



UNIVERSIDADE CATÓLICA PORTUGUESA

# Mergers and Acquisitions

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## The case of BMW Group and Tesla Motors

**Luís Verdasca Gomes**

**Advisor: Peter Tsvetkov**

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## Abstract

This case study provides analysis of a hypothetical M&A deal in the automotive industry. The main purpose is to consider if there is potential value creation when merging two different players, with different market approaches.

The existing level of globalization that illustrates the majority of the markets has shaped the automotive industry into determined, multinational groups of companies. The rationale motivating this work lies in the fact that the merger of two different players in the automobile industry would create new opportunities to both companies: BMW Group would acquire an option to expand in an emerging market and Tesla Motors, a small company, operating in the “niche” and, at the same time, “emerging” market of electric vehicles, would be granted an access to a mass production structure.

This paper concentrates on estimating the value created in this deal by combining an insightful business and company examination with Equity evaluation methodologies. Furthermore, it is employed and reviewed, the Literature on both, valuation and M&A, providing the standalone and merged companies’ valuation. Finally, an optimal price is suggested as well as the financing structure and mode of acquisition.

Key findings yielded primarily two conclusions: the piece of evidence that, by the end of 2012, both BMW Group and Tesla Motors stock is found to be undervalued by the market and synergies are approximately €2,65B, resulting in a premium of 93% over the average Tesla Motors’ market cap.

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## 1. Introduction

This dissertation will present the case of a proposed M&A transaction between the BMW Group and Tesla Motors. Bayerische Motoren Werke AG, is one of the best-selling luxury automakers in the world while Tesla Motors is a start-up company that designs, manufactures and sells electric cars. The objective of this case is to analyse the strategic and financial reasons that may justify a consolidation process between the two companies mentioned above.

Considering the expectations of high-growth for Tesla Motors, one might take as certain its position as a target company to established premium vehicle manufacturers that bet on acquisitions to enter the emergent, yet unexplored, market for electric vehicles. This could be an option of a strategy to stop thinking on survival and bet on profitable growth of long-term operations.

My personal curiosity about the global automotive industry and M&A, lead me to consider and develop of this case. The literature review, as the first step of this study, will present the various theories on the valuation of companies. In order to understand and discuss those theories, frameworks and suppositions that practitioners and academics apply are methodically explained.

The historical background, of both, companies and respective industries are presented in order to provide the necessary information that would be necessary in the creation of a valuation model reflecting the current and expected performance of companies and their respective environment.

The performance and forecast section provides the prospects for BMW and Tesla's standalone progression in a value basis. This was achieved through the development of a valuation model that was also used to quantify the output of the merger. Subsequently all expected value improvements were considered for the merged entity in order to provide a sound basis for the structure of the deal.

In the final section, particular transaction details were examined and an opinion formed on how to carry out the acquisition. Furthermore there were proposed a few procedures of how should BMW act in order to assure that the value is created.

## 2. Literature Review

Corporate mergers and acquisitions are events of big importance, according to Sirover and Sahni (2006), few if any decisions carry as much immediate and ongoing risk to shareholders as a major acquisition. The rationale behind such importance depends on the fact that M&A transactions are opportunities that give two companies the possibility to worth more operating as a united entity than they would be worth, if summed as individual entities. The generation of additional value by combining two firms and creating opportunities that would have not been available to these firms operating independently can be well defined as synergies (Damodaran 2005).

The ability of companies to capture this additional value is still, a theme of general discussion in the finance literature. Even though such transactions are opportunities, some authors defend that firms have not been able to exploit its potential benefits, leading negative effects on shareholder value.

Ultimately it is the comparison between value creation in the acquirer's shareholders perspective and the final price of this purchase that determines if the investment produces value. Furthermore, it is the reliability of a valuation that provides the sustenance of M&A decisions. Thus corporate valuation and its accuracy have a major role in the success of M&A operation.

