value of the company are disclosed. The end of this thesis is based on the explanation of the value reached on the previous step and the conclusions derived from the entire project.



3. Company Valuation Methods

The valuation of a company is an essential factor not only in terms of determining if the share is over-valuated or it is not, but also a company's value is crucial in order to take different decisions based on operational strategies or even to develop a new business model that will affect the value creation of the shareholder. It is also important to take in consideration the current value of a company in merge and acquisition situations and in order to operate in the stock exchange. It is also important to know the debt situation of the company and its asset distribution in order to understand how the company creates value and how it keeps it inside the company.

The value of a company may differ from buyers to sellers. For instance, in a merge or acquisition situation not only the value of a company is different between buyers and sellers, but also it is also different between several buyers since the value of a company also depends of the different and individual synergies it offers to the buyer.

The process of acquiring a company includes the establishment on the buy side of a maximum price that is willing to pay for a company, and from the sell side, the minimum price that is willing to accept for the same company. Finally, buyer and seller agree on a given price that satisfies both of them.

3.1 Discounted Cash Flows

The Discounted Cash Flows Method (here and onwards DCF), tries to determine the estimated value of the future cash flows of the company independently of how they will be distributed based on the company's wealth distribution policy. After the calculation of the value of these future cash flows, they will be discounted applying a given interest rate, which will be based and associated with the level of risk of those cash flow. The given interest rate will be ultimately different in every kind of cash flow and company.

According to Viñola and Adserá (1997), the main advantages of this method are:

- Based on cash flows and not in accounting terms.
- Information provided by the balance sheet and the Income Statement.
- It provides with a higher accuracy the current situation and circumstances that may affect the value of a company.
- Time Value of Money is taken in consideration.
- Detailed and complete analysis of the risk of a company.



The value of the company is obtained discounting the future cash flows of the company, as follows:

$$PV = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} \dots \frac{CF_n}{(1+r)^n}$$

Where: PV corresponds to the discounted value of future cash flows of the company, CF corresponds to the future cash flow of the period i, r is the interest rate used to discount the future cash flows and attending to the risk associated with those cash flows.

It is important to take in consideration that even though the number of future cash flows could be infinite, their value is decreased with every additional period because of the discount interest rate applied.

There is also another factor to take in consideration when evaluating a company. It is the residual value, which could be defined as the estimated present value of the after-tax future cash flow expected to be earned after the forecast period. That expected value needs to be discounted at a determined interest rate in order to calculate which is its present value. When calculating the residual value, there are a few different methods:

1. Perpetuity method: According to Damodaran (1994), the constant growth rate used to calculate the future cash flows is based on GDP trends. This is an accepted method and is widely used unless results become illogical.
2. Relative Valuation Multiples method: It is based on the usage of multiple, usually from the same sector of the company, (EBITDA multiple, P/E multiple, P/S multiple...). This method is based on the assumption that the companies belonging to the same sector have similar risk levels, cash flow generation and similar risk profile.
3. Liquidation Asset Value method: It is defined as the value of the assets at the time of sale. It does not include the value from intangible assets in order to calculate the final value.

The perpetuity formula previously mentioned is calculated according to the following scheme:

$$PV = \frac{CF_n * (1 + g)}{(r - g)}$$

Where PV is the present value of the residual value, CF_n is the expected cash flow, g is the constant growth rate applied to the cash flows and r is the discount rate.

In order to reach the value of the company by using the DFC method, several steps need to be followed:



1. Determination of the generated cash flows by the company.
2. Calculate the growth rate to be applied.
3. Calculate the discount rate to be applied to the future cash flows.
4. Determine the residual value and sum it into the last cash flow of the projection.

It is a key point to understand that when we talk about the discount rate to be applied, this number needs to be calculated. In order to calculate the discount rate, first we will calculate the cost of capital or cost of equity of the company according to CAPM model which stands for the following formula:

$$k_e = R_f + (R_m - R_f) * \beta$$

Where r is the discount rate, R_f is the return given by the risk-free asset, $(R_m - R_f)$ is the risk premium given by the market and calculated by the difference between the return offered by the market and the one from the risk-free asset.

After we have calculated the cost of Equity of the company, we will proceed to calculate the discount rate or WACC (Weighted Average Cost of Capital). In order to do so, we apply the following formula:

$$WACC = (1 - t) * \frac{(k_d * D)}{E + D} + \frac{(k_e * E)}{E + D}$$

Where t is the tax rate applied to the company, k_d is the cost of debt of the company, k_e is the cost of equity previously calculated, E is the Equity of the company and D is the total amount of debt of the company.

There are four different types of cash flow inside the companies:

1. Shareholder Cash Flow: it allows us to calculate the value available from the cash flow to enable the value creation for the shareholder, taking into account debt and the cost of equity. It is calculated attending to the operation of subtracting the principal and interest payments from the Free Cash Flow (here and onwards FCF). It also takes in consideration the Working Capital Needs of the company during the period and the reinvestment in fixed assets.

$$\text{Shareholder Cash Flow} = \text{CF} - [(1 - t) * \text{interests paid}] - \text{principal payments} + \text{New Debt}$$

2. Debt holders Cash Flow: This cash flow can be calculated by the sum between the interests paid by the company and the repayment of the principal of the Debt hold. In this cash flow the cost of debt (here and onwards k_d) is taking in



consideration and used in order to discount these cash flows and calculate their present value.

3. Capital Cash Flow: The Capital Cash Flow is supposed to represent the total cash flows available for the capital holder after taxes. This figure is the result of the sum between the cash flows available for the shareholders plus the cash flows available for the debtholders, the last one is composed by the principal repayment plus interests.

The formula of the Capital Cash Fow (CCF) is the following one:

$$CCF = \text{Shareholder CF} + (D * kd - \Delta D)$$

Where D is the total financial debt hold by the company and kd is the cost of debt of the company.

4. Free Cash Flow (FCF): The Free Cash Flow (here and onwards FCF) allows the valuation of a company through the calculation of this cash flow which is based on the cash flow available after all of the operations, after also discounting fixed assets reinvestments and the Working Capital needs of the company. This cash flow does not take into account the financial debt neither leverage of the company. In order to calculate this cash flow, after doing the previous steps, it is necessary to calculate the discounted future Free Cash Flows of the company as well.

$$FCF = EBIT * (1 - t) + D + A - \Delta WC - Capex$$

Where t is the tax rate applied, D is the Depreciation of the assets, A is the amortization, ΔWC is the Working Capital needs of the company and Capex is the Capital Expenditure that the company has incurred in.

3.2 Multiples

The multiples valuation method based its structure in calculating the value of a company using the current value of other similar companies inside the sector. In order



to do so, the quotation of other companies must be taken into account and based on some of their ratios, then those ratios are applied to the company in order to reach a value by comparison. Sometimes instead of using ratios or the quotation of other companies, the sector average is taken as reference and the value is calculated based on it. This method assumes that the market is efficient, all prices have been discounted and all the information is available for everybody.

However, there are different multiples methods in order to evaluate a company:

❖ **Quotation Multiples method**

The Quotation Multiples method is based on the estimation of a company's value taking other company's quotation and ratios in order to calculate it. It is a key point to revise other company's Income Statement or accounts in order to analyze if the quotation of such company is related or based in their accounts, otherwise it will not be useful to use their ratios and quotation to calculate the value of other company. Usually, the sector average ratios are taken in order to evaluate companies using the quotation multiples. The main disadvantage of this method is the subjectivity of it, since it uses comparable companies in order to calculate the value of other company which could not perform the same or could not be structured the same way even though both belong to the same sector.

Therefore, we have the following structure to apply the Quotation Multiples method:

- 1) Sector Analysis and Companies selection: In first place, a sectorial analysis must take place in order to identify the companies that are going to be taken as a reference to evaluate the company. To enable that selection, it must be taken into account factors such as the geography of the target companies, similar activity, similar size and operational structure.
- 2) Target Companies Analysis: The companies selected need to be analyzed in order to identify if they actually have the same structure, similar revenue projections, similar competitive situation and similar vertical integration than the company is being evaluated.

This two steps are very important in order to reach a proper and correct valuation of the company since if the selection and sector analysis is not correctly done, the ratios and multiples will not be appropriated for the company being evaluated and therefore the final valuation will not be a fair representation of the value of the company.

- 3) Once those two first steps have been properly achieved, the selection and calculation of the quotation multiples have to be performed:
 - **Price to Earnings ratio (PER)**: It is calculated by the division of the Market Capitalization by the Net Income of the company. Other way to calculate



this multiple is to divide the quotation price of the share by the Earnings per Share (EPS) of the company. The result of this multiple will ultimately be influenced by the leverage level of the company.

$$\frac{P}{E} = \frac{\text{Market Capitalization}}{\text{Net Income}} \qquad P/E = \frac{\text{price}}{\text{EPS}}$$

- **Relative PER:** It is calculated dividing the PER of the company by the PER of the country where the company has its fiscal residence.

$$\text{Relative P/E} = \frac{\text{Company P/E}}{\text{Country P/E}}$$

- **EBIT multiple:** Calculated based on the division of the Enterprise Value by the EBIT of the company. This multiple is not influenced by the leverage level of the company.

$$\text{EBIT multiple} = \frac{\text{EV}}{\text{EBIT}}$$

- **EBITDA multiple:** The calculation based its result in the division of the Enterprise Value by the EBITDA of the company. It is a good multiple choice in order to acquire foreign companies and it also does not take into consideration the leverage level of the company.

$$\text{EBITDA multiple} = \frac{\text{EV}}{\text{EBITDA}}$$

- **EV / Operating Cash Flow:** The main difference between this multiple and the previous one is that the Operating Cash Flow takes into account the Working Capital needs of the company, being its formula the following one:

$$\text{Operating Cash Flow} = \text{Net Income} + \text{Depreciation} \pm \text{Working Capital needs}$$

It is important to take in consideration that this ratio is not a good choice in order to evaluate companies with a high growth expectation since this method rarely estimates future cash flows and as a consequence the valuation of the company could be lower than expected.

- 4) After selecting and calculating the multiples, the final step is the selection of the valuation range for the target. In order to do so, it is important to follow the next steps:
 - a. Selection of the final valuation range based on the calculations obtained during the previous steps.



- b. It is important to give an extra importance to the PER multiple since it is one of the most important and reliable ones in quoted companies. If the company is not quoted could be a better choice to use the EBITDA multiple over the PER one.
- c. It is also important to revise the results obtained from other multiples in order to be able to determine if factors such as depreciation are having a crucial impact in the valuation of the company.
- d. Revising if calculations and result are logical and make sense comparing them with similar companies is always important in order to determine a proper and reliable valuation of the company.

