



Department of Economics & Business

Chair of Corporate Finance

HYPE FACTOR, AND DCF EVALUATION: TESLA Inc. CASE
STUDY

SUPERVISOR
Prof. Ugo Zannini

Leonardo Nobile
Serial n. 215351

ACADEMIC YEAR 2018/2019

1	STORY STOCKS AND THE “HYPER FACTOR”	4
	INTRODUCTION.....	4
1.1	.....	4
1.2	STORY STOCKS	4
	WHAT ARE THE MAIN TYPES OF STORY STOCKS?	5
1.3	.....	5
	TESLA. - TESLA, Inc.	6
1.4	.....	6
	BUSINESS OVERVIEW	8
1.5	.....	8
	WHY IS TESLA AN OVERVALUED COMPANY?.....	9
1.6	.....	9
	TESLA PEG RATIO	11
1.7	.....	11
2	TESLA ANALYSIS	12
	INTRODUCTION.....	12
2.1	.....	12
	QUALITATIVE AND QUANTITATIVE ANALYSIS	13
2.2	.....	13
	DCF	14
2.3	.....	14
	RISK RELATED TO TESLA’S BUSINESS	16
2.4	.....	16
	ANALYSIS BASED ON RATIOS	21
2.5	.....	21
3	BRAND REPUTATION	23
	SWOT ANALYSIS	23
3.1	.....	23
	WHAT REALLY DRIVES TESLA STOCK PRICE?	27
3.2	.....	27
	THE ESSENTIALITY OF BRAND IMAGE	27
3.2.1	.....	27
	BRAND IMAGE AND COMPETITORS.....	28
3.2.2	.....	28
	CONCLUSION	29
3.3	.....	29
	THE NUMERICAL OUTPUT	29

3.3.1	29
4 References	31
5 Sitography	32
.....	APPENDIX: DCF
EVALUATION	33
6	33
DCF TABLE	33
6.1	33

1 STORY STOCKS AND THE “HYPER FACTOR”

1.1 INTRODUCTION

Nowadays the market presents a multitude of companies reflecting their value through their name, brand. It is probably due to the high level of competition, so that most competitors have to push their brand name in order to get more market shares than the other.

In this dissertation I'm going to explain why some stock, so called “story stocks”, are overvalued, and what make them to be so hyped.

Through three chapters, I'll analyse the fundamentals of Tesla (which is retained to be one of the most over-hyped stock of all time), starting from the description of story stocks, going through examples of them, or even how to spot them.

We are going to get a justification for what is this company's stock price, looking at its financial statement and balance sheet, the main ratios in order to evaluate the business, and especially its future. We have to take a look at the actual competitors and related market too, the sector of electric car, government regulations over them, and how knowing all these facts Tesla is the leader of this field.

Tesla Incorporation (Inc.) is a manufacturer of electric cars, renewable energy and storage systems, with a prominent presence in the US, Europe, Asia and Canada. The shift incurred by the company towards the importance of environment-friendly responsibility, has helped the firm to expands itself.

Relying on the fact that now consumers can avoid fuelling and can even charge their car at home, Tesla makes of itself a real trouble for its competitors, having gained potential market shares. Why the company comes up with declaring losses every year? This is a question that finds the answer in this dissertation trough a financial statement analysis and checking the most useful ratios in order to get the real meaning of the awkward growth of Tesla.

1.2 STORY STOCKS

What is a story stock? “A story stock is, by definition, a company whose value is determined by its future perspectives and favorable press coverage rather than by its assets and income”.

Sometimes the fundamental value of a stock is thought to be the same thing as the market value, but this is not true since they differ in the way they are calculated.

The market value, also known as the fair value, is the price at which an asset could be sold, or traded in a competitive scenario, while the fundamental value, also known as intrinsic value, is defined as the sum of discounted cash flows, carried out taking into consideration any reasonable factor.

The point with this kind of stocks is that usually the intrinsic value is not reflected in what is the price of the share, since it may be much higher even if the fundamentals are conflicting.

Investors find really hard sometimes to evaluate this overpriced companies, and indeed they use to be biased in their evaluation, because the factors generating all these troubles are not easy to spot. Story stocks' price reflects mainly their future that diverges from a linear growth, in fact even a small change can affect company's horizon value and its cash flows, as a possible expansion of the business may imply a very high earnings growth rate g.

The most famous biased price is the Tesla's one. According to its level, even the less influential behaviour of its CEO Elon Musk could immediately let drop or raise the values of its shares. Concerning what we have just said, we'll analyse all the things influencing the evaluation of the company on the market.

Depending on the phase of the economic cycle occurring the number of story stocks may change, finding fertility during economic expansion since the investors' enthusiasms and positive sentiments.

On the other hand, we find rarely their presence when the market become bearish.

This kind of stocks depend on which sector is hyped in that particular years, in fact the most influential fact is where the investors decide to put their money, leading to overvalued market shares for that specific field.

1.3 WHAT ARE THE MAIN TYPES OF STORY STOCKS?

It is important to define many categories of these socks, since it helps us to place the companies into a matrix where we can group all them. The model we are going to describe is the Boston Consulting Group BCG, based on market growth and relative market share (market growth is resource-consuming while market share is resource). This graph, as shown in Figure 1, is useful for designing even the business portfolio.

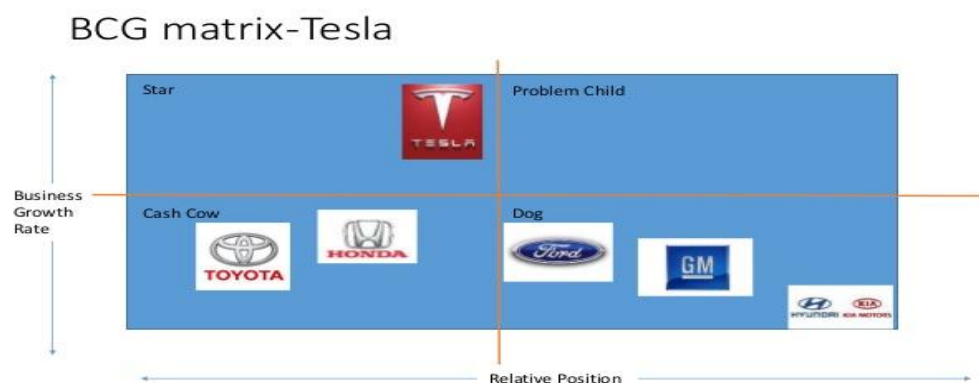
There are six categories of story stocks, which are: the leading company, the underdog, the smart company, the disruptor, the low cost company, and the responsible company.

The first is the one having the highest market share and may be defined as the top player in its sector. The second one has high potential and offers better products or lower prices, mainly working on its brand reputation. The smart companies are those having found customers' unmet needs. The fifth is the one that is actually trying to revolutionise the business. The low cost companies are those which put usually low prices due to lower cost deriving from good efficiencies, economies of scale period, automatization or improvements. The last category is the one concerning corporate social responsibility, that is a very important thing today.

Tesla incorporates most of these types of story stocks, and places itself into the star corner, having high market growth rate and good market shares, representing a company with rapid growth and expansion. This graph shows the power of Tesla picturing it as a promising company.

Figure 1

The graph shows the positioning map relative to Tesla and other car manufacturers companies. Source: slideshare.net.



1.4 TSLA. - TESLA, Inc.

“Tesla, Inc., formerly (2003–17) Tesla Motors, American electric-automobile manufacturer. It was founded in 2003 by American entrepreneurs Martin Eberhard and Marc Tarpenning and was named after Serbian American inventor Nikola Tesla.”

“The company specializes in Electric car manufacturing and, through its Solar City subsidiary, solar panel manufacturing. It operates multiple production and assembly plants, notably Gigafactory 1 near Reno, Nevada, and its main vehicle manufacturing facility at Tesla Factory in Fremont, California. As of June 2018, Tesla sells the Model S, Model X and Model 3

vehicles, Powerwall and Powerpack batteries, solar panels, solar roof tiles, and some related products.”

Tesla is considered a leading player in the global electric vehicles market, and nowadays is recognized as one of most hyped globally car brand. Most of its success is for sure related to its self-made image of automotive producer, although this is not its only market, since this company has also shown to have some strong points of force even in other projects as solar panels industry and storage of energy too.

Initially this company was aimed to produce an electric sport car, but later on its purposes became wider. It receives some sources from an investor in particular, that is actually its CEO, Elon Musk. At first he was a serie A investor, but after some years with the introduction of other shareholders as Google co-founders Larry Page and Sergey Brin, he became a serie B stockholder (other important investors are: former eBay President [Jeff Skoll](#), Hyatt heir [Nick Pritzker](#) and added the VC firms [Draper Fisher Jurvetson](#), Capricorn Management and The Bay Area Equity Fund managed by [JPMorgan Chase](#)).