### 2.1. Valuation

Defining the value of a company is a task that can follow a wide range of approaches. The use and rationale of those valuation methodologies is not always of a consensus. As Kaplan and Ruback (1996) state, professional and academics are associated with the use of distinct methods, additionally, there is little empirical evidence on which one, the discounted cash flow method or the comparable methods, provide the most reliable estimates of market value. In fact, there are models that require more input information or provide more output information, commonly each specific situation leads to a specific valuation method. According to Damodaran (2005), the models differ in its assumptions about pricing, but they do share some common characteristics and can be classified in broader terms. As result, the differences among models can make it easier to understand where a certain model fit into the big picture, but also why those models provide different results if its reasoning is not correct. Moreover it is of general agreement among authors that the stability of the capital structure has a crucial point in choosing a valuation method (Miles & Ezzel, 1980).

As a starting point, it is of common acceptance that the best practice for valuing operating assets is the discounted cash flow methodology (Luehrman, 1997). It is also generally established that valuation models follow the estimation on some form of present value approach, those models were first introduced with Irving Fisher - "The Theory of

Interest” (1930) and John Burr William’s in “The Theory of Investment Value” introducing the DCF concept. This practice, the Discounted Cash Flow, provides the estimation of the present value and future income streams to the company investors (Young et al. 1999).

Alternatively, a relevant valuation method and the most widely used by professionals, is the method in which companies use trading or transaction multiples. In those methods, a ratio or multiple of value relative to a performance measure is calculated for a set of guideline or comparable firms (Kaplan and Ruback, 1996). Additionally, the main negative side in this valuation method is that they tend to be more difficult to use to value more unique firms, with no obvious comparables, with little or no revenues and negative earnings (Damodaran 2002). Further recommendations suggest one use a scenario-based cash flows with probabilities than to apply the real options approach (Kester & Froot, 1997).

### 2.1.1. The components of FCF Models

A company’s value lies in its potential to generate a stream of profits in the future. (Frei & Leleux, 2004). A company’s valuation is based on assumptions as to what a company’s future may look like.

As confirmed by a few authors (Frei & Leleux, 2004 and Damodaran, 2002) corporate finance theory indicates that the value of any asset is equal to the present value of its cash flows. These cash flow valuations vary from each model to apply. The “base-case” method would be to discount the cash-flows at a risk-adjusted discount rate to arrive at an estimation of value (Damodaran, 2002). Common rule, the Discounted-Cash-Flow models applies the expected cash flows that are expected to yield from the assets in place and the growth assets in the company, discounting them to present date.

The delineation of a discount rate that reflects the riskiness of the cash flows (Luehrman 1997) can prove a complicated task as it complies expectations on return on capital once invested, growth rate as well as growth period. Additionally the subsequent value will be dependent on the previous assumptions.

The most common method is to estimate the cash-flows for a limited period of time and after this time the cash-flows are expected to grow at constant rate allowing us to reach a terminal value.

These estimations are expected to provide an integrated set of forecasts that reflect the company’s expected performance. The forecasting process is developed by defining a specific period for a number of years and then to value the remaining as a perpetuity. As the perpetuity formula assumes a steady-state performance, the specific period should be long

enough to ensure the company earns a constant rate of return on both existing capital and new capital invested.

### 2.1.2. Future Cash Flow Models

As it is the most preferred model among academics and practitioners (Koller et al. 2010). The main focus of this section will this essential step is to calculate the free cash flow to the firm. According to Damodaran (2005) FCFF is the amount of cash earned by a company after paying all operating expenses, taxes and reinvestment needs but before paying any interest or dividends to debt holders or equity holders.

$$\text{Free Cash Flow Firm} = \text{EBITDA} * (1 - T_c) - (\text{CapEx} - \text{Depreciation}) - \Delta \text{ Working Capital}$$

Furthermore, this model discounts free cash flow, meaning the cash flow available to all investors (Koller et al. 2010). This includes equity holders, debt holders, and any other non-equity investors, typically estimated in terms of weighted average cost of capital (WACC), meaning the mix of costs arising from all capital.

$$\text{Value of Operating Assets of Firm} = \sum_{t=1}^{t=n} \frac{\text{FCFF}_t}{(1 + r_{\text{WACC}})^t} + \frac{\text{FCFF}_{n+1}}{(1 + r_{\text{WACC}})^n} \frac{r_{\text{WACC}} - g_n}{r_{\text{WACC}} - g_n}$$

Considering the mathematical formula of this methodology, one can understand that this model consists of two main components. At first, the expected cash flows are discounted to its present value up to a certain point and added to the terminal value calculation. According to Ohlson & Zhang (1999), the explicit period of forecast is generally less than 15 years and it would be important estimating until a company enters into a stable growth stage.