The selection of this method to determine valuations of companies is always a good strategy since it takes in consideration sector trends, risks associated to the business area and future growth based on expectations. However, the probabilities of finding a company 100% comparable to the one being evaluated because of several factors such as accounting principles and legislation.

❖ **Transaction Multiples method**

The objective of this methodology is to calculate the price of a company based on other prices or transactions that others have paid for similar companies to the target company.

The multiples represent the price paid for similar companies for the 100% of the capital of the company, including features such as shares, warrants and options, other convertible products with high execution probability.

The result of this multiples is usually higher from the quotation ones. This is basically due to the fact that transaction multiples take as reference particular transactions that could include especial conditions and agreements between the companies inside the deal.

The main ratios used in this methodology are:

- Price/Sales
- Price/Profit
- Price/Value in Books
- EV/Sales
- EV/EBITDA



- EV/EBIT

It is important to take in consideration crucial factors such as the date of the transaction, for instance, if the transaction taken in consideration is from years ago, the estimation by multiples will no longer be accurate. The transactions selected need to be from the present and need to be based on similar size, operations and circumstances companies in order to reach a reliable and accurate calculation.

The advantages of using this valuation method come from sources such as the establishment of reasonable prices, the knowledge about sector trends and expectations and finally the estimation of the supply and demand of the sector which is a key point when evaluating a company. But this method also has some disadvantages, for instance: transactions from similar companies are rarely highly comparable which provides with a wide range of price variations, also the data needed to do the calculations inside this method could sometimes be confidential.

Both multiples valuation methods are complementary to the Discounted Cash Flows one. Usually, these methods should serve to check if the DCF results are logical since the results from both should also be similar.

3.3 Discounted Dividends

The Discounted Dividends method is based on the estimation of a share value taking as reference the projections for those dividends and their present discounted value. The result of the calculation is defined as the figure resulting from the present value of dividends projection plus the final value in the sale.

This model assumes that the cost of equity (k_e) keeps constant among the valuation period, the formula by which this model is represented is the following:

$$PV = \Sigma + \frac{D_i}{(1 + k_e)^i}$$

Where D_i are the projected dividends and k_e is the cost of equity.

Due to the fact that a projection of infinite dividends is not logical, there several different methods inside the Discounted Dividends method.



One of the most common ways to calculate the Discounted dividends is through the Gordon Shapiro approach, which establishes that given the expected dividend of the following year to the calculation and applying a constant growth rate, the value of a share can be calculated:

$$PV = \frac{D_i}{(k_e - g)}$$

Where D_i is the dividend of the following year to the calculation, k_e is the cost of equity and g is the constant growth rate applied.

According to Shapiro this formula would be as follows if the dividend for the following year is not an available information:

$$PV = \frac{D_0 * (1 + g)^i}{(k_e - g)}$$

Where D_0 is the current's year dividend distributed by the target company.

Damodaran (2002) establishes two main considerations regarding this method of Discounted dividends:

- First, the constant growth rate used in the calculations of the present value of the share cannot be higher than the GDP growth rate for the same period that the calculations.
- Second, it is assumed that, as a constant growth rate is taken for the calculations, the dividend distribution rate must follow the same trend as the growth one.

According to Shapiro approach, the constant growth rate can be also calculated based on the Payout of the company. The payout of a company is the dividend distribution rate, the Plowback rate is the result of subtracting the payout ratio (always in %) from 1. The result of this operation is the Plowback ratio, which after multiplying it by the Return on Equity (ROE) of the company would result in the theoretical growth rate of the company. Find the formulas disclosure below:



$$\text{Plowback} = 1 - \text{Payout}$$

$$g = \text{ROE} * \text{Plowback}$$

Other different manner of calculating the value of a share by applying the Discounted dividends method is by using different growth rates, a higher one for the first years of the calculation and a lower one for the rest of the years. This theory is based on the idea that starting companies usually have a very high growth rate during the early stages of their life cycle. However, these companies start to lower their growth rate and keep it stable when they are in the maturity inside the lifecycle of the company. That is the reason why this calculation is more appropriate for companies in early stages or with not stable payout ratio.

$$V = \sum_{i=1}^n \frac{D_i}{(1 + k_e)^i} + \frac{D_{n+1}}{(k_e - g)} * (1 + k_e)^{-n}$$

$$D_{n+1} = D_n * (1 + g)$$

3.4 PER

The PER (Price to Earnings Ratio), is one of the most used ratios in valuation models for companies of the majority of the sectors. It indicates the times that the market pays the profit of the company or in other words the market value of every euro of profit of the company. PER allows us to compare companies from different sectors and shows us the expectations for that company and future trends.

The PER is calculated by dividing the market price of the share in the Stock Market by the Earnings per share (EPS), which is calculated by the division between the Net Income of the company and the current number of shares. The calculation would be as follows:

$$PER = \frac{\text{price}}{\text{EPS}}$$

The PER is also related with the growth rate of the company and as a result it is related with the ROE as well. The growth rate for the company is determined by the variables ROE and Plowback as previously mentioned in the Gordon Shapiro approach.

ROE is calculated as follows:

$$ROE = \frac{\text{Net Income}}{\text{Equity}}$$



Based on previously mentioned calculations and formulas, it can be deduced the following equations process:

$$PER = \frac{Plowback * EPS}{(ke - g) * EPS} = \frac{Plowback}{ke - g}$$

Then:

$$PER = \frac{1 - \frac{g}{ROE}}{ke - g} = \frac{ROE - g}{ROE (ke - g)}$$

Other different approach in PER terms is the relative PER which represents the relation and connection of a company's PER with the ones from a country or with other sectors.

The PER is one of the most used indicators in the market in order to perform valuations and management activities. It allows to compare companies between each other and to compare the prices of each of them based on the number of times that the market is paying each profit unit of the company.

The main advantages of the PER are:

- It allows quoted and open capital companies to use it and the calculations are quite simple.
- It relates the market price of the share with the profit of the target company.

Main disadvantages:

- It does not take in consideration risk, changes in growth rates and changes in dividends distribution policies.
- It may be affected by changes in the macroeconomic environment.

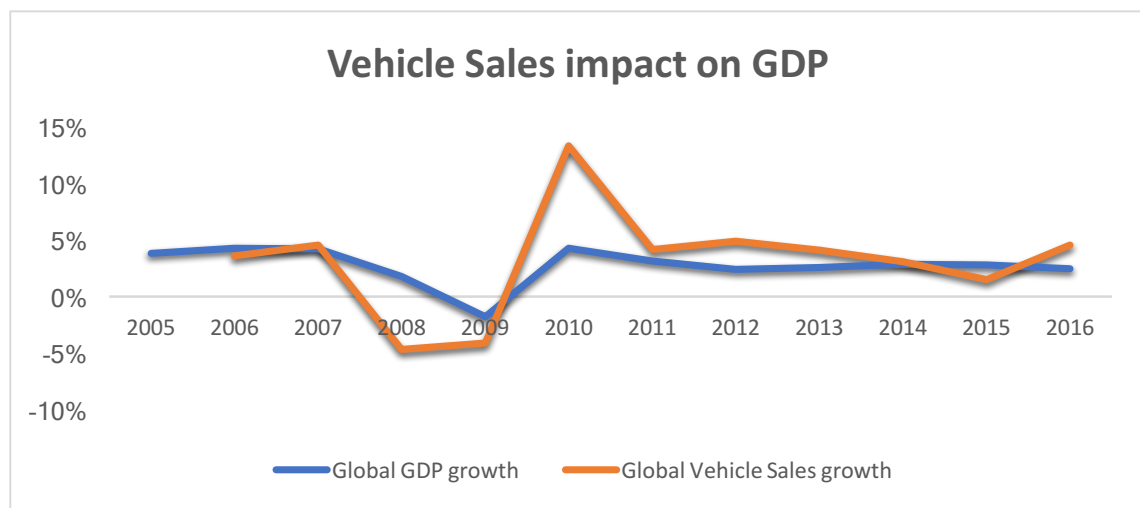


4. The Automotive Industry

4.1 General Overview

In order to conduct a proper evaluation of the company Tesla Motors, it is important also to understand the environment and market behavior that is surrounding the company. Factors such as macroeconomic ones are crucial to reach a deeper understanding of the market behavior of the Automotive Industry. Even though consumer's perception of the automobiles is based on the idea of a basic need, they are still considered as luxury goods in general terms.

First of all, an illustration the impact of the Automotive Industry sales over the global economy is important to understand this market.



Data: World Bank
Source: Own compilation

As it can be seen, both indicators are correlated between each other, meaning that the Automotive Industry has an important impact over the global GDP. The Automotive Industry is one of the most consolidated industries of the world, it is also one of the most competitive markets, where 15 companies control most of the market share. But, even though, big players have an important weight in the market, it has been proven that the Automotive market is highly dependent on the world's economy performance.

In terms of market dominance, there are four main markets in global car sales – Europe, United States, China and Japan -. China is currently the largest market of the world and so it was during the economic crisis. This leadership allowed the global market to remain relatively stable during the recession. However, Tesla Motors has redirected its strategy and focused it in strong economies such as Europe, UK and United States.



Growth in public debt is also a key point in terms of Automotive Industry analysis. Europe, Japan and United States have increased their public debt during last years, since the economic crisis and China has entered into an overcapacity problem. These factors altogether stand that a wider outlook of the economy must be considered, in order to take into account possible impacts across the industry.

4.2 Electric Vehicles Market

In order to reach a more reliable forecast and valuation of Tesla Motors is important to first not only understand the market of Electric Vehicles (EV), but also to analyze where is going.

The EV market has been growing at a relatively fast pace during last year, the improvements in range capacity, relatively lower prices and the establishments of certain grants for EV acquirers are some of the main factors that have made possible this development in the market. Several market researches have shown that most of driver would rather own an electric car than an oil car. Between main obstacles for acquiring electric cars, the most common one is the price of electric cars or for instance the range of the car. These obstacles have been diminishing with the appearance of not only new electric cars but also new business models. Tesla Motors has solved the range problem for driver, reaching at maximum more than 350 miles with just one charge. The other obstacle, the price, is still one of the main problem of electric cars for drivers, however Tesla Motors has recently launched a new model called “*Model 3*” which average price is between 35-38 thousand dollars. Comparing these prices and ranges, which were obstacle for most driver in order to acquire an electric vehicle, it can be seen how comparing nowadays’ electric cars with oil cars, the differences are no longer that wide.

Despite being a relatively recent market, EV companies have shaped their business model in order to achieve profitability. New manufacture strategies, additional regulatory standards and policies against vehicles emissions are some of the factors contributing to the shifting of the sector from traditional oil powered vehicles to electric and newer vehicles. This shift will continue to increase as long as electric vehicles continue to improve not only their features and capabilities but also their price.