In 2008 Tesla released its first electric car, the Tesla Roadster, and from then it has been focusing on the production of other 3 models as model X, model S, and model 3.

Actually this firm is about to launch other vehicles as model Y, trucks and pickups.

It is involved in the construction of 3 gigafactories allowing itself not to rely mainly on retailers. It had some financial troubles in the past, lying on the edge of the bankruptcy more than one time, since its management is the real trouble. This company is actually aiming to reach some really complicated objectives, and it is known to burn cash heavily in order to get them.

The most of Tesla is about its strategy that permits to demonstrate they are right about their vision to accelerate the world's transition to sustainable transport. It has somehow revolutionised the automobile industry, proving that all-electric car can perform as well as gas powered vehicles.

Tesla is always about to challenge itself in this way by being remarkable, and making themselves a great publicity. Due to this widespread advertisement and generally positive reviews of vehicles, it has enjoyed increased demand during the years.

For the other fields in which this company is operating, it is gaining some revenues from related services, including access to Supercharging network and software updates on the vehicles, or from Tesla Energy (battery power energy solution division), and sale of regulatory credits from energy tax credit.

Tesla went public in 2010 raising 226 million dollars in equity.

1.5 BUSINESS OVERVIEW

As already mentioned upon, Tesla designs, develops, manufactures and sell high-performance fully electric vehicles, and energy generation and storage systems. In addition to this it also installs and maintains shuck energy systems and sells solar electricity.

Defined as the “first vertically integrated” sustainable energy company, the company established and continues to grow a global network of stores, and services centres to speed up the adoption of their products.

Tesla currently produces the Model S sedan, the Model X SUV, and the Model 3 sedan, but they are also bringing up additional electric vehicles to market in the future such as Model Y, Tesla Semi Truck, a pickup truck and a new version of Tesla Roadster. Other than the design, well developed engineering, and performances Tesla offers to its customers the possibility to enjoy several benefits as:

1. *Long Range and Recharging Flexibility* (Tesla products differ substantially respect to the others offered in the market according to the range and recharging flexibility)
2. *High-Performance without compromised design or functionality*
3. *Energy Efficiency and Cost of Ownership* (the cost to charge Tesla’s vehicles is less compared to fuelling combustion ones)

One of the company’s point of force is the great network it is developing in terms of Supercharges and Destination Charges, widespread in North America, Asia and Europe in order to provide fast charging.

In 2016 Tesla started to make its last generation energy storage products, Powerwall 2 and Powerpack 2.the first is a home battery with an integrated inverter. The second one is an infinitely scalable energy storage system for commercial, industrial utility.

It is also liable of selling solar energy system to residential and commercial customers as also renewable energy to residential and commercial customers at prices below utility rates. Since 2006 the firm has installed solar energy for hundreds of thousands of customers, developing an image around itself of a company willing to reach its main objective to help people to change towards renewable energy.

Tesla also manufactures its vehicles in Fremont, California, Lathrop, and Tilburg, Netherlands and at its Gigafactory 1. For what regards production of energy storage, it is done at its Gigafactory 1 and Tesla solar products at U.S facilities in Buffalo, New York (Gigafactory 2). In 2019 the company starts the construction of Gigafactory Shanghai, where the production of the Model 3's particular trims will be carried out.

1.6 WHY IS TESLA AN OVERVALUED COMPANY?

Usually investors tend to spot over-hyped stocks so that they can take advantage doing that and get a gain from his fact. The elements helping us to spot overvalued stocks are not easy nor difficult to be depicted.

Initially we have to describe what are price to earnings ratio and growth rates.

As the figure 2 shows, “the price-earnings ratio (P/E ratio) is the ratio for valuing a company that measures its current share price relative to its per-share earnings (EPS).”

P/E ratio represents an important extent into measuring company's value; according to the investors it shows the possibility to know, value if they are better off buying a stock if it has a lower ratio respect to one with higher ratio. In efficient market, high P/E shows greater expected future gains due to perceived growth opportunities. Low ratio represents a poor future instead.

To sum it up, this ratio tells us about what the market is willing to pay today for a stock, based on its past and future earnings.

As already dealt with earlier, through this ratio we can evaluate if a stock is overvalued or even undervalued, comparing it to the sector or industry group. As an economic expansion occurs, inflation has to rise, but this would lead to an increase of interest rates by FED to slow the economy. This environment is a fertile field for some industries that could do great in this moment (as banks).

On the other hand, we have also to consider the cycle of recession where some other industries might benefit; investors should look to which industry has advantages in terms of earning.

To summarize it, P/E depends also on the economic cycle actually present.

What we have not mentioned yet, is that this ratio has some limitations. We know we can derive the price of a stock thanks to it, in not a difficult way, but what we do not know and calculate so easily is the impact on earnings, leading to some limits. The growth of earnings, for instance, is not into the ratio calculation, and due to this it has to be compared with P/E.

Another boundary is determined by the opinions of analysts, sometime way too much optimistic or pessimistic.

Usually this ratio is based on historical earnings, but investors relying on them are not so well informed about the future ones. For what concerns the growth rate g we are referring to it as “Earnings growth the annual rate of growth of earnings from investments.”

Usually P/E and g are compared in order to get if the stock is overvalued. Also known as PEG ratio, this comparison is determined, as metric of evaluation, for the trade-off between the EPS (earnings per share) generated, the price of the stock, and the company’s expected growth.

$$PEG\ RATIO = \frac{\frac{P}{E}}{EARNINGS\ GROWTH\ RATE}$$

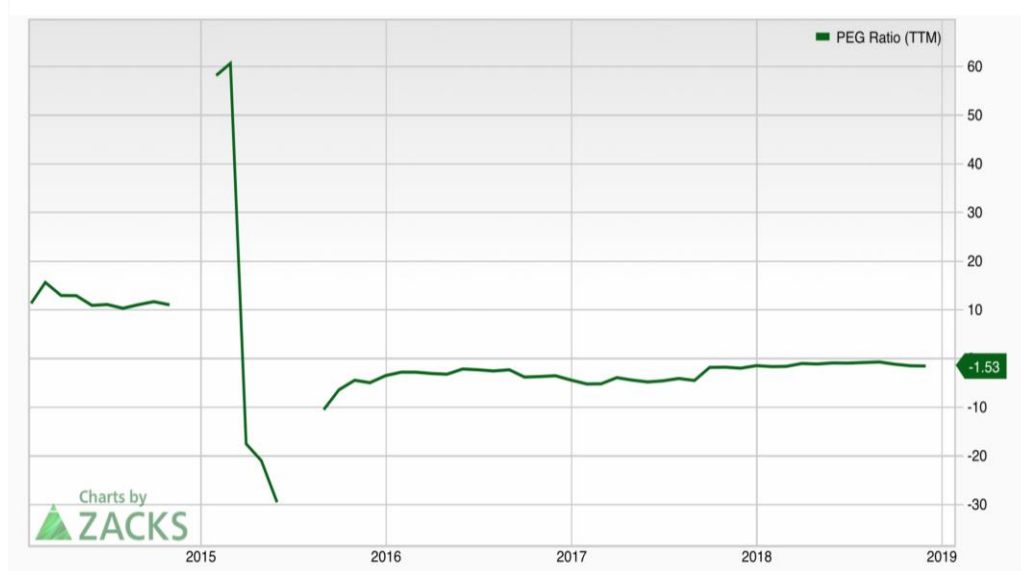
As we have seen in P/E ratio explanation yet, also this new ratio allows you to derive a stock’s value, but it gives you the opportunity to compare it to the company’s growth rate too, reaching a more performing result at the end of the evaluation. The g part of the PEG ratio helps you not to confuse what might be seen as an overvalued stock only going through a P/E method of assessment, since tanks to this help, it can tell us a very different story.

Figure 2

The graph shows the PEG Ratio of Tesla, illustrating years on the y-axis and level of the Ratio on the x-axis.

It demonstrates how this company has been having a negative PEG Ratio starting from 2015 until now.

Source: <https://www.zacks.com/>



1.7 TESLA PEG RATIO

Usually, a PEG greater than 1, is not considered as good since it is seen overvalued to its growth rate, while a value of 1 or less is valued great (at par or undervalued to its growth rate). This ratio tells you what you're paying for each unit of earnings. Tesla has mainly had negative PEG ratio during almost its all lifetime (as we may see thanks to figure 2). This may reflect the fact of negative earnings by this company that is actually burning cash at astonishing rhythm.

What does it mean? How can this company stocks' price be so high with such a negative ratio? Just looking at the graph we realize Elon Musk owns an overvalued company with an over-hyper stock price.