Even though the rationale to follow, would be to discount all the future cash flows at WACC, Kaplan et. al. (1996) defends this bipartition of the formula arises from the difficulty in the calculation a correct WACC, which can reveal to be difficult and tiresome as it requires that the cost of capital be recalculated for each period so that one can account for the changes in leverage. Since this model does not directly reflects the hypotheses on the operating performance of the firm, in every single year of forecast. It has become commonly acknowledged that one can proceed to use a terminal value in order to determine the remaining value once growth is stabilized.

The second part of the equation stands the terminal value that accounts for the value created after the explicit forecast period. It is pertinent to observe that the later the cash-flow, the higher the discount rate will be as a consequence of the exponent increase. Supplementary information is that the claims on cash flow of debt holders and other non-

equity investors are subtracted from enterprise value to determine equity holders' value (Koller, et. al. 2010).

### 2.1.3. Growth Rate

Higher growth rate are frequently associated with small and starting companies, as companies grow larger those values tend to stabilize, an explanation is that most products have natural life cycles, the only way to achieve lasting high growth is to continue introducing new products at an increasing rate (Koller et al., 2010). Mathematically we can define growth rate (g) as the product of return on invested capital (ROIC), after tax and the reinvestment rate (Damodaran 2007).

$$\text{Reinvestment Rate} = \frac{\text{CapEx} - \text{Depreciation} + \Delta \text{WC}}{(\text{EBIT} * (1 - T_c))}$$

$$\text{Return on Invested Capital} = \frac{\text{EBIT}(1 - T_c)}{\text{Fixed Assets} + \text{Current Assets} - \text{Current Liabilities} - \text{Cash}}$$

There are a few inferences one should take from the previous formulas. A first fact is that the invested capital, the denominator of the formula, should avoid biases and the mark-up that market complements to existing assets being always stated in book value terms. In order to maintain the consistency of the model cash is subtracted. Furthermore the earnings income is our measure of growth, and interest income from cash is not included in the operating income (Damodaran 2007).

As Damodaran (2002) explains, in the long run no firm can grow faster than the level of depreciation. This means that in a long-term perspective it would not make sense to have depreciation that has greater value than the capital expenditures. Furthermore, as Kaplan & Ruback (1996) suggested, capital expenditures (CapEx) should be considered equal to depreciation in a stable stage of the projections. Hitchner (2003) affirms that a thorough evaluation of the subject company's historical growth can be utilized to assist in growth determinations as well as published estimates of industry growth rates.

Other authors (Damodaran, 2002 and Koller et al 2010) claim that a stable long-term growth rate should not be higher than the economy's growth rate and that the reinvestment rate and growth rate should be consistent. When reaching stable growth, firms tend to reinvest less than higher growth firms and if the firm is to sustain its stable growth rate we need to make sure that the reinvestment rate is high enough to support this growth level.

### 2.1.4. The Cost of Capital

Defined as the opportunity cost of investing in a project with similar risk, the cost of capital is a relevant piece of any cash-flow valuation approach (Copeland, T. et al., 2000).

Quoting Luherman (1997), the discount rate should reflect the time value of money and a risk premium to compensate the investor for the additional risk. For the case of the Free cash flow to the firm approach, the discount rate utilized in a FCFF valuation is a weighted-average cost of capital (WACC), this is a rate adjusted to risk replicating the overall risk of the capital for the firm.