4.3 Governments Incentives

Governments form most of the countries have certainly interest in electric cars as the new way of mobility. Campaigns related with environment sustainability are common nowadays and government support in this subject is notoriously stronger than years ago. To promote the production and acquisition of electric and hybrid cars, European and American governments offer certain grants for the customers in order to help them to acquire this type of vehicles.



A clear example of this type of grants or incentives are the USA Department of Energy income tax credits reaching up to \$7,500 for Electric and Hybrid Vehicles buyers. For instance, Tesla vehicles buyers would receive the full amount of the grant since is a fully electric car.

The way this government strategy affects Tesla Motors in particular is by increasing its demand. People would be more willing to change their traditional vehicles to new electric ones if there is some kind of financial incentive or grant related with it. With this kind of strategies, the transition from traditional vehicles to electric ones will be faster and cheaper for the customer, resulting in a better technology use and a reduction in the usage of fossil fuels.

4.4 Market Competitors

In order to be able to analyze Tesla Motors competitive environment is a key point to deeply understand what are the current alternatives to its vehicles. Fuel vehicles market is highly competitive and there are some brands that are completely established in the market share of the sector. Current Tesla models *X* and *S* are currently competing on the *premium sedan* and *SUV* market which main competitors are well known brands such as Mercedes, BMW, Audi and Lexus. With the launching of the new *Model 3* Tesla is entering at the same time in the *medium-sized sedans* market which is dominated by the same brands as previously mentioned in addition of brands such as Toyota and Honda.

But Tesla vehicles are no longer competing against fuel cars from the previously mentioned brands. Most of the big players in car manufacturing have already began to produce and sell electric cars as well. BMW launched two years ago i3, i5 and i8 models, first fully electric vehicles in the history of the brand. Volkswagen will launch its first fully electric car at the beginning of 2020, the Volkswagen Phaeton which will compete with Tesla's *model X*. In addition, Porsche has announced the launching of its fully electric sedan by 2020 to compete with Tesla's *model S*, the new Porsche will have a 15% higher range than Tesla's one and will have a similar competitive price.

Market competition in terms of electric cars will be strong by 2020. The main reason is the quick development of fully electric cars by the big players in the market. These new electric cars will directly compete with Tesla's different models. However, Tesla is settled in the market from the beginning which gives it a competitive advantage over its competitors and gives it the opportunity of further developments of its existing cars and the opportunity of creating new more innovative ones.

Regarding Tesla's Energy production and storage products, there are several companies currently developing technologies to directly compete with Tesla's integrated systems and energy storage systems. For instance, AES Energy Storage, LG Chem and Samsung are developing different energy storage systems in order to create a competitive advantage. Solar Energy competition remains stable, being the only competitors the traditional local utility companies. Residential Solar Energy competition counts with several competitors such as Sunrun Inc., Vivint Solar Inc. and Trinity Solar and Songevity Inc.

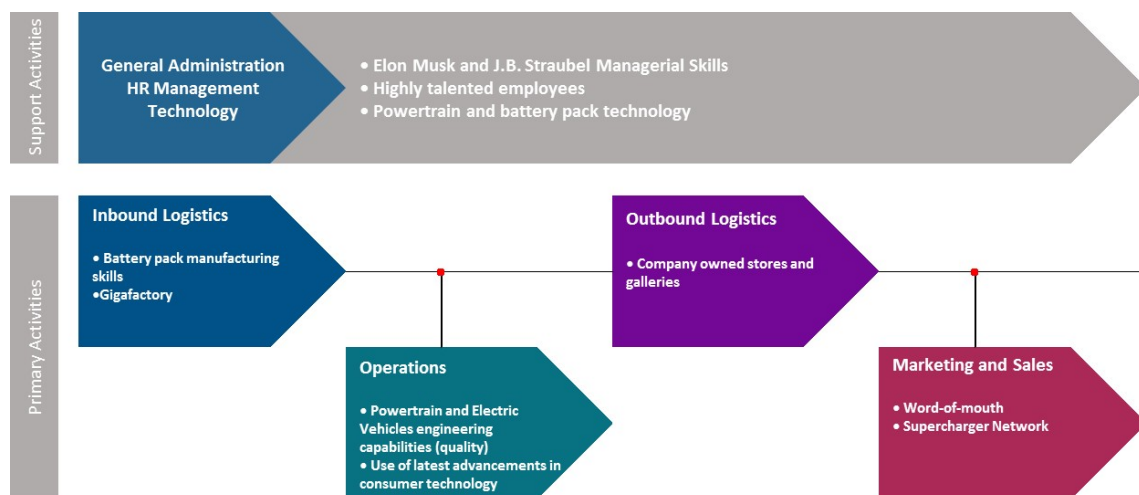


In addition of the competition created by the existing big player in the Automotive Industry, new competitors in electric vehicles are arising as well. The switch from fuel vehicles to electric vehicles is still in development but this movement has generated new market opportunities for new players.

Even though market entry barriers are high there are still companies willing to invest in electric cars and take a competitive advantage over the traditional big players. Companies such as Google, which is the main technological company nowadays, is developing self-driving electric cars to compete with Tesla. On the other hand, completely new companies such as Lucid Motors Inc., are developing innovative electric cars that supposes additional competition in the redefined Automotive Industry.

4.5 Tesla Competitive Advantage

Previously in this thesis it has be mentioned that even though Tesla has several competitors the company is still ahead of its competition. Further innovation, current existing product and value chain flexibility are key points for Tesla to keep its growth rate. The use of Porter's Value Chain Analysis (1985) is a good way in order to see what are Tesla's best value-creation sources:



Source: Compiled by author

Tesla is one of the few companies that follows a vertical manufacturing strategy. Tesla design, manufacture and monitor the quality all inside the company. This vertical strategy makes possible a cost reduction improves final product quality.

Regarding the powertrain of Tesla Inbound Logistics, it is developed in its California factory and the battery packs, called *superwall*, are sourced from Panasonic. Tesla's battery packs and electric batteries are in most cases ahead of the competitors because of their innovation and quality.

Tesla's competitive advantage from Operations comes mainly from the technical know-how, years of research and development and higher innovative features. Tesla is expected to keep this competitive advantage based on the idea that other competitors are years behind Tesla and while they are currently launching products to compete with the Tesla's ones launched several years ago, Tesla is creating new technologies and improving its cars.



In terms of the overall value chain, Tesla is supported by its installed capacity and know-how manufacture of products to maintain its competitive advantage over the rest of competitors.

5. Tesla Motors Inc.

Tesla Motors is the most famous electric car company in the world. The company's business model is based on the sale of electric cars, electric batteries, solar panels and components for electric propulsion of vehicles.

The core of the company is based on the propulsion system engineering which includes: the batteries pack, motor, power electronics and the engine. Tesla provides with a copper three phases motor and an especial engine in order to reduce the resistance and the loss of energy. Tesla electric cars contain high number of processors and algorithms in order not only to control the power and security but also to manage the vehicle stability, acceleration and the charge status of the batteries pack.

Tesla motors sells cars all around the world via Internet by its web platform or via specialized retail commerce. Currently, Tesla has run out stock of reservations in the new model *Tesla Model 3*. In order to measure the presence of Tesla around the world it makes more sense to attend to the number of charge stations around the world over the number of cars, since the last ones can be sell through the web platform all around the world even if the buyer country has no Tesla infrastructure at all.

As a curious fact, Tesla Motors introduced the electric autonomous car to the market which has made the company really famous and has provided it with a very good image and high brand value. However, Tesla cars have still some problems related to their innovation, that is why during March and April Tesla share's price went down at a fast pace.

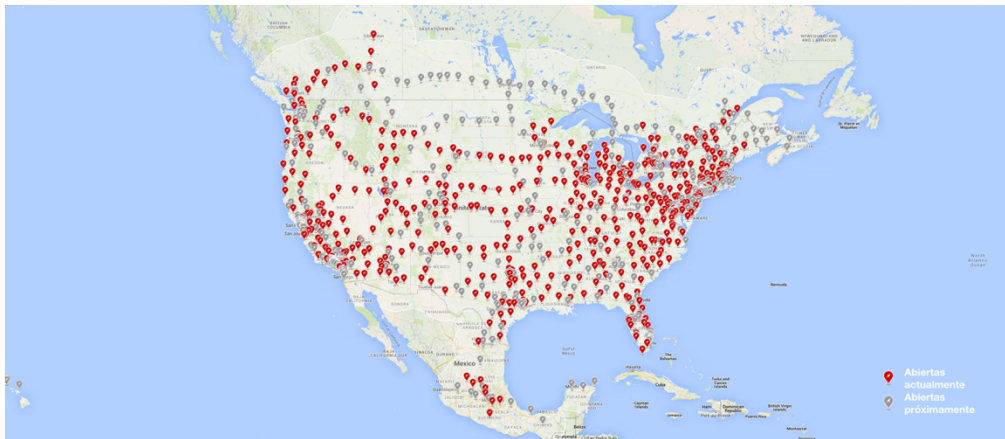
In addition, Tesla has been graded as the top company in terms of customer satisfaction. Through a consumer survey, it was determined that the 91% of Tesla owner would buy a Tesla car again.

Customer satisfaction is one of the key KPIs in the Automotive Industry, combining a vertical value chain strategy, further innovations than competitors and product quality Tesla is currently positioned at the top of the Electric Vehicles Industry.

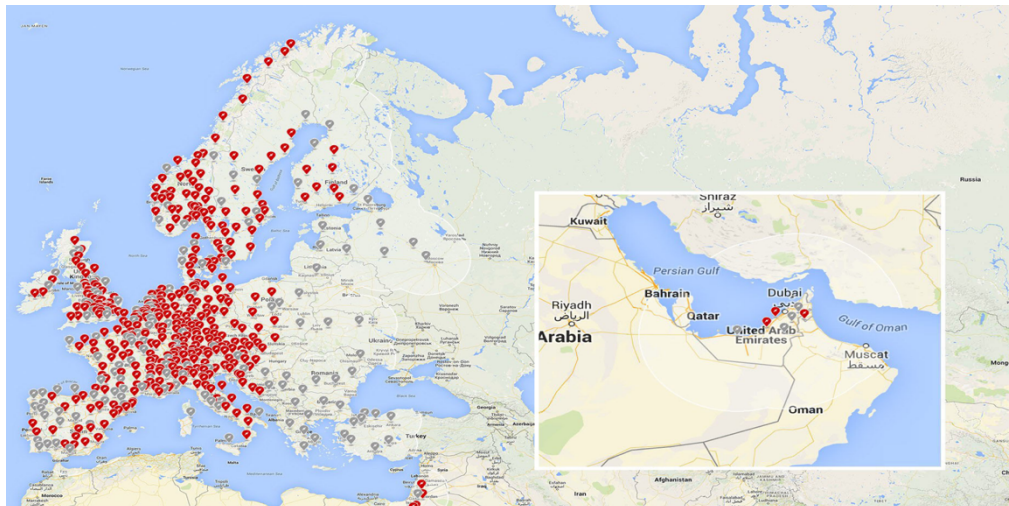
| Rank | Brand | Would Buy Again |
|------|-----------|-----------------|
| 1 | Tesla | 91% |
| 2 | Porsche | 84% |
| 3 | Audi | 77% |
| 4 | Subaru | 76% |
| 5 | Toyota | 76% |
| 6 | Honda | 75% |
| 7 | Mazda | 74% |
| 8 | Chrysler | 73% |
| 9 | Chevrolet | 73% |
| 10 | Lexus | 73% |



Tesla has over 1.210 charge stations around the world and counts with more than 9.428 superchargers distributed all around the world. These stations and superchargers are distributed through North America, Europe, Middle East and Asia. The objective of Tesla is to increase the number of stations and chargers through the following years which will help to build a sustainable infrastructure for not only Tesla users but also for electric car users in general.