This incoherence is somehow justified by the process of a firm spending all it got now, and let it grow in the future, as we note for what concerns pharmaceutical companies, having negative ratios in the first times of their lives, or even the technological ones. Investing billions and burning cash so bad may report a loss before turning into a profit. This is what is happening with Tesla, and the price is held up due to its bright-considered future. Usually negative PEGs are followed by bad implications, but they are not always as you think, since the reasons behind the ratio breaks into two possibilities:

1 - P/E ratio is negative: negative earnings are very risky, this would mean to bet on a comeback in order to get the gains, but it all takes into consideration and enormous risk.

2 - negative g: this implication allows us to have a negative PEG, but it's the worst case since it drive us to know the company has a negative trend, with no so many hopes for the future.

Tesla is of course in the first "category", because of its enormous possibility of growth, but it is still having negative earnings. The current share price is above its future cash flow value. In conclusion we can tell TESLA is actually an overvalued company due to its balance sheet, since its current price is always above on what it should really be.

2 TESLA ANALYSIS

2.1 INTRODUCTION

Through this chapter we are going to check in a more detailed way what's really TESLA about. Taking some data from its balance sheet and income statement of the last years, we now evaluate this company, and try to get to know its effective value.

Beginning from a quantitative and qualitative brief analysis, the main purpose is to assess the percentages used in the upcoming DCF Evaluation. Usually the analysts find the intrinsic value of a firm thanks to financial data and other method as the discounted cash flow.

Investors use this kind of calculation relying on what are the analyst's estimates, and other do not trust them, choosing to get some forests by their own, anyway this analysts is widely used by investment banks and finance Professionals. It is not so easy to calculate due to the estimates that have to be carried out based on so much elements to be taken into consideration, (in-fact the dirty part of this work is brought out by the analysts), and usually investors take data as given. As all method of analysis it has some pros and cons.

- Pros:

- 1 It relies on free cash flows, which are considered to be reliable measure of estimation.
- 2 DFC is not influenced by non-economic factors.
- 3 Really useful if the estimates on future forecasts are very reliable.
- 4 It is considered one of closest estimate of stock's intrinsic value.

- Cons:

- 1 DFC's very sensitive to the assumptions made by the analysts.
- 2 If the future estimates are not so easy to calculate, DFC is not reliable sometimes.
- 3 Is the most intensive in time occurring process respect to the other methods.
- 4 It varies with the company expectations.

2.2 QUALITATIVE AND QUANTITATIVE ANALYSIS

The heaviest part into analysing a company is to get some numbers from what are the circumstances of the firm itself. Knowing all about its income statement, balance sheet and reports and derive, from them, all the percentages we need to forecast the next years.

Tesla's growth is certainly related to its achievements and even what it still has to reach.

- Qualitative factors about costs: usually as the competition increases, all the firms tend to have a so called cost leadership strategy; it helps companies to enlarge efficiencies while reducing production costs respect to the other competitors in the market. Tesla is not one of them, and I personally believe it's a great point in favour of the underlined company, since it's a sign of quality bettering brand's name.
- Quantitative factors about costs: as everyone already know Elon Musk always has net loss in term of revenue since and every year he enjoys higher costs, since 2008 up to now.
- Supply chain management (qualitative): Tesla deals with a lot of supplier; it may seem a good thing if it was not for all the delays the firm is actually incurring to. The fact of relying on suppliers, may result into delayed shipment or unmet specifications that cause higher costs.
- Supply chain management (quantitative): issues from supplier also affect production of vehicles; in-fact all these problems reduced the production of model x of 50%. This reflects future negative revenue projection and losses if they won't be fixed.
- Infrastructure (qualitative): this company is not only concerning its efforts into making cars, but it's actually pushing other fields as the one of supercharger network or showroom service, in order to offer a greater assistance to customers.

- Infrastructure (quantitative): as the company grows, as the revenues and sale go along too, Tesla will be needed of new space. This all will lead to higher capital expenditure in the future.

Tesla's achievements in the previous year (2018) represent the biggest single annual growth in the history of automotive industry. The company is planning to produce 350000 vehicles a year, reaching its largest scale of production. In addition, the last quarter of 2018 is-estimated to have a production growth of 8%, making 1000 auto per day, and in the first quarter of 2019 is heading to a price reduction of 2000\$ per car.

According to Tesla's forward looking statement, they are also involving a lot of efforts into software development and ramp, model 3 (that is even planned to be partly manufactured in China), autopilot, solar roof, growth in Tesla's store, service centres, body shops, and even 3 gigafactories.

Looking at all these facts we can summarize what we are analysing is a company having a lot of costs for the future years, even though all the losses it has incurred through all the past times, but of course it also permits us to have excellent hopes for the next years, since it seems like this firm is going to increase revenues along with the costs and even better the market shares.

2.3 DCF

The DCF analysis has many steps, and it is, at least initially, focused on the forecasted data. The data are predicted by analysts by taking into account all factors that can influence what's forecasted. We all know it is not a precise science, since due to many sudden elements, the rulers may change over time, especially if what is concerned about lasts many years, increasing so the possibility of mistakes.

Since the errors are directly related to time, all the data given by the analysts, used to get some information about the future of a company in order to evaluate its business, are also checked

by some agencies, composed of other experts using their knowledge to express their consensus over the estimated previously made.

Consensus are defined as “a figure based on the combined estimates of analysts covering a public company.”

“The consensus estimate is the average of all the current estimates made available by brokerage analysts. Consensus estimates are more advantageous because they reduce the risk of any single analyst making an incorrect forecast”.

We aim to calculate the Terminal value which is an important feature in the process of DFC because it represent “Terminal value represents the future value of a company beyond the projection period” and more or less it is considered as the 75% of firm’s total value.

We also use some other kind of ratio different from what we have just described and more reliable than P/E or PEG, indeed they are able to gather more variable into their calculation and

Figure 4

The values represented in this figure shows how a revenue multiple is usually obtained. In this case the table illustrates the revenue multiple of Apple Inc. Source: finbox.io

(x) No. of Shares Outstanding	5,000
Market Capitalization	\$839,268
(+) Total Debt	114,483
(+) Minority Interest & Other Liabilities	0
(+) Preferred Equity	0
(+) Pension	0
(-) Cash & Equivalents	(25,913)
(-) Investments & Other Non-Oper. Assets	(211,187)
1. Enterprise Value	\$716,651
2. LTM Revenue	\$265,595
Revenue Multiple (1 / 2)	2.7x

they are EBITDA and REVENUE multiples.

Figure 4 is an example of how a revenue multiple is obtained, measuring the dollars in enterprise value for each dollar of revenue.

- Example of EBITDA:

“Denbury Resources Inc., a petroleum and natural gas company based in Texas, reported its first-quarter financial performance on June 24, 2016. Denbury Resources had an enterprise value-to-adjusted-EBITA ratio of 5x and a forward enterprise multiple of 13x. Both enterprise multiples were compared to other industry companies with past company multiples. The company's forward enterprise multiple of 13x was more than double the enterprise value from the same period in 2015. Analysts found that the increase was due to an expected decline in the company's EBITDA by 62%”.

- Enterprise Multiple =
(Enterprise Value) 1/EBITDA

- $DCF = \frac{CF}{(1+r)^1} + \frac{CF}{(1+r)^2} + \dots + \frac{CFn}{(1+r)^n}$

2.4 RISK RELATED TO TESLA’S BUSINESS

In order to plug in the inputs inside the DCF model we have to consider all kinds of risks that could come up given its business.

You should take care of all the experiences this company has had in the previous years and what may be the future of Tesla. The main risks related to its industry that this firm faced in the past and may face in the upcoming future are delays, or other complications in the design, manufacture, launch, production, delivery and servicing ramp of new vehicles and other products such as Model 3, Model Y, energy storage system, and solar roof.

Knowing that Tesla presented its plans about future years, showing all the projects (Model Y, the Tesla Semi, pickup truck, Tesla Roadster, solar roof and energy storage) we should expect same delays had on past products in order to do a right evaluation of the DCF.

It cannot be denied that this company has limited experience to date in manufacturing vehicles at these high volumes recently found. As we expect this brand to keep its growing trend, the

forecasted production according to what we expect, tells us Tesla will improve cost-effective manufacturing capabilities, process and supply chains necessary to support high volumes.