Concerning the debt holder's composition in a company in practice, of course, debt differs in several important respects, including maturity, priority, convertibility, call provisions, covenant restrictions, and whether the debt is privately placed or held by public investors (Shivdasani and Zak, 2007). In what concerns the estimation of the cost of capital, only the Net Debt, which comprises Long and Short-term Debt subtracted of Cash and Cash Equivalents, should be taken into account. Damodaran (2010) defines the cost of debt simply as a function of the current level of risk free interest rate and a default spread.

$$\text{Cost of Debt } (R_d) = (\text{Risk Free Rate} + \text{Default Spread})$$

With respect to the equity investors of the firm, the required return rate for their residual claim on the firm is the cost of equity. The most commonly accepted among the models is the model presented by Sharpe in 1964 and Lintner in 1965, this is known as CAPM – Capital asset pricing model, the main rationale was that the return on any asset is the risk-free rate ( $R_f$ ) plus a risk-premium depending the fluctuation of the asset's value with market ( $\beta$ ). A primordial assumption is that investors are well-diversified and their major concern is the non-diversifiable risks of the stock. Accordingly Koller et. al. (2010), the model relies in the fact that every investor holds some combination of the riskless asset and the market portfolio leads to the next conclusion: the expected return on equity of a certain company is linearly related to the beta of the asset, which is the company's risk profile.

Another important assumption in this model is that diversification enables the investor to escape all risks except for the overall market risk. It is also important to mention that, since debt is prior to equity in receiving returns, a consequence of an increase in the debt ratio would be a reduced probability of shareholders receiving their returns in case of financial distress. On the other hand, it is argued that all other risks, excluding market risk, are diversifiable. This leads to the conclusion that only the company's rate of return to the level of economic activity is relevant in when considering risk, agreeing with Sharpe (1964).

Consequently, one should distinguish between the cost of unlevered equity ( $R_U$ ) and cost of equity ( $R_E$ ).

$$R_E = R_F + \beta_L(R_M - R_F)$$

$$R_U = R_F + \beta_U(R_M - R_F)$$

### 2.1.5. The Beta

The CAPM implies that the expected return of an asset must be linearly related to the covariance between its return and the return of the market portfolio (Esteban M., 2010). Beta measures the extent to which returns on the stock and the market move together (Bodie, Kane and Marcus. 2008) and the rationale behind this is that if an investor adds a stock that increases the overall risk of the portfolio, this investor will require a higher return. Damodaran (2010) recommends that a beta can be simply computed by regressing equity returns on a market portfolio, usually historical monthly returns for a period of at least three years, being the resulting slope coefficient the company's beta. In a more practical application, as the market index may be biased, it would add consistency to this approach if one calculate the average beta for the industry, since it would help avoiding miscalculations. Agreeing to Koller et. Al. (2010) even with a robust estimation process, judgment is still required. In the case one find it adequate, one should consider how the industry is likely to move with the economy.

Formula for the Beta:

$$\beta_I = \beta_U \left( 1 + (1 - T_C) \left( \frac{D}{E} \right) \right)$$

### 2.1.6. The Risk Free Rate (Rf)

Agreeing to Damodaran (2008), The risk free rate is the building block for estimating both the cost of equity and capital. A risk-free rate could be defined as the expected return on an investment with no default risk. Theoretically, Risk in finance is viewed in terms of the variance in actual returns around the expected return (Damodaran 2008), this resembles to the return paid on a zero-beta portfolio. Damodaran (2010) suggests that the risk free rate should be the long term government bond rate. If the analysis is shorter term, the short term government security rate can be used as the risk free rate. Additionally, even though there is a general assumption that government bonds were for the most part default free and that the government bond rate was therefore a risk free rate, the market is clearly distinguishing creditworthiness across countries. A very practical rationale is that 10-year Treasury bonds, general rule, matches the duration of the cash-flows, being relatively low sensitive to inflation and providing consistency to the valuation.

$$R_E = R_F + \beta_L(R_M - R_F)$$

$$R_U = R_F + \beta_U(R_M - R_F)$$

### 2.1.7. The Risk Premium

Risk Premium can be measured as the difference between the expected holding period return associated with a certain level of risk and the risk-free rate, that is, the rate you can earn by leaving money in risk-free assets such as T-bills, money market funds, or the bank (Bodie, Kane, Marcus, 2008). This is a constituent of the CAPM model, and can be simply explained as the difference between  $E(r_m) - r_f$ , the size of this premium can be determined by a wide range of factors, such as the investors' risk aversion, the market liquidity and the macroeconomic volatility.