Source: Tesla Motors Inc.



Source: Tesla Motors Inc.



5.1 Tesla Motors Strategy

When talking about the Automotive Industry, it could be have seen in the previous point how difficult is actually to penetrate in the sector and how many well established competitors are in the market. The barriers for new market players are really high and it is a difficult task to actually become of the main players in the market. Most of the big players are traditional players that have been in the sector for more than 40 years and that count with not only the resources but also the image and brand to keep their position and number of customers.

The case of Tesla is not different, the company had to overpass the entrance barriers of the market in order to become a player and be able to establish itself in the sector. But one of the most important factors of success of Tesla Motors is its long-term strategy. Back at the beginnings of Tesla, the first car ever launched by the company was the Tesla Roadster. The Roadster was a sports car launched by Tesla in 2008, it had an autonomy around 390km and an acceleration of 3,9 second from 0-100km/h. Even though the car specifications were good enough and in addition the Roadster was one of the first fully electric car that could be compared with traditional cars, they were only sold 2450 units worldwide, so it was not really an overwarming success of the car. In addition, the car price was above 100 thousand dollars for the basic option, supposing a luxury car in general terms.

Even though the first Tesla car was not really a huge success, it was the perfect feature to begin the Tesla long-term strategy. This strategy was based on the manufacturing of an initial car which was supposed to be luxury and to have a sport design in order to create and image for the brand and set the quality of their products. This was the first stage of the strategy. The second stage was to manufacture a similar priced car but with a new level of innovation and that could be a fully competitor of traditional cars but still include more technology and innovations than the majority of the cars. This was the *Model S*, launched in 2012 at an average price of 100 thousand dollars was the best sold Tesla car in the history of the company. The next stage of Tesla's strategy was to launch an even more expensive and higher quality vehicle which had to not only improve the quality associated with the brand but also to increase the role of innovation inside the company, this car was the *Model X*, launched in 2015 at an average price of 130 thousand dollars. The *Model X* consolidated the Tesla brand as a high quality luxury cars and best innovation in electric cars in the market. In addition, with the launching of these two vehicles, Tesla became the first automotive company to include a working Autopilot that could be use by users in public roads.

With this strategy Tesla wanted to introduce itself as a luxury fully electric car manufacturer which offer high technology and the best quality in their products while being respectful with the environment. One of the key points of the strategy was to reinvest most of the revenues generated for the first to models in order to manufacture the las model which was going to be the final result of the strategy. The final model was the *Model 3* launched in 2017 at an average price of 35 thousand dollars. This model is



intended to be the culmination of Tesla's strategy. Is the first tesla model which has been made to produce it in masses, the Model 3 is intended to be the most affordable Tesla car ever made but still keeping the quality and the technology of the previous models.

Inside Tesla's strategy is also the sale of electric batteries and the leasing of its vehicles. Both of those activities are included in the consolidated Income statement of the company. Even though the weight of these activities is much lower than the weight of the car sales over the total revenues of the company.

Finally, Tesla's strategy is expected to remain the same in the long-term due to its efficiency and in addition, Tesla is slowly incorporating the supply of solar roof tops between its products. This has been possible thanks to the acquisition of Solar City by Tesla. However, there has been no sales of these products so far.

Through this strategy, Tesla will be able to improve the image of the brand and, at the final point of the strategy, to create value not only for the customer but also for the shareholder. In addition, is expected that Tesla will make a positive result within the following two years thanks to the long-term strategy that has been following:



| SWOT | |
|---|---|
| STRENGTHS | OPPORTUNITIES |
| <ul style="list-style-type: none"> ➤ <i>Innovative in electric car development.</i> ➤ <i>Biggest charging stations network worldwide</i> ➤ <i>Higher technology than competitors</i> ➤ <i>Fully vertical integrated: manufacturing, promotion and distribution is done by the Company.</i> ➤ <i>Competitive price taking in consideration quality and features that vehicles provide</i> | <ul style="list-style-type: none"> ➤ <i>Proper developed strategy in terms of demography distribution attending to customer segmentation.</i> ➤ <i>Image of an environmentally respectful company, which improves relationship and reputation regarding customers.</i> ➤ <i>Market growth of electric cars increasing much faster than the hybrid cars one.</i> ➤ <i>Improve post-sale services and relationship with customers by offering extended guarantees and a better service network.</i> ➤ <i>Expectations about the electric car sector are optimistic since quantity and Price of oil will get worse.</i> |
| WEAKNESSES | THREATS |
| <ul style="list-style-type: none"> ➤ <i>Higher Price due to low demand on electric cars.</i> ➤ <i>Customers do not rely completely in the sector yet.</i> ➤ <i>Little customer segments the main objective of the Company.</i> ➤ <i>Long delivery time of the vehicles and products.</i> ➤ <i>Need of installing devices in homes such as chargers or batteries.</i> | <ul style="list-style-type: none"> ➤ <i>Current Price of fossil fuels in decreasing.</i> ➤ <i>The market is still dependent of grants and equivalent to increase the demand.</i> ➤ <i>New competitors with advanced technology currently penetrating in the market.</i> ➤ <i>Customer may not be willing to change their traditional vehicles for the new technologies.</i> |

5.2 Historical Share Price Analysis

Tesla's IPO was launched in 2010 and the initial Price of the IPO was \$17 per share. The share price is currently at around \$290 and shares reaches their maximum point in history in June 2017 at a price of \$383,45 per share. The biggest increase to date was from November 2016 to June 2017 where share price went up more than a 200% in just 6 months. This rise can be explained by the fact of Tesla launching a new model, *model 3*, which was the cheapest model yet and was going to provide large amounts of cars at a faster pace. The establishment in Europe as the primary fully electric car was also one of the factors that affected Tesla's rise and Uber's deal with Tesla was the final factor to reach the maximum value of the company yet.



Source: Yahoo Finance

The most important falls that can be seen on the screen are mainly due to car accidents with Tesla cars that were being driven by the Autopilot. There have been more than two autopilot accidents in the history of Tesla's technology. Every time there is one accident, the share price of the company experiences an important fall. The most recent example is the car accident in USA in March 2018. It can be seen in the screen how at this time there is a fall in the share price.

In addition, it is a really interesting matter of study how Tesla share have gone up in general terms since the IPO even though the company has not done any profit yet and being all the net result from previous years negative.

5.3 Ownership Structure

There are currently 156.100.000 Tesla shares outstanding. Out of the total number of shares, the 22% is held by insiders, a 5% by the owners and the remaining number of shares in free float. Assuming that most of investors are Mutual Funds or Institutional funds and that the average daily trade is around 5 million shares, is correct to say that Tesla's shares are easily traded in the market and that the risk of counterparty is really low in this case.



5.4 Financial Statements Analysis

| | 2017 | 2016 | 2015 |
|-------------------------------|-------------------|------------------|------------------|
| Total revenues | 11.758.751 | 7.000.132 | 4.046.025 |
| Growth | 52% | 55% | 24% |
| Total cost of revenues | 9.536.264 | 5.400.875 | 3.122.522 |
| Growth | 57% | 55% | 27% |
| Gross profit | 2.222.487 | 1.599.257 | 923.503 |
| As a % of the Sales | 19% | 23% | 23% |
| EBIT | -1.632.086 | -667.340 | -716.629 |
| Growth | -89% | 7% | -284% |
| EBT | -2.209.032 | -746.348 | -875.624 |
| Growth | -109% | 16% | -208% |
| Net Profit | -2.240.578 | -773.046 | -888.663 |
| Growth | -106% | 14% | -202% |

Tesla has been exponentially growing since 2014 until 2016. In this period, it has counted with a CAGR of 97,8% and its main source of income is still automotive sales. However, during last year (2017) even though Tesla has increased its revenue as previous years, the EBIT of the company is an 89% lower than in 2016. This difference is mainly due to operating expenses and selling and administrative of the company, both figures increased more than a 70% from 2016 to 2017 concluding in much lower EBIT in 2017 even though Tesla had higher revenues that year. Since Tesla is a fully vertical integrated company, operating expenses supposes an important figure inside the company's Income Statements. Selling and Administrative is also an important part of Tesla since the company has its own stores and has been developing new and more innovative selling platforms.

Research and Development supposed a higher expense in 2017, an expenditure that was mainly due to recent investigations about automotive improvement and the possible launching of new models in a near future. New battery packs and the released of the new solar roof tops supposed for Tesla a higher expenditure of research and development, affecting its Income Statement.

As a result, the Net profit of the company was a 106% lower in 2017 being -2.209 million dollars. This negative Net profit has been stable since the IPO, 8 years ago now, has had a negative impact in the Return on Equity (ROE). This situation of losses since 2010 has been reducing value for shareholder, which at the end, a company's main purpose is to create and increase that value.



| Balance Sheet in millions \$ | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Total current assets | 1.266 | 3.199 | 2.792 | 6.260 | 6.571 |
| Total non-current assets | 1.151 | 2.651 | 5.301 | 16.404 | 22.085 |
| Total current liabilities | 675 | 2.107 | 2.816 | 5.827 | 7.675 |
| Total non-current liabilities | 1.075 | 2.830 | 4.187 | 12.084 | 16.743 |
| Total stockholders' equity | 667 | 912 | 1.089 | 4.753 | 4.237 |

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------|-------------|-------------|-------------|-------------|-------------|
| Debt / Assets | 72,4% | 84,4% | 86,5% | 79,0% | 85,2% |
| Debt / Equity | 262,4% | 541,3% | 643,1% | 376,8% | 576,3% |
| ROE | -11,1% | -32,3% | -81,6% | -16,3% | -52,9% |

It can be taken from Tesla's Balance Sheet that Tesla's assets are mostly non-current assets. This is mainly due to the fact that most of Tesla's assets are divided between Property and Solar Energy Systems, being both of them valued at more than 6 billion dollars each. The Balance Sheet also shows that it has grown by a CAGR higher than 100% in general terms, by its side, the stockholders' equity having had its biggest increasing from 2015 to 2016. As it is shown in the table, leverage has increased significantly, being the Debt to Equity ratio of 576% in 2017 and having reached its peak in 2015 with a 643%.