The Gigafactory Shanghai will implement these issues, lowering cost-effective manners related to Model 3, which is the Tesla most sold vehicle. For what concerns Model 3, the production plan is based on many key assumptions, which are:

- ❖ Tesla will be able to sustain and expand high volume production of Model 3 at the Tesla Factory without exceeding projected costs and timeline.
- ❖ It will be able to enlarge Gigafactory 1 in time to make big volumes of quality lithium-ion cells to be integrated into battery modules and finished battery and drive unit elements for Model 3.
- ❖ It will be able to build and commerce production at additional facilities.
- ❖ It will be able to manufacture high volumes of Model 3 within specified design tolerances and high quality.
- ❖ To maintain suppliers for necessary components under terms and conditions that are acceptable in order to meet all the commitments over mentioned.
- ❖ To be able to attract, and hire skilled employees to operate its planned high-volumes production, meeting all the circumstances mentioned above.

All these assumptions forecast a bright upcoming future for this company, but we have to consider that they may even not meet all objectives due to many risks factors.

For instance, concurrent with its increasing vehicles production they also need to continue to boost sales and deliveries. Tesla's efforts into its expanding policy towards the Europe and China, makes it more tough for the company as it has limited marketing, selling and delivering experience in that territories. In particular, they are targeting for the first time with Model 3 a mass demographic range of potential customers, in which they have a limited background projecting demand and pricing manners.

Given these risks, we have to mention that Tesla expects, considering all the drawbacks it could have, to grow according its plans.

Tesla's future growth may suffer changes due to the company's addiction upon customers' willingness to adopt electric vehicles and especially in the mass market demographic which the firm is targeting Model 3.

From this point of view, there are many factors influencing Tesla's projects, such as:

- ❖ Perceptions about electric vehicles features, quality, safety and performances.
- ❖ Perception about limited range.
- ❖ Competition, including hybrid vehicles.
- ❖ Volatility in the cost of oil and gasoline.
- ❖ Government regulations and economic incentives.
- ❖ Access to charging facilities.

Tesla is also dependent on its suppliers, the majority of which are single source suppliers, and of course if one of them has the inability to deliver necessary components according to a precise schedule, prices, quality and volumes, it could harm the production causing delays and difficulties.

To avoid many of these issues Tesla has developed highly automated production lines in its Gigafactories in order to recover some of the problem that derives from suppliers, some of which have been replaced due to negligently behaviour.

One of the most important partners of this firm is Panasonic, with who Tesla has signed long-term agreements for what concerns manufacturing manners and lithium-ion cells at Gigafactory 1 in Nevada, and PV cells in Gigafactory 2 in Buffalo.

The prospective of this firm is mainly relying on their attitudes to manage the scale of their business, future growth and to adapt to the new conditions both domestically and internationally. Most part of the investors expect Tesla to continue to expand its operations whatever it takes, as the company already faced some serious difficulties. What may drive bad vibes is of course this willingness towards manufacturing capabilities outside the US, getting into a new market in which they have limited experience.

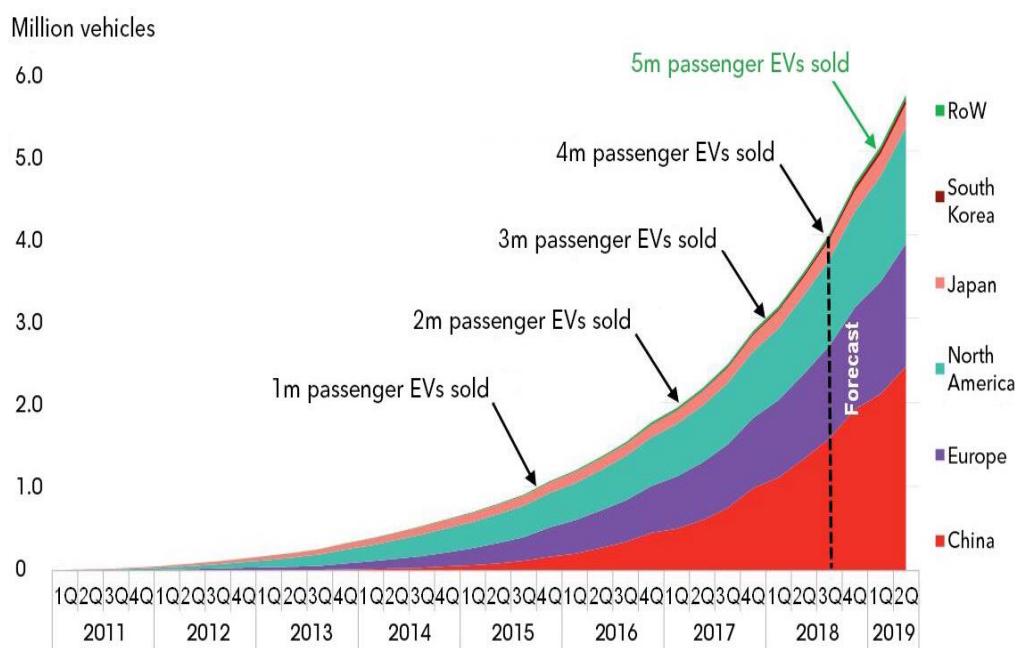
Anyway, given all these risks over mentioned, investors still believe in this company, and that's the main reason that keeps up the stock's price. All the data I decided to insert into DCF table reflect the optimistic point of view Tesla gained, but I also considered to increase the capital expenditure for the next years, especially 2019. In fact, I believe that this firm has been optimizing its production process and also the choices of its suppliers in order to be able to manage the forecasted growth, but since the estimates carried out by Tesla for the 2019 capex seem to be too much optimistic, I boosted the numbers until 20% of capex rate.

The worldwide automotive markets for alternative fuel vehicles is expected to become more competitive as time passes by. Indeed, a growing numbers of companies have announced plans towards full transition from fuel to electric cars.

Getting more into details, Model 3 was the bestselling premium vehicle in the US in 2018. As Tesla proposes long-range, mid-range and performance variants of Model 3, it's easy to believe that we will see increased demand with the entrance of a new variant, such the version with a price of \$35,000. Leaving all the possible drawbacks behind, it cannot be denied Tesla has a competitive advantage respect the other competitors according to battery and powertrain technology, as its vehicles' EPA-rated range per kWh is expected to be superior to that of the other electric cars. In addition to this Tesla is also working on the increase of the value proposition and affordability of its offerings to customers, helping them with financing arrangements over time. For example they are trying to introduce leasing option for Model 3, and this would boost even more the production of this model that has already incurred into a big ramp during 2018.

For what concerns Model 3, Tesla's objective is to be able to produce 10,000 vehicles per week, and an annualized output of 500,000 cars between the fourth quarter of 2019 and the second

Figure 3
 The chart shows how the millions vehicles of electric cars sold grows since 2011 until 2019.
 Source: <https://about.bnef.com>



Source: Bloomberg NEF

one of the 2020. The inputs plugged into the model are drawn from analysts estimates mainly, but I decided to change some numbers because of a more personal estimation.

As it was forecasted initially for 2018 revenues, they have had an increase of 82% approximately, paying about the same expected rate. The statistics were due to the boom in the sales of model 3, in fact it was the most hyped item of Tesla in 2018. Although the most part of the revenues was because of the auto sales, also the solar and energy stage contributed, obtaining the second place.

In 2019 the company will have some difficulties in recreate the same numbers, since it might sound a little awkward and unrealistic if Tesla does what it has been already able to get in 2018. During 2019, all the items proposed on the market will have a greater impact as they will be already familiar with the public.

Estimating a revenues forecast of 34% is, according to me, a reasonable solution, and it's obviously a great margin. We don't have to forget that Tesla is not a grown up company, it is still in a development phase, growing year by year.

As Figure 3 shows , the electric car market can only grow. Since 1996, up to now, electric car companies increased the production of total-electric vehicles. The annual global sales has been going along with the global plug-in sales, and every country is improving the services for electric car drivers as Figure 3 illustrates. What we can firmly asses is the idea of traveling with non-gas vehicles even for long distances. As the governments around the world, also, promote the convention to electric, there will be more space for all the companies making these kind of car. Tesla is already having the biggest percentage of this market , and it is actually maintaining its position and enlarging its proportion so to take advantages in the future from its Growth. That's why the forecasts on revenues can only be positive as time passes by.

After the 2018 increase in the rate of revenues, in 2019 too we expect a less rapid growth of the company. Of course the boost we incurred into the previous year was mainly due to automotive sales, but for what regards the solar and energy projects, during this year they are forecasted to be the one liable for what concerns the increase in numbers. Making an estimate on what could be the real quantity of auto sold in 2019, and multiplying them for the average price of the models, we get a result, (that respects the 400000 sales provided per year), through which only 12 percent of the growth is due by vehicles, and the rest thanks to other plans.

2020 is the big year in which they will drop the Roadster model 2. Together with model X, model S, and model 3, the second version of the already released sport car, will keep up the statistics for this year. Of course we don't expect to sell as many roadster as the other model

since the retail price is above 200000\$, but because of all the new features introduced by this new model (as the much higher distance likely to cover or the autopilot), it sounds to go sold-out.