Damodaran (2011) suggests that the risk free rate chosen in computing the premium has to be consistent with the risk free rate used to compute expected returns. Consequently, if the treasury bill rate is used as the risk free rate, the premium has to be the premium earned by stocks over that rate. For this reason, one shall use the most representative equity market. The use of this tactic for a given mature market may yield historical premiums of higher value than expected premiums. The reason for this is survivor bias which is the case of removing failing companies from the historical databases as they are not operating anymore. It is also argued that looking across multiple markets for very long time periods can mitigate this bias (Damodaran 2011).

In the particular case of CAPM, the only risk that is relevant for purposes of estimating a cost of equity is the market risk or risk that cannot be diversified away. The question relies whether country risk becomes the additional risk in an emerging market is diversifiable or non-diversifiable risk.

A viable option would be, as Damodaran suggests, would be to multiply the country rating by the average of equity to bond market volatility and then added to the historical risk premium. Authors and practitioners classifies as the appropriate range between 4.5% and 5.5% (Koller et al. 2010) Other approaches include estimating the premium is through surveys, and by using the implied premium. In its studies, Kaplan S. (1996) suggests one should bear in mind that the use of lower risk premium – recommended by many practitioners as well as some academics – would reduce the accuracy of the discounted cash flow estimates of value.

## 2.2. The Weighted Average Cost of Capital – WACC

As an exemplification of the aggregate risk of a company or business, the weighted average cost of capital (WACC) calls for a balanced capital structure in which debt and equity are utilized at some predetermined percentage (Block, S. 2011). Nevertheless, there can be some errors associated with misunderstand of the formula to calculate WACC, quoting Modigliani & Miller (1958) the authors claimed that in the absence of taxes leverage

has no impact on firm value, however, in a practical approach tax shields and costs of financial distress suggest this method is questionable. Fama and French concluded that equity returns are inversely related to the size of a company (as measured by market capitalization) and positively related to the ratio of a company's book value to its market value of equity, being so the use of book values in spite of market values in the calculation of the capital structure may present a modest estimation.

Additionally, Fernández (2011), reminds that calculating the WACC assuming a capital structure that is neither the current one nor the forecast: the debt to equity ratio used to calculate the WACC is different from the debt to equity ratio resulting from the valuation.

There is not a common opinion regarding the use of WACC, while Luehrman (1997) affirms using WACC as the discount rate is now obsolete, Damodaran (2005) defends that it can be a methodology worth using as it is flexible enough to allow the capital structure to smoothly change over time. The hypothesis of computing the value of WACC every year is a feasible option but it requires new assumptions and thus introduces noise to the valuation. One of the most suggested alternatives is a generalized version of the Fama-French three-factor model. In which the Arbitrage Pricing theory states that a security's actual returns are generated by  $k$  factors and random noise (Koller et al. 2010).

$$WACC = R_E * D + E + R_D * D * E * (1 - T_C)$$

### 2.3. Adjusted Present Value

Adjusted Present Value is designed to value operations and any existing asset that will generate future cash flows. It is a methodology to analyze financial maneuvers separately and add their value to that of the business (Luehrman, 1997). This valuation model follows the teachings of Modigliani and Miller, who proposed that in a market with no taxes, a company's choice of financial structure will not affect the value of its economic assets (Koller et al 2010). The execution of this model can be appraised based on four or more steps, this depends, not only on the number of different sources of capital there are but also in the way the analyst wants to separate the enterprise value. At an initial phase, the model separates the value of operations into the value of operations as if the company were all-equity financed and the value of tax shields arising from debt financing. Consequently, it is valued the cost of financial distress so that in a final phase one can add the base-case to the other individual components reaching the value of the firm. This methodology can be expressed in the following mathematical formula:

$$\text{Value of Business} = \text{Value of Unlevered Firm} + \text{Value of Tax Benefits} - \text{Value of Bankruptcy Costs}$$