In general terms, Tesla has more leverage but also more non-current assets and infrastructure, at the same time its ROE has been decreasing since 2013 which means that value creation for shareholders is lower every year.



6. WACC

The Weighted Average Cost of Capital (WACC) is the most common and accepted tool in order to discount cash flows. It takes in consideration the time value and risk assumed by the company, in this case by Tesla Motors, by including the cost of equity and the cost of debt in its calculation. The calculation of the WACC has been previously explained in this thesis. Tesla's WACC result of the previously explained calculations is 8,52%.

6.1 Cost of Debt (k_d)

In order to understand the result of Tesla's cost of debt, is important to know that since 2014 Tesla was graded as "B-" by S&P500. This change in the grading of the company meant a change in the cost of debt as well, since companies with lower rates have usually a higher cost of debt due to their implicit risk added. According to this statement, Tesla's cost of debt has been calculated attending to its outstanding debt and several products considered also as debt inside the Balance Sheet and the interest expense incurred by the company throughout the different years.

However, according to the S&P500 rating, companies within this grade range and with a higher capitalization than 5 billion dollars are assigned with a credit spread of 5,5%, Damodaran (2014).

6.2 Cost of Equity (k_e)

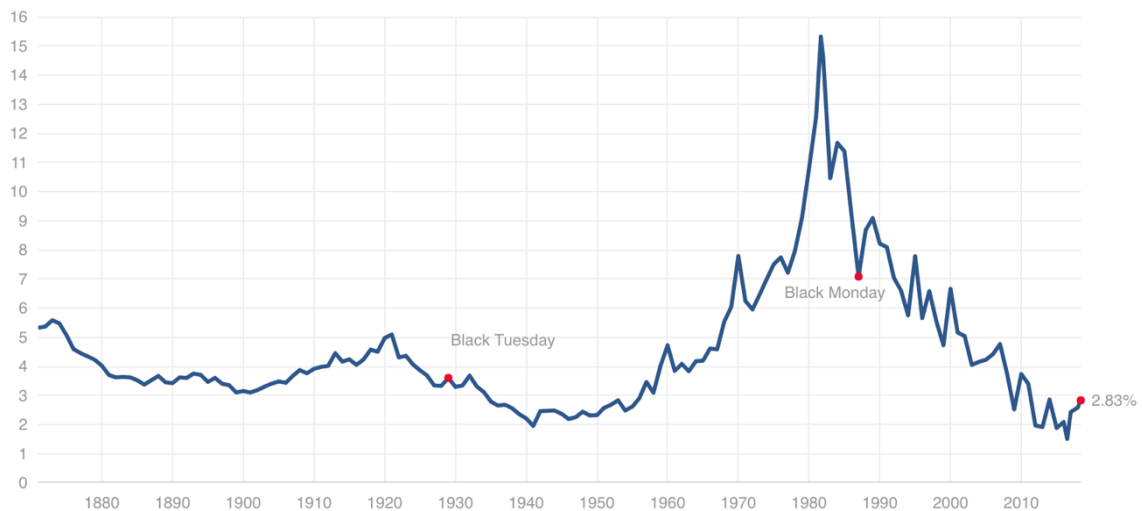
The cost of equity has been calculated by the CAPM model explained at the beginning of this thesis. The CAPM model takes in consideration the market risk free rate, the systematic risk (Beta) and the equity risk premium. The result of the model is a proper calculation of the return that shareholders are going to ask for the given risk of the company.



6.2.1 Risk Free rate

In this case, the risk-free rate considered for the different calculations is the 10-year U.S Treasury Bond. In the chart is shown the history of the U.S 10-year Treasury Bond, as it can be seen is currently at 2,83% and it overall terms it has been decreasing since the year 2000. However, during the last two years this rate has been raising at a stable rate which indicates a recovery of the economic situation in the country.

Source: NASDAQ



6.2.2 Systematic Risk

In order to calculate the Beta of the company is necessary to make a regression between Tesla's share price and the overall market returns in order to reach a certain correlation between them and therefore estimate what is the risk implicit in Tesla. However, this model even though is the most used one in terms of systematic risk, has some factors that does not take in consideration. For that reason, and in order to make the valuation of Tesla more realistic, the Beta that is going to be used in the valuation will come from an average of the different calculated Betas of Reuters and Bloomberg. Their calculations take addition factors in consideration and their Betas are in most cases accepted in order to evaluate companies. According to this, The Beta of Tesla would be between 0,94 and 0,99.

6.2.3 Market Risk Premium

The Market Risk Premium is the extra return that investor require to the market in order to cover the cost opportunity. This premium would consist on the difference between the market return and the risk-free rate, which supposes the cost of opportunity of investing in the market and assuming the implied risk in comparison to investing in the risk-free asset which in theory would have no risk at all. Damodaran calculated that this risk premium of the market was 5,69% at the end of 2017 and this figure will be used in order to do the valuation of Tesla.



6.4 Capital Structure

In order to be able to determine the WACC is important to first determine the capital structure of Tesla Motors. The capital structure is composed by Equity and Debt, and each one has its own cost of equity or debt. By combining the calculations of both costs and the capital structure, the WACC would be the average of the costs based on weightings.

The exact market values of the Equity and Debt of Tesla Motors are unknown, however, in order to be able to solve the calculations approximations of the market value of both of them will be done. Historically, Tesla has financed mainly through equity, however since the IPO the capital structure has changed. Even though there are no official figures for the capital structure, the equity market value should be the result of multiplying the number of shares outstanding by the share price, resulting on the Equity of the company. According to the previous statement, and assuming that this valuation is based on June 1, 2018, the number of shares outstanding at that day were 169,79M and the share price of the same day was \$289,5 resulting on a market capitalization or equity of \$49,15B.

In terms of Debt, usually the debt used in order to calculate the WACC or the return for investors is the Net Debt. The Net debt value is calculated taking in consideration the difference between the long-term debt, its current status as short-term debt and the net cash and equivalents. The result of this calculation would be the figure of \$5,15B of Net Debt which is composed of \$9,42B of Long term debt in 2017, \$897M of Short term debt and \$3,37B of Total Cash and Equivalents.

In general terms, Tesla Motors has a Market Capitalization of \$49,15B and a Net Debt of \$5,15B. The outcome from these calculations would be that the ratios for Debt and Equity are the following ones:

- Equity → 90,57%
- Debt → 9,43%

Usually, when calculating the capital structure of a company and obtaining the Debt to Equity ratio it can be seen what is the leverage of the company. The higher the Debt to Equity ratio is, the lower the WACC will be. The cost of debt is always lower than the cost of equity, but having more debt implies more risk which will result in a higher cost of equity. Commonly, companies try to balance the Debt to Equity ratio in order to lower as much as possible the cost of the resources but keeping a certain level of risk in the company.



7. DCF Valuation

In terms of forecasting, most times and with the majority of the companies, is always a hard task to try to project future revenues or future cash flows in order to be able to evaluate the company. There are many ways of forecasting future cash flows of a company, regression models where based on the past movements a regression equation estimates future movements. There is also the stable growth rate method, which is basically applying a constant growth rate and based on that rate future cash flows or revenues are estimated. In addition, the market average growth or inflation are also used in order to forecast future cash flows, but they are less common because of their accuracy.

However, in the case of Tesla the task of forecasting future cash flows, revenues and margins is even harder. With only negative cash flows and profit margins in the past, the entire value of the company is based on future expectation of growth and profitability. Assuming that, the way of projecting cash flows will be based on the average growth of sales, operating expenses and the percentage of margins out of sales. This could look as a less accurate method but with only negative cash flows, estimating based on average past growth is a proper way of understanding the evolution of the company and where it is going.

Once the projections have been calculated, the Free Cash Flows resulting from them are discounted assuming the WACC previously calculated as the discount factor. The Terminal Value is also calculated attending to the constant growth rate and discounted as the cash Flows. Finally, the sum of the discounted cash flows and the terminal value result in the theoretical value of the company. Which divided by the total number of shares outstanding is the theoretical price per share of the company.

7.1 Time Frame of the Forecast

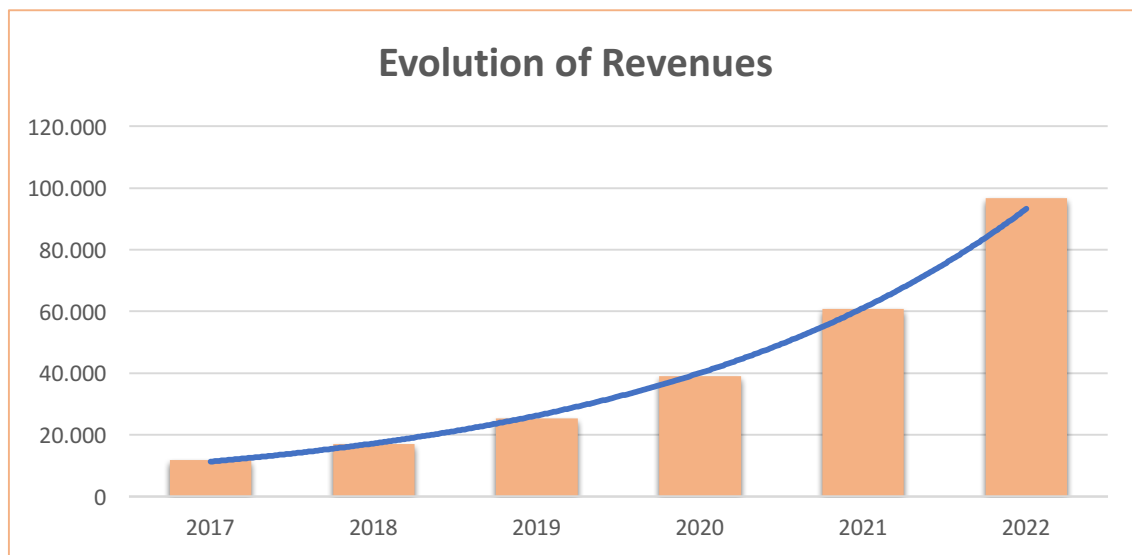
The time frame for the forecast of the cash flow of Tesla must be long enough to let the company reach stable positive cash flows and to be long enough for the growth rates to be similar or lower than the growth of the economy. It is also important to consider a period that allows the supply and demand to balance between each other. One of the most challenging factors about a Tesla valuation is its negative cash flows. Tesla has only had negative results and cash flows since its beginning. This fact meets its explanation where Tesla's highest value comes from the *Present Value of Future Growth* (PVGO) which basically means that the probabilities of Tesla increasing its sales and rising its results are quite high from now until few years in the future. That is the main reason why even though Tesla only makes negative profit its value keeps going up. Based on the previous statement, the time frame for the valuation will be of 5 years of forecast, meaning from 2017 until 2023. A shorter time frame would be more accurate but at the same time would not allow Tesla's situation to reach stability. While a longer period of forecast would generate less confidence, and would not be accurate.