Ore the years Tesla will confirm its position in the market, and I personally am hypothesising, that in 2020 it has already strongest position in this market, keeping to get growths.

For the other years 2021, 2022, Tesla has planned to produce and to drop some new models, not the usual family or sport cars, but trucks or pickups.

This is a possibility to strengthen its dominant position. These new kind of vehicles are supposed to be lunched on the market in 2021 so that the increase in revenue is a little greater than 2022, even if is reasonable to believe both years have the “usual” annual positive margin. The capex rate I decided to choose is 20%. I make this hypothetical rate, taking some suggestions from analysts and also looking back at the numbers in the previous years. In 2017 Tesla capex was about 29% of the revenues, and on average in the 5 years before it's as a capital expenditure of approximately 27%. On the other hand I found (from finbox.io that is actually drawing is data from Zacks investment research) the analysts forecast an average of 17%rate. In their forward-looking statement, they still show many projects and ideas to be accomplished. Elon Musk is supposed to spend a lot of resource in building the 3 gigafactories already announced, and even if there could be the support of some partnerships, the capital expenditure will be pretty high.

I indeed provide the capex of 20% as an approximation of the men between the data I was able to gather, keeping in mind that Tesla won't go out of cash forever, and it will have some positive free cash flow and EPS.

2.5 ANALYSIS BASED ON RATIOS

Onto comparing the fundamental ratios of this company, I decided to get a comparison between 2015, 2016 and 2017 ratios.

Tesla Inventory Turnover ratio shows an increase in the efficiency of turning inventory into sales with an improvement of 1.18 in 2017 respect to the 2016 and of 1.602 compared to 2015. On the other hand, we find an increase in inventory by 196 USD respect to Dec 2016 in Dec 2017.

Another important kind of ration is the Asset Turnover Ratio that has shown a huge improvement as we compare 2016 to 2017. In addition to this the big investments were made in Plant and Equipment, respectively a 64% increase in contrast to Dec 2016 in Dec 2017.

Receivable Turnover Ratio, as the table 2 illustrates, had a continual increase, indicating extended credit terms to customers in the collection of debt from the market.

The cash coverage ratio shows if the company is able to pay for borrowers' interests, and it has always to be greater than 1:1. 2016 is the only year Tesla had this ratio of 2.17. As for the Interest Coverage Ratio, this firm's earnings before interest and tax has been keeping negative for the past 3 years, putting the company at constant risk of bankruptcy.

The Current Ratio dropped by 0.2182 showing a reduction in. Current assets and Tesla's ability to pay short term and long term obligations. As for the fact of ability to measure the ability of paying its current liabilities when they come due with only quick assets, the quick ratio in 2017 has declined but 0.158 against 2016, leading to a deterioration of the company's liquidity position. The Debt Ratio according to long terms debt to total assets was in the same range for the past 3 years. It increased by USD 3.55 billion in 2017.

Total Debt to Equity Ratio rose during 2017 as the company had a simultaneous increase in long term debt and a reduction in equity due to the loss of 4.974 billion.

Gross Profit Margin Ratio lowered significantly in 2017 by 4% respect to 2016 and 2015, indicating an increase in operating costs and selling price too.

What has been negative for the past 3 years is also the Return on Asset Ratio, as the company faced net losses in those years. The same trend has been followed by the Return on Equity Ratio, in fact in 2017 for every dollar invested in the company the return was negative at -0.286 dollar.

Tesla's Net Profit Margin Ratio goes along with the previous two mentioned.

The Net Loss Margin percentage rose by 8% in 2017 compared to 2016.

For what concerns Cash return to Revenue it is positive since the firm maintained closing cash and bank balances all along.

What may disappoint the investors are the Cash return to Asset and Cash return to Equity, which show that Tesla has been making losses without generating cash from operating activities, even if in 2017 its position improved by USD464 million against 2015 statistic.

3 BRAND REPUTATION

3.1 SWOT ANALYSIS

“SWOT analysis (or SWOT matrix) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning. It is intended to specify the objectives of the business venture or project and identify the internal and external factors that are favourable and unfavourable to achieving those objectives. Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. SWOT has been described as the tried-and-true tool of strategic analysis”.

Electric car industry saw an improvement in competition during the last years. This circumstance could of course harm the position of Tesla in this market where the company is actually the leader. Anyway, the sole focus on electric car technology and house engineering helps it to maintain its leadership position.

STRENGTH Strong design and vehicles engineering capabilities Revenue growth Innovation	WEAKNESS Debts Lawsuits Deal with SEC
OPPORTUNITY Demand expansion Launch of new products	THREAT Increase in competition Seasonality of business Regulatory framework

STRENGTH

Strong design and vehicles engineering capabilities

Not only given by its strong design and the development of the aesthetics manners of its cars, but the company offers ranges that are almost double of the ones offered by its competitors. In-

house proprietary on-board charging system it's another relevant feature Tesla vehicle have, permitting recharging from almost any electric car outlet.

Tesla's car technology permits to its customers to reduce anxiety over range thanks to the combination of its elements, and also to alleviate the need for expensive large-scale charging infrastructure.

Revenue growth

One Tesla's point of force is the increase it faced in the revenue performance in the last years. For instance, the company reported a growth of 68% from 2016 to 2017.

This great improvement was due to mainly the boosted performance of the Automotive, Service and Other, and Energy Generation and Storage segments. Used vehicles sales increased, as result of increased automotive sales and expansion of trade-in program.

Innovation

The continuous innovation capabilities of this company keep high its performance and sales, since its development and research sector focus on the improvement of the features of the new products and the existing ones.

As already mentioned above Tesla's development and research concentrates on the improvements primarily of its facilities according to manufacturing processes, self-driving technology, innovative elements for what regards all the vehicles, Powertrain engineering, and energy storage, that help the company to gain and maintain customers.

WEAKNESS

Debts

High rate of debts remains the most influential uncertainty investors find regarding Tesla.

At the end of the financial year of 2017 the company had a total long term debt of US dollar of 9418.4 million compared to the 5978.3 of 2016. Its long term debt increase of 57.5% which results to be a relative factor analysing the company's weaknesses. The company also had an increase in the interest expense of about 300 million dollars comparing 2016 to 2017. This shows us that Tesla will face the same growth of this factor in the future which of course will influence profitability.

These elements had some consequences in the D/E ratio which reached 2.4 in 2017, recording higher D/E ratio respect its major competitor, Bayerische Motoren Werke AG (1.0).

Lawsuits

Tesla had some problems according to some lawsuits it received from companies as Nikola Motor Company, a hydrogen truck start-up company, which supposed to be breached by Tesla for stealing patent in creating electric semi. In April 2018, a family of deceased individual presented a lawsuit against the company's Model X since they were driving this model just cited.

Settlement deal with SEC

The company faced many issues with the US Security and Exchange Commission (SEC). SEC launched a civil investigation against Tesla for manipulating stock prices. In-fact Elon Musk, CEO and Chairman, was under suspect when the company's stock raised by 13% suddenly only due to a tweet had by the CEO himself, according to taking its company private.

The settlement includes resignation of Elon Musk as the Chairman for three years and election of two independent directors, along with a fee of 20 million US dollar to be paid.

OPPORTUNITIES

Launch of new products

Tesla is building up its future since the last models it created made the company gets the fame that it's now enjoying. It cannot be denied the opportunities for the upcoming years derive from the projects the company launches and the volume it wants to deliver on the market.

Launch of new products to drive volume growth is the strategy the firm has to adopt that could help in driving its revenue increase.

Launching and promoting new products help the company in its mission to change people's minds and to guide persons towards electric markets. An example of this could be the partnership stipulated with the state of South Australia to build a virtual power plant to reduce electric bills, leading people to change onto "efficiency". Tesla Roadster is another great car

that could help in the acquisition of new clients as the car has the one of the most powerful electric motors of all time.

Demand expansion

As already said before Tesla is a full electric car manufacturer and since the market of both hybrids especially, and electric car are developing at astonishing rate, this leads to a demand expansion for electric and hybrid vehicles, as the people are always more concerned with reducing the emission of CO₂.

In Addition to this the company faced a boost in popularity in the last years due to both its strange price of the stock, its charismatic CEO, and also thanks to its marketing operations that help it out to expand the demand of its products.

THREAT

Increase in competition

As the markets of electric car grows it cannot be denied that the competitor's presence increases simultaneously. Intense competition could harm the business growth, in an industry already competitive.

Tesla vehicles compete in a field based on traditional segment classification and technology. BMW, Audi, Mercedes, Volkswagen, Volvo and so on, are just a few of all competitors the company has to challenge and they are experienced in the process of making electric cars.