Luehrman (1997), defends that this valuation methodology is exceptionally transparent, providing a more complete information about where the value reside and helps understand where value can be improved. The author adds that, the breakdown of the problem into operational and financial parts clearly add managerial information to the analysis.

$$\text{Value of the Unlevered Company } (V_U) = \sum_{i=1}^n \frac{\text{FCFF}_i}{(1 + R_U)^i} + \frac{\text{FCFF}_{n+1}}{(1 + R_U)^n}$$

The equation above works as the main differential factor of the APV, this is, the, a first step is to discount the cash flows at the unlevered cost of equity obtaining the value of the company without debt. With reference to the operational part, one can say the procedure is exactly the same as the one of FCFF, the difference resides in the discount rate: the FCFF discounts at WACC, while the discount rate on the APV method is the unlevered cost of equity.

The second equation one should take into account is the one postulating the value of future tax shields, in the case that the amount of debt is held constant and considering that tax shields have the same level of certainty as the principal and interest payment on debt. One should consider that the use of this formula in a scenario of a growing firm which is expecting to increase its debt level proportionally to its growth, would not be a reasonable practice. It is also noteworthy that in the long-run, the assumption is that indebtedness grows at the same pace as the company, making the perpetual tax shield growth (g) equal to growth (TGR) in operations (Luehrman, 1997).

$$\text{Present Value of Tax Shields (PVTs)} = \sum_{i=1}^n \frac{(D_i * R_D * T_C)}{(1 + R_D)^i} + \frac{(D_i * R_D * T_C)/(R_D - g)}{(1 + R_D)^n}$$

The next rationale step would be to evaluate the outcome of the given leverage on the default risk of the firm and bankruptcy costs. According to Damodaran (2002) if PI is the probability of default after the additional debt and BC is the present value of bankruptcy cost. The estimation of the present value of expected bankruptcy cost could be estimated as:

$$\text{PV of Expected Bankruptcy Cost} = \pi * \text{Bankruptcy Cost}$$

It is stated by Korteweg (2007) that from a study across 22 industries and 244 firms that the market expects costs of financial distress to be from 0% to 11% of firm value for observed levels of leverage. Additionally, some have endorsed the higher returns that Fama and French (1992) show are earned by firms with low price to book ratios to distress while low price to book stocks, are more likely to be distressed (Damodaran 2007).

Regarding the estimates of indirect cost of bankruptcy as Shapiro and Titman speculate, the indirect costs could be as large as 25-30%, providing no evidence of costs. In opposition, Damodaran (2007) suggests that the probability of bankruptcy can be estimated through the bond rating or to estimate the probability of default, based upon the firm's observable characteristics, at each level of debt. As final step as Luerhmen (1997) suggests, one should ass the pieces together.

$$\text{Enterprise Value} = V_U + [1 - P(D)] * PVTS - P(D) * CFD$$

Bearing in mind a company would have no PVTS if there was no operations, this component should be multiplied by the probability of no distress. In opposition, the CFD would only incur in the opposite scenario, bankruptcy.

#### 2.4. Relative Valuation - Multiples

Despite the fact that discounted cash flow analysis is the most accurate and flexible method for valuing projects, divisions, and companies (Koller et al. 2010), Damodaran (2002) defends that earnings multiples remain the most commonly used measures of relative value. Contrasting with the cash flow or return-based methods, relative valuation concentrates on market expectations for a certain company based on its relative situation alongside its similar companies. As Kaplan and Ruback (1996) explains, in relative valuation methods, a ratio or multiple of value relative to a performance measure is calculated for a set of comparable firms. Hence, valuation by multiples requires calculating the average of one or more financial ratios for a group of comparable companies and applying those ratios to a specific company (Lie and Lie, 2002).

The quality of these valuations relies on its assumption. First, comparables are assumed to have expected future cash flows that grow at the same rate and have the same level of risk as those of the firm being valued (Kaplan and Ruback 1996). Second, the selection of the correct set of multiples.