7.2 Revenues

Revenues forecast has been calculated by using the weighted average of the previous years' growth in revenues. This method is commonly used when valuating companies, but the method has some problems of related with accuracy in some particular cases. In the case of Tesla, it is probably one of the correct methods to use since Tesla only has negative results in the past so a regression model will not be neither accurate nor useful in these cases. In addition, according to the research that has been done during this thesis, Tesla Motors is expected to continue growing during next years, this is mainly because tesla is still in the growth phase of its lifecycle and so it will continue to grow at a fast pace during following years.

In addition, the introduction of new models more affordable (Model 3) that will be sold massively, will make Tesla's revenues go even higher. Based on this, the average growth of the past years is expected to keep at least for the following 5 years of Tesla's life. The following graph shows the evolution of Tesla's revenues during the following five years, the growth is exponential and based on the average of previous years' growth.



Data: Tesla Motors Inc.
Source: Own compilation



7.3 Cost of Revenues and Operating Expenses

After calculating the projected revenues of the company by using the average growth method, it is important to project also the future cost of revenues and the operating expenditure that the company is going to incur in. In order to calculate these costs, the weight over the Revenues method has been used. This method is based on the calculation of the future costs based on their weight over the total revenues, meaning that for example if in 2017 the cost of revenue of Tesla Motors was 70% it is expected that the following years this cost will behave the same. But this method is not right in this case, the case of Tesla is different, current cost of revenue of Tesla over the revenues is up to almost 80%, this is mainly because the efficiency of Tesla is not the adequate yet and in addition the sales are still very low for the company. So, the company spends high amounts in manufacture cars and still sells few of them.

But in the following years, and with the introduction of the new Gigafactory, Tesla will be able to improve its efficiency and reduce the cost of revenue in more than a 15%, according to their own projections. With higher sales, and better efficiency, the weight of the cost of revenues over the total revenues is expected to decrease in the following years.

However, Operating Expenses and Research and Development expenditure is expected to remain with the same weights over total revenues that the current ones. Based on this model the results of the Income Statement for the following five years would be as follows:

| In USD Millions | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|------------------|------------------|------------------|-------------------|-------------------|-------------------|
| Revenue | 11.759,0 | 16.947,6 | 25.273,1 | 38.952,2 | 60.814,0 | 96.770,2 |
| % Growth | 52% | 37% | 40% | 43% | 45% | 46% |
| Cost of revenue | - 9.536,0 | - 10.168,6 | - 15.163,9 | - 23.371,3 | - 36.488,4 | - 58.062,1 |
| % Revenues | 81% | 60% | 60% | 60% | 60% | 60% |
| Gross profit | 2.222,0 | 6.779,1 | 10.109,3 | 15.580,9 | 24.325,6 | 38.708,1 |
| Research and development | -1.378,0 | - 1.521,9 | - 3.533,1 | - 5.445,4 | - 8.501,7 | - 13.528,3 |
| Sales | - 2.476,0 | - 2.711,6 | - 4.043,7 | - 6.232,3 | - 9.730,2 | - 15.483,2 |
| Total operating expenses | - 3.854,0 | - 4.233,5 | - 7.576,8 | - 11.677,8 | - 18.231,9 | - 29.011,5 |
| EBIT | -1.632,0 | 2.545,6 | 2.532,4 | 3.903,1 | 6.093,7 | 9.696,6 |
| % Revenues | -13,9% | 15,0% | 10,0% | 10,0% | 10,0% | 10,0% |
| Interest Expense | -471,0 | -548,6 | -818,1 | -1.260,9 | -1.968,5 | -3.132,4 |
| Other income (expense) | -106,0 | -3,5 | -5,2 | -8,0 | -12,5 | -19,8 |
| EBT | -2.209,0 | 1.993,7 | 1.709,3 | 2.634,3 | 4.112,8 | 6.544,4 |
| Provision for income taxes | -32,0 | -48,2 | -71,9 | -110,8 | -172,9 | -275,2 |
| Net income from continuing operations | -2.241,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |
| Net income | -1.961,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |
| % Revenues | -17% | 11% | 6% | 6% | 6% | 6% |
| Net income available to common shareholders | -1.961,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |



7.4 Cash Flow Statement

The Cash Flow Statement has been calculated starting with the EBIT previously calculated in the projected Income Statement. The Depreciation has been projected based on the 2017 Depreciation shown in Tesla's Income Statement and properly estimated for the following years based on expected growth. Capital Expenditure and the Working Capital Needs of the company have been also estimated based on past growth and according to their weight over the total revenues so when revenues increase the rest of factors are expected to increase accordingly. The Final Cash Flow would be just the sum of the previous calculations, as seen in the following table:

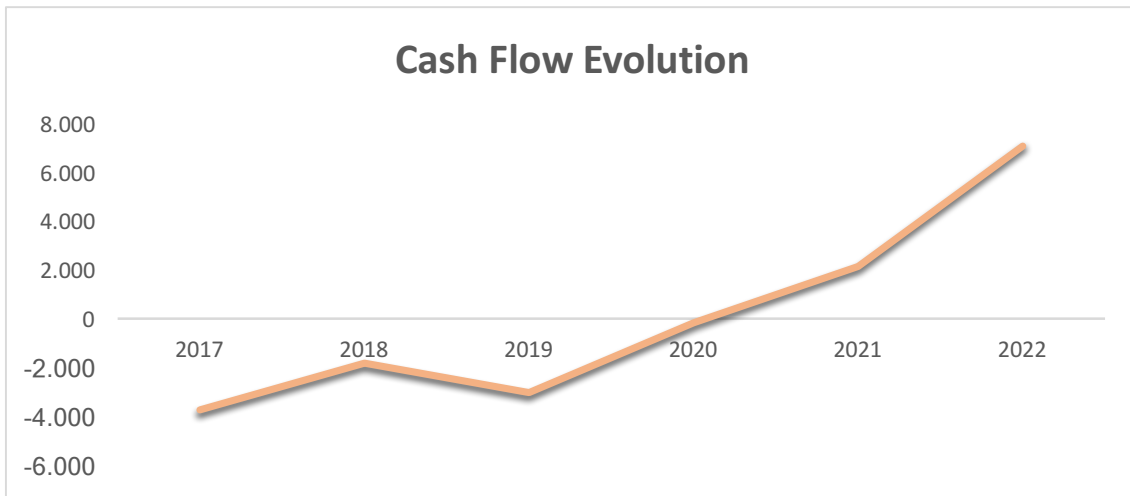
| In USD Millions | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| EBIT (1-t) | - 1.632,0 | 2.545,6 | 2.532,4 | 3.903,1 | 6.093,7 | 9.696,6 |
| Depreciation | 1.636,0 | 1.708,9 | 2.548,4 | 3.927,7 | 6.132,0 | 9.757,6 |
| Capital Expenditure | - 4.045,0 | - 5.609,1 | - 7.448,0 | - 6.936,4 | - 8.429,6 | - 9.762,7 |
| Working Capital Needs | 317,0 | -472,2 | -672,5 | -1.057,3 | -1.654,5 | -2.611,4 |
| CF | -3.724,9 | -1.826,9 | -3.039,7 | -163,0 | 2.141,6 | 7.080,1 |
| TV | - | - | - | - | - | 131.224,2 |
| FCF | - 3.724,9 | - 1.826,9 | - 3.039,7 | - 163,0 | 2.141,6 | 138.304,3 |

7.5 Terminal Value

The Terminal Value of the company will be calculated attending to several factors. First of all, the last cash flow estimated by the forecast will be used in order to calculate the Terminal Value of the model. Secondly, the Terminal Growth Rate estimated by the model will apply as perpetuity to the forecasted cash flow previously calculated. And finally, the WACC will be applied in the denominator. The result from the calculation is discounted and summed to the other discounted cash flows, resulting in the Present Value of the company. The Terminal Growth Rate used has been a 2,5% based on the idea that usually a 2% is used based on inflation for mature companies because it is supposed that they will not have increasing growth such as new companies or companies that are not established yet and are still growing at a fast pace, such as Tesla.



Based on all of this, the Terminal Value has been calculated, resulting in the previous results shown in the table and obtaining the following Cash Flow Evolution of Tesla Motors Inc.:



Source: Own Compilation

7.6 Final Results of the forecast

The final results obtained from all the calculations previously explained are the following ones:

| | |
|-----------------|-------------|
| NPV | 93.344,4 |
| # Shares | 156.100.000 |
| Price | 553,47 |

| | |
|-------------|------|
| kd | 5,5% |
| ke | 8,2% |
| WACC | 7,5% |

Based on these results from the model proposed, the price of Tesla should be \$553,47 at the date of calculations which is December 31, 2017. However, the price of a Tesla's share at that time was very different of what the calculations show:

| Date | Open | High | Low | Close* | Adj Close** | Volume |
|--------------|--------|--------|--------|--------|-------------|--------------|
| Dec 29, 2017 | 316,18 | 316,41 | 310,00 | 311,35 | 311,35 | 3.777.200,00 |

Based on this information, Tesla's shares were undervalued at that time according to the model proposed in this thesis, so the proper advice for that date, according to this model, would be to buy Tesla shares and hold them.



8. Multiples Valuation

The valuation using the multiples method has been previously described in this thesis. The method is based on the utilization on the average ratios for the sector and to calculate the multiple for the company. In this case, the sector is the Automotive Industry, from which the main competitors affecting Tesla Motors have been selected in order to calculate the average ratios of the sector. They all are high quality automotive companies, as Tesla Motors is.

| | P/E | EV/EBITDA | Price to Sales |
|---------------------|--------------|--------------|----------------|
| Daimler AG | 6,03 | 9,49 | 0,37 |
| BMW | 6,12 | 10,01 | 0,54 |
| Toyota/Lexus | 8,64 | 8,87 | 0,73 |
| Volkswagen | 6,62 | 8,55 | 0,32 |
| Ford/Volvo | 9,25 | 12,8 | 0,56 |
| Average | 7,332 | 9,944 | 0,504 |

The result is an average P/E ratio of 7,332, which multiplied by the Net Income of the company would result in the theoretical value of the company. In this case, The Net Income of Tesla Motors in 2017 is -1,96B. The result in this case would be -14,38B which could not be a proper result since it does not make sense that Tesla Motors' value is negative.