In addition to this the firm does not compete only with other electric cars, but even with vehicles propelled by alternative fuels.

Seasonality of business

The demand in this industry generally declines over the winter season, while sales are mostly higher during the summer. Tesla's profits may suffer from this seasonality as already faced for what concerns Roadster model. The company may even be able to anticipate this increase and decrease in sale but not with an exact nature. Thus, the seasonality of a business may incur into fluctuations in operating costs with significant impact on the overall business performance.

Regulatory framework

Automotive Emissions Control regulations concerns all the automotive manufacturers.

In EU emissions are regulated by EC (European Commission) and the UN ECE (United Nations Economic Commission for Europe). EU member states can give tax incentives to car manufacturers who meet emissions standards earlier than the compliance date.

3.2 WHAT REALLY DRIVES TESLA STOCK PRICE?

Since the popularity of this company increased over the years, critics have always been concerning with Tesla's future and creditworthiness, and sometimes it continues to be a serious problem for this kind of company mainly relying on its reputation. All the attempts to get Tesla in troubles have been dismissed by the CEO Elon Musk, claiming instead he was inciting a revolution in car design.

Demand for new models in 2019 is reported to be even stronger than the one of 2018, so to publicise the company.

On the other side we find the usual issues Tesla has ever had. They are about manufacturing, reliability, a high turnover of board members and length delays in getting new models to market.

However much of this firm is owed to the cultivation of high successful brand image.

3.2.1 THE ESSENTIALITY OF BRAND IMAGE

Before October 2018 Tesla had only twice made a quarterly profit. In addition to this production automation issues and models delays releases, investors didn't change their mind, keeping to think this stock is a short sell one. This usual credence has been going on since some years ago when Tesla was always allowing its negative cash flows. Since last quarter of 2018 Tesla reported an original quarter and managed to pay off a great chunk of debt, so to increase the confidence despite the strong arguments against the Californian Company.

We cannot even deny that actually many of the faults responsible for delays have been fixed, and the forecasts for the company's 2019 look promising.

It is usually associated with the car of tomorrow, and this fact is of course vital in creating the conditions for Tesla to experience great future.

If the long term view on this company had not been so rosy, it would have suffered so many breakdowns like other automotive companies, so not to be able to spend so heavily in developing a cutting-edge technology. As we already mentioned, delays and poor reliability is very bad news for this kind of company always promising to get better creating expectations into buyers' minds. A lot of firms have failed this way, and sometimes innovative ideas, as in this case electric cars, are sometimes built but interest is lost following delays and frustration with breakdowns.

Customer's satisfaction is industry leading, but ranks poorly reliability surveys suggest issues are commonplace.

3.2.2 BRAND IMAGE AND COMPETITORS

Tesla has not inserted itself in an easy market, since the presence of the other automotive firms don't allow to immediately get a great market share.

The first competitor coming to mind is Volkswagen Group. The chief executive of that company reported the aims to spend 44bnEUR on new technologies over the next 5 years. This led us to think Tesla is not the only company burning cash, or at least investing in innovative idea.

Of course all the models presented by Tesla are much more expensive respect the other electric cars proposed by car manufacturer aiming to a market which clients could afford way less than a 30k dollar vehicle.

I firmly believe the future of this new sector will develop in a way Tesla will specialize and focus on big projects like shipment service vehicles, or a luxury car field. The main challenge of this company is not the one of getting mainstream as a model 3 would be whatever Toyota or VW, but focusing on innovations and bigger projects.

3.3 CONCLUSION

As we have analysed any points of view about one of the most hyped public company, we are now drawing conclusions and finally coming out with our vision of Tesla's future.

Once we have stated Tesla is a very uncertain firm, we must underline how sensitive could be the output of our analysis; as the time passes by, additional factors and variables may affect what's the real result of the evaluation of such a volatile stock.

Tesla is actually facing a point of its life where uncertainty is every day present and it should be evaluated on the base of its perspectives rather than its historical results.

3.3.1 *THE NUMERICAL OUTPUT*

Our fundamental analysis concerned about the stock price leads us to an optimistic scenario, which certainly justify the fact of the so called "hyped" company. Relying much on Finbox and Zacks Investment Research, numbers seem to suggest us that this company is going through tough times; indeed what is evident is the fact that Tesla uses only to burn cash, but this is not the only thing people see. Going more deeply onto analysing Elon Musk's company, I decided to plug in some very optimistic data into the fundamental analysis that has been carried out, and even if it appears to be unreliable from some perspectives, the reasons they led me use those data are the same that lead people to keep buying this stock with such a high price.

The numerical output is in a way biased towards the positive trend around the brand. I firmly believe that all the successes Tesla is having derive from its strength; indeed, looking at the objectives and the forecasts of its future, that are quite good, is absurd how a company with such a negative financial statement may have a very considerable part of market shares.

Due to these assumptions I drove an analysis with very high prediction of growth and with a significant capex also assuming economies of scales occurring later in the upcoming years.

Since I assume Tesla valuation is biased, and so it's its stock price, I think this could be only helpful for this part of its life-cycle; in fact, as the company persists to have financial troubles according to cash or all the other issues it actually faces, this hyped position only contributes to boost its price.

What I took on mostly is the possibility that this overvalued trend over Tesla, could end when the company will have a financial stability and will experience a flat growth, having reached

its projected goals. The impact of “stories” and brand reputations around the company leads the overrated price, also due to the fact that story stock as this one are difficult to evaluate through DCF and relative valuation. Of course it cannot be denied that all the statements claimed upon might be taken seriously depending on the kind of investors you are. You could be one of the risk averse section and you won’t believe in a company with such negative data, or you could be one mostly relying on expectations people have and except for the information in the financial statement you could focus more on the brand image and forecasts.

In conclusion, story stocks can be very attractive and dangerous at the same time, but the risk attitude on them drive you towards higher profits and one can demonstrate and exploit all the hype-factors so to discover new opportunities that numbers cannot identify.

4 References

- Airs, N.A., Mom Aric, S.M., Othman, R., & Zain, M.M. (2015). Fraudent financial statement detection using statistical techniques: The case of small medium automotive enterprise. *The Journal of Applied Business Reserch*, 31(4), 1469-1478.
- Bhavani, G.M., & Amponsah, C.T. (2017). M-Score and Z-Score for detection of accounting fraud. *Accountancy Business and the Public Interest*, 68-86.
- Bhavani, G.M., Amponsah, C.T., & Mehta, A. (2018). Forensic accounting education in UAE: An exploratory study with diverse stakeholders. *Accountancy Business and the Public Interest*, 89-105.
- Choate, G.M. (1974). Financial ratio analysis. *Hospital Progress*, 55(1), 49-57.
- Mehta, A., & Bhavani, G. (2017). Application of forensic tools to detect fraud: The case of toshiba. *Journal of Forensic and Investigative Accounting*, 9(1), 692-710.
- Nuhu, M. (2014). Role of ratioanalysis in business decisions: A case study NBC Maiduguri Plant. *Journal of Educational and Social Research*, 4(5), 105-118.
- Ofori, E. (2016). Detecting corporate financial fraud using modified altman Z-Score and beneishM-Score . *The Case of Enron Corp*, 7(4), 59-65.
- Spathis, C.T. (2002). Detecting false financial statements using published data: Some evidence from Greece. *Managerial Auditing Journal*, 17(4), 179-191

5 Sitography

- <https://www.investopedia.com/terms/s/storystock.asp>
- <https://www.britannica.com/topic/Tesla-Motors>
- https://en.m.wikipedia.org/w/index.php?title=Tesla, Inc.&wasRedirected=true#Vehicle_models
- https://www.sec.gov/Archives/edgar/data/1318605/000156459019003165/tsla-10k_20181231.htm#ITEM_1A_RISK_FACTORS
- <https://www.zacks.com/stock/chart/TSLA/fundamental/peg-ratio-ttm>
- <https://www.investopedia.com/terms/p/price-earningsratio.asp>
- https://en.m.wikipedia.org/wiki/Earnings_growth
- https://www.sec.gov/Archives/edgar/data/1318605/000156459019003165/tsla-10k_20181231.htm#ITEM_1A_RISK_FACTORS
- <https://www.slideshare.net/mobile/NateAboussou/tesla-strategy-recommendations-report>
- <https://www.investopedia.com/terms/c/consensusestimate.asp>
- <https://www.zacks.com/stock/chart//price-consensus-eps-surprise-chart>
- <https://www.investopedia.com/terms/e/ev-ebitda.asp>
- <https://about.bnef.com/blog/cumulative-global-ev-sales-hit-4-million/>
- https://en.m.wikipedia.org/wiki/SWOT_analysis
- www.marketline.com

6 APPENDIX: DCF EVALUATION

The following table represents the way we run the DCF of Tesla Motors, Inc., and allow us to see what are the values obtained by considering the influence of some factors and circumstances gained from the market and even some comparisons with other companies so to have a reference putty on which to compare.