The importance of those assumptions rely in the fact that the comparable method can reveal to be more accurate than any DCF as it incorporates contemporaneous market expectations of future cash flows and discount rates in the multiple. It is also noteworthy that one should use a set of multiples since it would provide a more rigorous valuation and add a broader perspective on what drives the value. Regarding the choice of which multiples to apply, while Goedhart et al. (2005) defends that a good multiple must describe a company's ability to generate profit but also be difficult to manipulate through accounting or leverage. A study from Mînjina D. (2010) defends that the most accurate selection method is ROE, as in the case of Price-Earnings method, and the least accurate is TA, price-total assets multiples. A third authors, Lie & Lie (2002) affirm that in their analysis of multiples total enterprise

multiples are better estimates of value, being the multiple Enterprise Value/Book Value the most accurate estimator.

Additionally one should add that comparable industry transactions values effectively combined the comparable company and comparable transaction approaches. This comparable industry transaction method uses multiples of firms in the same industry involved in a similar transaction (Kaplan and Ruback 1996).

Finally, this valuation method is the most recurrent among practitioners, research on relative valuation corroborates this methodology can provide reliable estimates of value. Koller et. al. (2010) defends that when comparative analysis is careful and well reasoned; it not only provides complementary information for the DCF but also provides critical insights into what drives value in a given industry.

## 2.5. Cross – Border Valuation

As Kester and Froot (1997) explain, acquisitions of American targets by foreign companies rose about 50% only in the decade 1980-90. This trend of increasing in acquisitions at a global scale, rose the question of how should a company evaluate an investment in a firm in another country. The authors made available guidance on how to value cross-border investments. The authors identified a group of main issues that directly impact the valuation of cross-border operations.

The valuation of companies outside the home country rise some issues needing special attention, one should consider international accounting differences, international taxation, translation of foreign-currency financial statements and the estimation of the cost of capital in foreign currency.

International accounting differences are rapidly becoming less of an issue, in Europe and Asia the accounting practices by adopting International Financial Reporting Standards (IFRS) whereas the U.S. GAAP was also adopted by a large part of the organizations to facilitate comparisons and transparency for investor and analysts.

Under U.S. GAAP and IFRS, consolidation is determined by effective control: if parent companies effectively control subsidiaries, these must be consolidated.

Another important issue is the taxation of the corporate income. In order to estimate taxes on projected future income, one would need to understand what the relevant tax rate is and what amount of profits is actually taxable. There are cases on which some profit that is taxed in one country may not be taxable in another. In addition, many countries offer the possibility of fiscal grouping that is preparing consolidated tax filings for a group of companies that are owned by the same company. This can be advantageous in the case of

a specific company generating profit and the other incurring in losses. The consequence would be that the amount of taxes that a company would pay on a stand-alone basis could therefore differ from other group companies in different jurisdictions.

As (Kester, Morley & Froot, 1995) suggests, there are two most commonly used tax approaches. The first would be to use of a worldwide tax credit system, Corporations headquartered in countries which use this system owe taxes to the headquarter country on all of their worldwide income, however, foreign income taxes paid must be credited against taxes on foreign-source income in the headquarter country. The use of a territorial tax exemption system, this system suggests taxes are paid and calculated locally. In this case the country's marginal corporate tax rate should be used in calculating the after-tax free cash flows.

A very important piece is the appropriate currency to choose, either to calculate free cash-flows (FCF) or measuring discount rates. First of all, CFs that are earned on an investment in a foreign country may not be converted into home currency and remitted directly back to the foreign parent ( Kester, Morley & Froot, 1995). According to Kester et al. (1997), foreign-currency cash flows can either be discounted with a discount rate adjusted for foreign-exchange risk, or they can be converted to home currency in order to be discounted with the appropriate home-based discount rate. In the use of both methods the value should be the same. Additionally "the choice of currency in which to denominate valuation should not drive the result". In sequence, this decision should be based upon available information to compute the appropriate exchange rates: the information on long term interest rates, forward exchange rates of expected inflation rates for, both, home and foreign countries.