The second ratio is the EV/EBITDA, which average of the sector is 9,94 and that multiplied by the EBITDA of Tesla Motors would result in the theoretical value of the company. In this particular case, Tesla's EBITDA for 2017 is USD -102B which multiplied by the average ratio would result in USD -1,01B, which in this case does not make sense for the same reason as the previous calculations.

The third ratio, Price to Sales uses the Net Sales per share of the company which are the Revenues in this case, in order to calculate the theoretical value of the company. Based on this assumption, Tesla's Revenues of 2017 are USD 11,76B and shares outstanding at December 31, 2017 were 156.100.000 which result in USD 75,33 per share and multiplied by 0,504 results in USD 37,97. The result obtained is that the share price of a Tesla share is \$37,97 which means that the company's value would be USD 5,9B. This result is too low for Tesla Motors since the main source of value of this company is in the Present Value of Growth Opportunity (PVGO) so this ratio is not very useful even though it at least gives us a positive result over the company's value.

In common companies, usually mature companies, valuation using the multiples method is usually the most accurate way of calculating the company's value. However, in some companies, such as Tesla Motors, that have negative results, multiples method of valuation cannot be used since the value of the company would result in a negative figure. That is mainly why in the case of Tesla Motors this method is not useful for calculating the value of the company.

In this case, only the Discounted Cash Flow method of valuation is useful and can offer a proper value for the company.



9. Conclusions

Main conclusions taken from the process of valuation of Tesla Motors Inc. are that first of all, estimating Tesla's value is a really hard task since it is a company that only has had losses even though the price of the share continues to go up. In addition, multiple valuation methods are not useful in this case, since due to its negative results most of the ratios are not valid for calculating the company's value and the ones that can be used over the positive figures of the company do not reflect a fair company's value. This is mainly due to the fact that the main source of value of Tesla Motors is its PVGO, meaning that Tesla Motors' value is based on the future growth and expectations of the company.

Secondly, based on the DCF methodology, the suggestion is to buy and hold Tesla's shares since they are undervalued. In the model proposed, the growth rates used are even lower than most of the experts are using to calculate the future value of Tesla. And even with those lower growth rates, the company's value is higher than its current share price. The share price at December 31, 2017, was \$311.35. Currently, June 18, 2018, Tesla's share price is at \$370.83 and the model proposed in this thesis stands that the value of a Tesla share should be around \$553. It may sound too high for a Tesla share but at January 3, 2017, just one year and a half ago, the share price of Tesla was \$216.99. The company has increased its share price more than a 54% in one year and a half and the company has not even made a profit yet. With the new model launched this year and that will produce massive sales due to its price and quality, Tesla will increase its share price at a fast pace.

The final recommendation, according to the model proposed, is to buy and hold Tesla's shares since their value is expected to increase during the following years. Taking into consideration the past accidents and the falls of the stock, it is also important to assume how these facts affect Tesla's image and share price evolution. However, Tesla has been able to recover itself in a really short period of time and according to this thesis it is expected to have a significant growth here and onwards in time.

The last conclusion taken from this thesis is that based on the market research it has been cleared that Tesla Motors has changed the Automotive Industry, causing that the big players invest in new technologies in order to be able to manufacture electric cars. But, even though big manufacturers are currently offering electric car alternatives to Tesla's ones, Tesla is the company with the best quality and technology and its brand image will determine its future growth as a company and will also determine the future share price of the company.



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11. Appendices

Appendice A: Tesla Income Statements Information

| Revenues | 2017 | 2016 | 2015 |
|---|-------------|-----------|-----------|
| Automotive sales | 8,534,752 | 5,589,007 | 3,431,587 |
| Automotive leasing | 1,106,548 | 761,759 | 309,386 |
| Total automotive revenues | 9,641,300 | 6,350,766 | 3,740,973 |
| Energy generation and storage | 1,116,266 | 181,394 | 14,477 |
| Services and other | 1,001,185 | 467,972 | 290,575 |
| Total revenues | 11,758,751 | 7,000,132 | 4,046,025 |
| Cost of revenues | | | |
| Automotive sales | 6,724,480 | 4,268,087 | 2,639,926 |
| Automotive leasing | 708,224 | 481,994 | 183,376 |
| Total automotive cost of revenues | 7,432,704 | 4,750,081 | 2,823,302 |
| Energy generation and storage | 874,538 | 178,332 | 12,287 |
| Services and other | 1,229,022 | 472,462 | 286,933 |
| Total cost of revenues | 9,536,264 | 5,400,875 | 3,122,522 |
| Gross profit | 2,222,487 | 1,599,257 | 923,503 |
| Operating expenses | | | |
| Research and development | 1,378,073 | 834,408 | 717,9 |
| Selling, general and administrative | 2,476,500 | 1,432,189 | 922,232 |
| Total operating expenses | 3,854,573 | 2,266,597 | 1,640,132 |
| EBIT | (1,632,086) | (667,340) | (716,629) |
| Interest income | 19,686 | 8,53 | 1,508 |
| Interest expense | (471,259) | (198,810) | (118,851) |
| Other (expense) income, net | (125,373) | 111,272 | (41,652) |
| Loss before income taxes | (2,209,032) | (746,348) | (875,624) |
| Provision for income taxes | 31,546 | 26,698 | 13,039 |
| Net loss | (2,240,578) | (773,046) | (888,663) |
| Net loss attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries | (279,178) | (98,132) | — |
| Net loss attributable to common stockholders | (1,961,400) | (674,914) | (888,663) |
| Net loss per share of common stock attributable to common stockholders | | | |
| Basic | (11.83) | (4.68) | (6.93) |
| Diluted | (11.83) | (4.68) | (6.93) |
| Weighted average shares used in computing net loss per share of common stock | | | |
| Basic | 165,758 | 144,212 | 128,202 |
| Diluted | 165,758 | 144,212 | 128,202 |



| In millions | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|--------------|--------------|--------------|---------------|---------------|
| Assets | | | | | |
| Cash and cash equivalents | 846 | 1.906 | 1.197 | 3.393 | 3.368 |
| Total cash | 846 | 1.906 | 1.197 | 3.393 | 3.368 |
| Receivables | 49 | 227 | 169 | 499 | 515 |
| Inventories | 340 | 954 | 1.278 | 2.067 | 2.264 |
| Prepaid expenses | 28 | 95 | 125 | 194 | 268 |
| Other current assets | 3 | 18 | 23 | 106 | 155 |
| Total current assets | 1.266 | 3.199 | 2.792 | 6.260 | 6.571 |
| Gross property | 1.261 | 2.889 | 5.766 | 16.055 | 22.215 |
| Accumulated Depreciation | -140 | -293 | -571 | -1.018 | -1.724 |
| Net property | 1.121 | 2.596 | 5.195 | 15.037 | 20.492 |
| Goodwill | | | | | 60 |
| Intangible assets | | | | 376 | 362 |
| Other long-term assets | 30 | 55 | 106 | 991 | 1.171 |
| Total non-current assets | 1.151 | 2.651 | 5.301 | 16.404 | 22.085 |
| Total assets | 2.417 | 5.849 | 8.092 | 22.664 | 28.655 |
| Liabilities and stockholders' equity | | | | | |
| Liabilities | | | | | |
| Current liabilities | | | | | |
| Short-term debt | - | 602 | 633 | 1.150 | 897 |
| Capital leases | 8 | 10 | | | |
| Accounts payable | 304 | 778 | 916 | 1.860 | 2.390 |
| Taxes payable | 38 | 71 | 101 | 153 | 186 |
| Accrued liabilities | 44 | 143 | 235 | 786 | 879 |
| Deferred revenues | 255 | 449 | 707 | 1.427 | 1.869 |
| Other current liabilities | 27 | 54 | 224 | 450 | 1.454 |
| Total current liabilities | 675 | 2.107 | 2.816 | 5.827 | 7.675 |
| Non-current liabilities | | | | | |
| Long-term debt | 586 | 1.865 | 2.082 | 5.978 | 9.418 |
| Capital leases | 13 | 12 | | | |
| Deferred taxes liabilities | 7 | | | | |
| Accrued liabilities | 33 | | | 150 | 276 |
| Deferred revenues | 181 | 292 | 446 | 852 | 1.178 |
| Minority interest | | | | 1.152 | 1.395 |
| Other long-term liabilities | 254 | 661 | 1.659 | 3.952 | 4.476 |
| Total non-current liabilities | 1.075 | 2.830 | 4.187 | 12.084 | 16.743 |
| Total liabilities | 1.750 | 4.938 | 7.004 | 17.911 | 24.418 |
| Stockholders' equity | | | | | |
| Common stock | - | - | - | - | - |
| Additional paid-in capital | 1.807 | 2.345 | 3.415 | 7.774 | 9.178 |
| Retained earnings | -1.140 | -1.434 | -2.322 | -2.997 | -4.974 |
| Accumulated other comprehensive income | | | -4 | -24 | 33 |
| Total stockholders' equity | 667 | 912 | 1.089 | 4.753 | 4.237 |
| Total liabilities and stockholders' equity | 2.417 | 5.849 | 8.092 | 22.664 | 28.655 |



Financial Statements Analysis

| Balance Sheet in millions \$ | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Total current assets | 1.266 | 3.199 | 2.792 | 6.260 | 6.571 |
| Total non-current assets | 1.151 | 2.651 | 5.301 | 16.404 | 22.085 |
| Total current liabilities | 675 | 2.107 | 2.816 | 5.827 | 7.675 |
| Total non-current liabilities | 1.075 | 2.830 | 4.187 | 12.084 | 16.743 |
| Total stockholders' equity | 667 | 912 | 1.089 | 4.753 | 4.237 |

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------|-------------|-------------|-------------|-------------|-------------|
| Debt / Assets | 72,4% | 84,4% | 86,5% | 79,0% | 85,2% |
| Debt / Equity | 262,4% | 541,3% | 643,1% | 376,8% | 576,3% |
| ROE | -11,1% | -32,3% | -81,6% | -16,3% | -52,9% |

| | 2017 | 2016 | 2015 |
|-------------------------------|-------------------|------------------|------------------|
| Total revenues | 11.758.751 | 7.000.132 | 4.046.025 |
| Growth | 52% | 55% | 24% |
| Total cost of revenues | 9.536.264 | 5.400.875 | 3.122.522 |
| Growth | 57% | 55% | 27% |
| Gross profit | 2.222.487 | 1.599.257 | 923.503 |
| As a % of the Sales | 19% | 23% | 23% |
| EBIT | -1.632.086 | -667.340 | -716.629 |
| Growth | -89% | 7% | -284% |
| EBT | -2.209.032 | -746.348 | -875.624 |
| Growth | -109% | 16% | -208% |
| Net Profit | -2.240.578 | -773.046 | -888.663 |
| Growth | -106% | 14% | -202% |