6.1 DCF TABLE

The first part of the table shows us the fair value obtained from the DCF calculation according to all the inputs inserted. The summary tells us the average between a range in order to have the balanced inputs described on the left.

In order to create this process, we have to follow many steps of the “Discounted Cash Flow: EBITDA exit Model”. This generic method is widely used. The main steps to take care about are:

- *Step 1:*
 1. Forecast Free Cash Flows
 2. Create a Revenue Forecast
 3. Forecast EBITDA Profit Margin
 4. Forecast Depreciation & Amortization Expenses
 5. Select a Pro Forma Tax Rate
 6. Plan Capital Expenditures
 7. Forecast Net Working Capital Investment
 8. Calculate Free Cash Flow
- Step 2: Select a Discount Rate
- Step 3: Estimate a Terminal Value
- Step 4: Calculate The Equity Waterfall
- Step 5: Comparison of EBITDA multiple

➤ **Summary of the main features used to run the model**

Tesla Motors, Inc.

Fair value obtained from the calculation

\$316.72

5-Year				2/3/201
DCF				9
Model:				
EBITDA				
Exit				
SUMMAR				
Y:				
	Range			Value
	Low	High	Average	
<u>Cost of</u>	9.0%	8.0%	8.5%	
<u>Capital</u>				
<u>Terminal</u>	6.9x	8.9x	7.9x	
<u>EBITDA</u>				
<u>Multiple</u>				
<u>Fair Value</u>			316	
			.72	
<u>Time</u>	5-Yr			
<u>horizon</u>	Period			
<u>Revenue 5Y</u>	32.9%			
<u>CAGR</u>				
<u>EBITDA</u>	155.2%			
<u>5Y CAGR</u>				
<u>5Y Average</u>	15.8%			
<u>EBITDA</u>				
<u>Margin</u>				

5Y Average 2.8%

Unlevered

FCF

Margin

❖ **Step 1**

➤ **Here we start with the inputs projections over the next five years**

Input Projection

<u>Fiscal</u>	<i>Dec-17</i>	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>
<u>Years</u>						
<u>Ending</u>						
Point 2 of the first step						
<u>Revenue</u>	11,759	21,350	28,583	33,177	41,234	48,673
<u>% Growth</u>	68.0%	81.6%	33.9%	16.1%	24.3%	18.0%
Point 3 of the first step						
<u>EBITDA</u>	95	2,258	4,020	5,546	6,900	10,279
<u>% of Revenue</u>	0.8%	10.6%	14.1%	16.7%	16.7%	21.1%

**Input
Projections**

<u>Fiscal</u> <u>Years</u> <u>Ending</u>	<i>Dec-17</i>	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>
Point 6 of the first step						
<u>Capital</u>	3,415	4,270	5,717	6,635	8,247	9,735
<u>Expenditures</u>						
<u>% of</u>	29.0%	20%	20.0%	20.0%	20.0%	20.0%
<u>Revenue</u>						
	Fiscal					YTD
	Years					
	Ending					
<u>Historical</u> <u>Spending</u>	<i>Dec-13</i>	<i>Dec-14</i>	<i>Dec-15</i>	<i>Dec-16</i>	<i>Dec-17</i>	<i>Sep-18</i>
<u>Capital</u>	264	970	1,635	1,281	3,415	1,776
<u>Expenditures</u>						
<u>% of</u>	13.1%	30.3%	40.4%	18.3%	29.0%	
<u>Revenue</u>						
<u>5-Year</u> <u>Average</u>	26.2%					
		Input				
		Projection				
		n				
<u>Fiscal</u> <u>Years</u> <u>Ending</u>	<i>Dec-17</i>	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>
<u>Net</u>	-3,731	-6,774	-9,069	-10,526	-13,083	-
<u>Working</u> <u>Capital</u>						15,443

<u>% of Revenue</u>	-31.7%	-31.7%	-31.7%	-31.7%	-31.7%	-31.7%
<u>NWC Investment</u>	Point 7 of the first step	3,043	2,295	1,457	2,556	2,360
	Fiscal Years Ending					<i>Latest</i>
<u>Historical Spending</u>	<i>Dec-13</i>	<i>Dec-14</i>	<i>Dec-15</i>	<i>Dec-16</i>	<i>Dec-17</i>	<i>Sep-18</i>
<u>Total Current Assets</u>	1,266	3,180	2,782	6,260	6,571	7,920
<u>(-) Cash and Equivalents</u>	(846)	(1,906)	(1,197)	(3,393)	(3,368)	(3,523)
<u>(-) Short Term Investments</u>	(3)	(18)	(23)	(106)	(155)	397
<u>(-) Total Current Liab.</u>	(675)	(2,107)	(2,811)	(5,827)	(7,675)	(9,775)
<u>(+) Current Portion of Debt</u>	8	611	628	1,150	897	2,107
<u>Net Working Capital</u>	(250)	(240)	(621)	(1,916)	(3,731)	(2,874)
<u>% of Revenue</u>	-12.4%	-7.5%	-15.3%	-27.4%	-31.7%	
<u>Average</u>	-18.9%					

<u>NWC</u>	(11)	381	1,295	1,815	(856)
<u>Investment</u>					

Input Projections

<u>Fiscal</u>	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>	
<u>Years</u>						
<u>Ending</u>						
Point 4 of the first step						
<u>Depreciation & Amortization</u>	3,023	4,047	4,697	5,838	6,891	
<u>% of Revenue</u>	14.2%	14.2%	14.2%	14.2%	14.2%	
<i>Fiscal Years Ending</i>					<i>YTD</i>	
<u>Historical Spending</u>	<i>Dec-13</i>	<i>Dec-14</i>	<i>Dec-15</i>	<i>Dec-16</i>	<i>Dec-17</i>	<i>Sep-18</i>
<u>Depreciation & Amortization</u>	121	302	501	1,042	1,727	1,525
<u>% of Revenue</u>	6.0%	9.4%	12.4%	14.9%	14.7%	
<u>Average</u>	11.5%					

Select a Pro **Point 5**
forma Tax **of the**
Rate **first step**

*Fiscal
Years
Ending*

<u>Historicals</u>	<i>Dec-13</i>	<i>Dec-14</i>	<i>Dec-15</i>	<i>Dec-16</i>	<i>Dec-17</i>
<u>Income</u>	(71)	(285)	(876)	(746)	(2,209)
<u>Before</u>					
<u>Taxes</u>					
<u>Income</u>	(3)	(9)	(13)	(27)	(32)
<u>Taxes</u>					
<u>Selected</u>	23.0%				
<u>Tax Rate</u>					
<u>Assumption</u>					

Select a
Discount
Rate Range

	<i>Low</i>	<i>Mid</i>	<i>High</i>
<u>Selected</u>	9.0%	8.5%	8.0%
<u>Discount</u>			
<u>Rate</u>			

<u>Implied</u>	\$267.65	\$316.72	\$367.50
<u>Fair Value</u>			

<u>Select a</u>			
<u>Terminal</u>			
<u>Value</u>			
<u>Range</u>			
	<i>Low</i>	<i>Mid</i>	<i>High</i>
<u>Company</u>	99.8x	99.8x	99.8x
<u>LTM</u>			
<u>EBITDA</u>			
<u>Multiple</u>			
<u>Benchmark</u>	3.0x	6.2x	15.5x
<u>LTM</u>			
<u>EBITDA</u>			
<u>Multiple</u>			
<u>Sector</u>	1.6x	9.6x	698.3x
<u>LTM</u>			
<u>EBITDA</u>			
<u>Multiple</u>			
<u>Selected</u>	10,279	6.9x	7.9x
<u>EBITDA</u>			
<u>Exit</u>			
<u>Multiple</u>			
<u>Terminal</u>	70,930	81,209	91,488
<u>Value</u>			

<u>Implied</u>	\$267.65	\$316.72	\$367.50
<u>Fair Value</u>			

<u>Supporting</u>					
<u>Calculation</u>					
<u>Calculation</u>	<u>Point 8</u>				
<u>of Free</u>	<u>of the</u>				
<u>Cash Flow</u>	<u>first step</u>				
<u>Projected</u>					
<u>Unlevered</u>					
<u>Cash Flow</u>					
	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>
<u>EBITDA</u>	2,258	4,020	5,546	6,900	10,279
<u>D&A</u>	(3,023)	(4,047)	(4,697)	(5,838)	(6,891)
<u>EBIT</u>	(765)	(27)	849	1,062	3,388
<u>Pro forma</u>	0	0	(195)	(244)	(779)
<u>Taxes</u>					
<u>NOPAT</u>	(765)	(27)	653	818	2,609
<u>Capital</u>	(4,270)	(5,717)	(6,635)	(8,247)	(9,735)
<u>Expenditur</u>					
<u>es</u>					
<u>NWC</u>	3,043	2,295	1,457	2,556	2,360
<u>Investment</u>					
<u>(+) D&A</u>	3,023	4,047	4,697	5,838	6,891