Cash Flow Statement

| Millions \$ | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|-------------|--------------|--------------|--------------|--------------|
| Cash Flows from Operating Activities | | | | | |
| Net income | -74 | -294 | -889 | -773 | -2241 |
| Depreciation & amortization | 106 | 232 | 423 | 947 | 1636 |
| Amortization of debt discount/premium and issuance costs | 9 | 70 | 72 | 87 | 91 |
| Investment/asset impairment charges | 14 | 16 | 45 | 66 | 132 |
| Stock based compensation | 81 | 156 | 198 | 334 | 467 |
| Change in working capital | 125 | -257 | -493 | -694 | -497 |
| Accounts receivable | -22 | -184 | 46 | -217 | -25 |
| Inventory | -463 | -1050 | -1574 | -2466 | -179 |
| Prepaid expenses | -17 | -61 | -30 | 57 | -72 |
| Accounts payable | 0 | 253 | | | |
| Accrued liabilities | 67 | 162 | | | |
| Other working capital | 561 | 623 | 1064 | 1932 | -221 |
| Other non-cash items | -3 | 20 | 120 | -91 | 351 |
| Net cash provided by operating activities | 258 | -57 | -524 | -124 | -61 |
| Cash Flows From Investing Activities | | | | | |
| Investments in property | -264 | -970 | -1635 | -1440 | -4081 |
| Acquisitions | | -12 | 214 | -115 | -5 |
| Purchases of investments | | -206 | | | |
| Sales/Maturities of investments | | 189 | | 17 | |
| Other investing activities | 15 | -4 | -26 | -206 | -223 |
| Net cash used for investing activities | -249 | -990 | -1674 | -1416 | -4419 |
| Cash Flows From Financing Activities | | | | | |
| Debt issued | 660 | 2300 | 319 | 2853 | 7138 |
| Debt repayment | -461 | -11 | -204 | -1904 | -4264 |
| Common stock issued | 415 | | 750 | 1702 | 400 |
| Other financing activities | 21 | -146 | 658 | 1094 | 1140 |
| Net cash provided by (used for) financing activities | 635 | 2143 | 1524 | 3744 | 4415 |
| Effect of exchange rate changes | | -36 | -34 | -7 | 39 |
| Net change in cash | 644 | 1060 | -709 | 2196 | -25 |
| Cash at beginning of period | 202 | 846 | 1906 | 1197 | 3393 |
| Cash at end of period | 846 | 1906 | 1197 | 3393 | 3368 |
| Free Cash Flow | | | | | |
| Operating cash flow | 258 | -57 | -524 | -124 | -61 |
| Capital expenditure | -264 | -970 | -1635 | -1440 | -4081 |
| Free cash flow | -6 | -1027 | -2159 | -1564 | -4142 |



Leasing and Other Income operations

| Operating Lease Vehicles | 2017 | 2016 |
|--|-----------|-----------|
| Operating lease vehicles—beginning of period | 2,462,061 | 1,556,529 |
| Net increase in operating lease vehicles | 1,208,445 | 1,355,128 |
| Depreciation expense recorded in cost of automotive leasing revenues | (377,491) | (255,167) |
| Additional depreciation expense recorded in cost of automotive leasing revenues as a result of early cancellation of resale value guarantee | (22,156) | (13,495) |
| Additional depreciation expense recorded in cost of automotive leasing revenues as a result of expiration | (138,760) | (114,264) |
| Increases to inventory from vehicles returned under our trade-in program and exercises of resale value guarantee | (76,675) | (66,670) |
| Operating lease vehicles—end of period | 3,055,424 | 2,462,061 |
| Deferred Revenue | | |
| Deferred revenue—beginning of period | 916,652 | 679,132 |
| Net increase in deferred revenue from new vehicle deliveries and reclassification of collateralized borrowing from long-term to short-term | 742,817 | 715,011 |
| Amortization of deferred revenue and short-term collateralized borrowing recorded in automotive leasing revenue | (634,317) | (457,113) |
| Additional revenue recorded in automotive leasing revenue as a result of early cancellation of resale value guarantee | (3,451) | (5,192) |
| Recognition of deferred revenue resulting from return of vehicle under trade-in program, expiration, and exercises of resale value guarantee | (15,765) | (15,186) |
| Deferred revenue—end of period | 1,005,936 | 916,652 |
| Resale Value Guarantee | | |
| Resale value guarantee liability—beginning of period | 2,389,927 | 1,430,573 |
| Increase in resale value guarantee | 1,201,660 | 1,267,445 |
| Reclassification from long-term to short-term collateralized borrowing | (257,075) | (116,078) |
| Additional revenue recorded in automotive | (18,781) | (16,543) |



| | | |
|---|-----------|-----------|
| leasing revenue as a result of early cancellation of resale value guarantee | | |
| Release of resale value guarantee resulting from return of vehicle under trade-in program and exercises | (80,599) | (62,919) |
| Release of resale value guarantee resulting from expiration of resale value guarantee | (138,577) | (112,551) |
| Resale value guarantee liability—end of period | 3,096,555 | 2,389,927 |



Tesla Income Statement: First Quarter 2018

| Revenues | 2018/Q1 | 2017 |
|---|----------------|-------------|
| Automotive sales | 2,561,881 | 2,035,060 |
| Automotive leasing | 173,436 | 254,54 |
| Total automotive revenues | 2,735,317 | 2,289,600 |
| Energy generation and storage | 410,022 | 213,944 |
| Services and other | 263,412 | 192,726 |
| Total revenues | 3,408,751 | 2,696,270 |
| Cost of revenues | | |
| Automotive sales | 2,091,397 | 1,496,649 |
| Automotive leasing | 104,496 | 166,026 |
| Total automotive cost of revenues | 2,195,893 | 1,662,675 |
| Energy generation and storage | 375,363 | 151,773 |
| Services and other | 380,969 | 213,876 |
| Total cost of revenues | 2,952,225 | 2,028,324 |
| Gross profit | 456,526 | 667,946 |
| Operating expenses | | |
| Research and development | 367,096 | 322,04 |
| Selling, general and administrative | 686,404 | 603,455 |
| Total operating expenses | 1,053,500 | 925,495 |
| Loss from operations | (596,974) | (257,549) |
| Interest income | 5,214 | 3,09 |
| Interest expense | (149,546) | (99,346) |
| Other expense, net | (37,716) | (18,098) |
| Loss before income taxes | (779,022) | (371,903) |
| Provision for income taxes | 5,605 | 25,278 |
| Net loss | (784,627) | (397,181) |
| Net loss attributable to noncontrolling interests and redeemable noncontrolling interests in subsidiaries | (75,076) | (66,904) |
| Net loss attributable to common stockholders | (709,551) | (330,277) |
| Net loss per share of common stock attributable to common stockholders | | |
| Basic | (4.19) | (2.04) |
| Diluted | (4.19) | (2.04) |
| Weighted average shares used in computing net loss per share of common stock | | |
| Basic | 169,146 | 162,129 |
| Diluted | 169,146 | 162,129 |



Appendice B: Claculations

| In USD Millions | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|-----------|------------|------------|------------|------------|------------|
| Revenue | 11.759,0 | 16.947,6 | 25.273,1 | 38.952,2 | 60.814,0 | 96.770,2 |
| % Growth | 52% | 37% | 40% | 43% | 45% | 46% |
| Cost of revenue | - 9.536,0 | - 10.168,6 | - 15.163,9 | - 23.371,3 | - 36.488,4 | - 58.062,1 |
| % Revenues | 81% | 60% | 60% | 60% | 60% | 60% |
| Gross profit | 2.222,0 | 6.779,1 | 10.109,3 | 15.580,9 | 24.325,6 | 38.708,1 |
| Research and development | -1.378,0 | - 1.521,9 | - 3.533,1 | - 5.445,4 | - 8.501,7 | - 13.528,3 |
| Sales | - 2.476,0 | - 2.711,6 | - 4.043,7 | - 6.232,3 | - 9.730,2 | - 15.483,2 |
| Total operating expenses | - 3.854,0 | - 4.233,5 | - 7.576,8 | - 11.677,8 | - 18.231,9 | - 29.011,5 |
| EBIT | -1.632,0 | 2.545,6 | 2.532,4 | 3.903,1 | 6.093,7 | 9.696,6 |
| % Revenues | -13,9% | 15,0% | 10,0% | 10,0% | 10,0% | 10,0% |
| Interest Expense | -471,0 | -548,6 | -818,1 | -1.260,9 | -1.968,5 | -3.132,4 |
| Other income (expense) | -106,0 | -3,5 | -5,2 | -8,0 | -12,5 | -19,8 |
| EBT | -2.209,0 | 1.993,7 | 1.709,3 | 2.634,3 | 4.112,8 | 6.544,4 |
| Provision for income taxes | -32,0 | -48,2 | -71,9 | -110,8 | -172,9 | -275,2 |
| Net income from continuing operations | -2.241,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |
| Net income | -1.961,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |
| % Revenues | -17% | 11% | 6% | 6% | 6% | 6% |
| Net income available to common shareholders | -1.961,0 | 1.945,5 | 1.637,4 | 2.523,6 | 3.939,9 | 6.269,3 |

| In USD Millions | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| EBIT (1-t) | - 1.632,0 | 2.545,6 | 2.532,4 | 3.903,1 | 6.093,7 | 9.696,6 |
| Depreciation | 1.636,0 | 1.708,9 | 2.548,4 | 3.927,7 | 6.132,0 | 9.757,6 |
| Capital Expenditure | - 4.045,0 | - 5.609,1 | - 7.448,0 | - 6.936,4 | - 8.429,6 | - 9.762,7 |
| Working Capital Needs | 317,0 | -472,2 | -672,5 | -1.057,3 | -1.654,5 | -2.611,4 |
| CF | -3.724,9 | -1.826,9 | -3.039,7 | -163,0 | 2.141,6 | 7.080,1 |
| TV | - | - | - | - | - | 131.224,2 |
| FCF | - 3.724,9 | - 1.826,9 | - 3.039,7 | - 163,0 | 2.141,6 | 138.304,3 |

| | |
|----------|-------------|
| NPV | 93.344,4 |
| # Shares | 156.100.000 |
| Price | 553,47 |

| | |
|------|------|
| kd | 5,5% |
| ke | 8,2% |
| WACC | 7,5% |