<u>Free Cash</u>	1,031	598	173	965	2,126
<u>Flow</u>					
<u>% Growth</u>		-42%	-71%	459%	120%

Discountin

g Periods

	<i>Dec-18</i>	<i>Dec-19</i>	<i>Dec-20</i>	<i>Dec-21</i>	<i>Dec-22</i>
<u>Balance</u>	9/30/201	12/31/20	12/31/2019	12/31/20	12/31/20
<u>Sheet</u>	8	18		20	21

Beginning

Date

<u>Balance</u>	12/31/20	12/31/20	12/31/2020	12/31/20	12/31/20
<u>Sheet End</u>	18	19		21	22

Date

<u>Mid-Year</u>	11/15/20	7/1/2019	7/1/2020	7/1/2021	7/1/2022
<u>Convention</u>	18				

Discount

Periods

<u>Terminal</u>					3.91
------------------------	--	--	--	--	------

Valuation

Date

	2/3/2019				
--	----------	--	--	--	--

Discounting Factors

	<i>Discount</i>	<i>Low</i>	<i>Mid</i>	<i>High</i>
<u>Dec-18</u>	0.22	98.2%	98.2%	98.3%
<u>Dec-19</u>	0.41	96.5%	96.7%	96.9%
<u>Dec-20</u>	1.41	88.5%	89.1%	89.7%
<u>Dec-21</u>	2.41	81.2%	82.1%	83.1%
<u>Dec-22</u>	3.41	74.5%	75.7%	76.9%
<u>Terminal</u>	3.91	71.4%	72.7%	74.0%

➤ **Step 2: selecting a discount rate**

<u>Discount</u>	9.0%	8.5%	8.0%
<u>Rate</u>			

➤ **Step 3: estimate a Terminal Value**

Calculation of Enterprise Value

<i>FCF</i>	<i>Low</i>	<i>Mid</i>	<i>High</i>
------------	------------	------------	-------------

<u>Dec-18</u>	1,031	1,012	1,013	1,014
<u>Dec-19</u>	598	577	578	580
<u>Dec-20</u>	173	153	154	155
<u>Dec-21</u>	965	784	793	802
<u>Dec-22</u>	2,126	1,584	1,609	1,635
<hr/>				
<u>(A) PV of</u>		4,110	4,147	4,185
<u>Discrete</u>				
<u>Cash Flows</u>				
<hr/>				
<u>Selected</u>		6.9x	7.9x	8.9x
<u>EBITDA</u>				
<u>Exit</u>				
<u>Multiple</u>				
<u>Terminal</u>		10,279	10,279	10,279
<u>EBITDA</u>				
<u>Terminal</u>		71.4%	72.7%	74.0%
<u>Discount</u>				
<u>Factor</u>				
<u>(B) PV of</u>		50,635	59,025	67,708
<u>Terminal</u>				
<u>Value</u>				
<u>(A + B)</u>		54,745	63,172	71,893
<u>Enterprise</u>				
<u>Value</u>				

❖ **Step 4: calculate the Equity Waterfall**

<u>Equity</u>				
<u>Waterfall</u>				
	<i>Model</i>			
	<i>Low</i>	<i>Mid</i>	<i>High</i>	<i>Market</i>
<u>Enterprise</u>	54,745	63,172	71,893	63,173
<u>Value</u>				
<u>(+) Cash &</u>	3,523	3,523	3,523	3,523
<u>Equivalents</u>				
<u>(+)</u>	26	26	26	26
<u>Investments</u>				
<u>& Other</u>				
<u>(-) Debt</u>	(11,779)	(11,779)	(11,779)	(11,779)
<u>(-) Minority</u>	(551)	(551)	(551)	(551)
<u>Interest &</u>				
<u>Other</u>				
<u>(-)</u>	0	0	0	0
<u>Preferred</u>				
<u>Stock</u>				
<u>(-) Other</u>	0	0	0	0
<u>Value of</u>	45,964	54,391	63,112	54,391
<u>Common</u>				
<u>Equity</u>				
<u>(/) Shares</u>	172	172	172	172
<u>Outstandin</u>				
<u>g</u>				
<u>Implied</u>	267.65	316.72	367.50	316.72
<u>Stock Price</u>				
<u>Historical</u>				
<u>Financials</u>				

	<i>Fiscal</i>					<i>YTD</i>
	<i>Years</i>					
	<i>Ending</i>					
	<i>Dec-13</i>	<i>Dec-14</i>	<i>Dec-15</i>	<i>Dec-16</i>	<i>Dec-17</i>	<i>Sep-18</i>
<u>Revenue</u>	2,013	3,198	4,046	7,000	11,759	14,235
<u>Growth</u>		58.8%	26.5%	73.0%	68.0%	
<u>Cost of Revenue</u>	(1,557)	(2,317)	(3,123)	(5,401)	(9,536)	(11,636)
<u>Gross Profit</u>	456	882	924	1,599	2,222	2,599
<u>R&D Expense</u>	(232)	(465)	(718)	(834)	(1,378)	(1,104)
<u>SG&A Expense</u>	(286)	(604)	(922)	(1,432)	(2,477)	(2,167)
<u>Other Expenses / (Income)</u>	(1,557)	(2,317)	(3,123)	(5,401)	(9,536)	(11,766)
<u>Total Operating Expenses</u>	(2,075)	(3,385)	(4,763)	(7,667)	(13,391)	(15,037)
<u>EBIT</u>	(61)	(187)	(717)	(667)	(1,632)	(802)
<u>(+) D&A</u>	121	302	501	1,042	1,727	1,525
<u>(+) Asset Write-down</u>	0	0	0	0	0	0
<u>(+) Restructuring</u>	0	0	0	0	0	0

<u>(+) Merger</u>	0	0	0	0	0	0
<u>/ Acq Exp</u>						
<u>(+)</u>	0	0	0	0	0	0
<u>Goodwill</u>						
<u>Impairment</u>						
<u>(+)</u>	0	0	0	0	0	0
<u>Litigation</u>						
<u>(+) Other</u>	0	0	0	0	0	0
<u>Non-</u>						
<u>recurring</u>						
<u>Adjusted</u>	60	115	(216)	374	95	724
<u>EBITDA</u>						
<u>% Margin</u>	3.0%	3.6%	-5.3%	5.3%	0.8%	5.1%
<u>Adjusted</u>	(61)	(187)	(717)	(667)	(1,632)	(802)
<u>EBIT</u>						
<u>% Margin</u>	-3.0%	-5.8%	-17.7%	-9.5%	-13.9%	-5.6%

❖ **Step 5: Comparison of EBITDA multiple**

<u>Current</u>				
<u>Trading</u>				
<u>Multiples</u>				
	EV /			
	LTM			
	EBITDA			
	Min	Max	Average	Median
<u>Tesla</u>				7.9x
<u>Motors,</u>				
<u>Inc.</u>				

<u>Benchmark</u>	3.0x	15.5x	7.7x	6.2x	6.2x
<u>s</u>					
<u>Sector</u>	1.6x	698.3x	16.1x	9.6x	9.6x
<u>Benchmark</u>	<i>Current</i>				
<u>s Used</u>	<i>Multiple</i>				
<u>Ford Motor</u>		3.0x			
<u>Company</u>					
<u>General</u>		4.9x			
<u>Motors</u>					
<u>Company</u>					
<u>Honda</u>		NM			
<u>Motor</u>					
<u>Company,</u>					
<u>Ltd.</u>					
<u>Nissan</u>		NM			
<u>Motor Co.,</u>					
<u>Ltd.</u>					
<u>BorgWarne</u>		6.2x			
<u>r Inc.</u>					
<u>Fiat</u>		NM			
<u>Chrysler</u>					
<u>Automobile</u>					
<u>s N.V.</u>					
<u>Harley-</u>		5.9x			
<u>Davidson,</u>					
<u>Inc.</u>					
<u>Monro</u>		15.5x			
<u>Muffler</u>					
<u>Brake, Inc.</u>					

Standard *10.6x*
Motor
Products,
Inc.

Stone- *7.8x*
ridge, Inc.

Tesla *7.9x*
Motors,
Inc.