One should consider the mathematic formula for converting the discount rate:

$$(1 + \text{Home Discount Rate}) = (1 + \text{Foreign Discount Rate}) * \frac{1 + \text{Foreign L. T. Rf}}{1 + \text{Home L. T. Rf}}$$

## 2.6. M&A Transactions

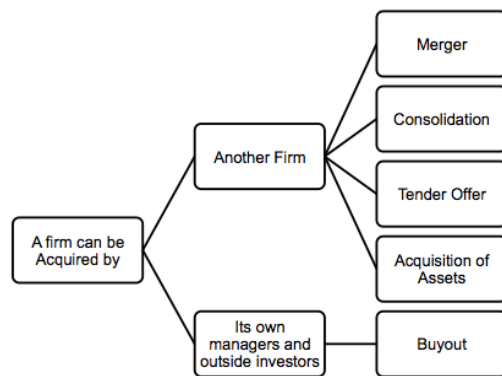
Initially, the starting point would be to isolate potential target firms then estimate how would it adequate with the company's strategies. Moreover, one should ensure to be choosing the finest firms to set as target in order to start negotiating with their boards and main stakeholders. Successively, the conclusion of a transaction with one firm does not imply that the process is at its end, it is essential to develop an effective post-merger integration. The explanation of the main types of M&A and its source of financing as well as the functioning of how synergies are explored and shared will be the main subject of this section.

Overall, it is the economic, regulatory or technological the main factors causing industry merger waves. Additionally, sufficient capital liquidity must be present to accommodate the necessary transactions (Harford, 2004).

### 2.6.1. Classifying M&A Transactions

Despite the fact that M&A is mentioned a single class of action, these transactions can range from one firm merging with another firm to create a new firm to managers of a firm acquiring the firm from its stockholders and creating a private firm (Damodaran 2002). The main differentiator factors among these operations are not only who acquires the company, but also how is the company expected to be operating after the deal.

Damodaran (2002) provides us with the following distinctions among transaction types:



Classification of Acquisitions (Damodaran, 2002)

- ◇ Mergers – target firm becomes a part of acquiring firm
- ◇ Consolidations – target firm and acquiring firm becomes a new firm
- ◇ Tender offers – target firm continues to exist as long as there are dissident stockholders holding out (successful tender offers ultimately become mergers)
- ◇ Purchase of assets – target firm remains as a shell company, but assets are transferred to the acquiring firm

**Figure 1 Classification of Acquisitions**

As common facts, one should add that consolidations and tender offers are the transactions that are fundamentally the same in a long-term consideration. While Tender offers incline to be viewed as mergers, consolidation occurs as a merger of the companies into another entity. Furthermore, tender offers are supervised to the target company stockholders developing as the mode to avoid a firm's board in hostile takeovers (Loughran and Vijh, 1997). The main purpose of tender offers is to disconnect inefficient managers.

As Bruner (2004) states, the way one access a particular M&A deal depends on our frame of reference, each M&A transaction can present different forms and a different effect.

An acquisition could be classified conferring to the level of connection of the two organizations as horizontal, vertical or conglomerate, as authors argue. Commonly, a horizontal acquisition occurs when both firms compete in the same industry. Although in a

vertical acquisition, the buying and the assimilated firms are counterparts in its value-chain and not opponents. Moreover a conglomerate or diversifying acquisition companies arise in companies that are entirely distinct.

### 2.6.2. Synergies

Synergy is the additional value that is generated by combining two firms, creating opportunities that would not been available to these firms operating independently (Damodaran, 2005). In addition one must misplace this concept with the definition of control, which is the value of operating the company more efficiently under different control (Damodaran, 2005). Therefore, control and synergy must always be measured independently assuring that double counting is prevented.

Damodaran (2005) suggests the existence of two distinct forms of synergies: Operating and Financial. The first form, Operating Synergies, denote the effect of the operations of the combined firm, including economies of scale, increasing pricing power and higher growth potential.

In opposition, in a Modigliani-Miller (1958) world without taxes, bankruptcy costs, informational asymmetries, or agency costs, there are no purely financial synergies. Nevertheless considering the existence of taxes and default costs, a company's capital structure becomes relevant (Leland, 2007) and the financial synergies arise from tax benefits, diversification, higher debt capacity and use of excess cash.

Additionally, diversification can be a font of financial synergy even though of ambiguous outcomes as they can differ crosswise countries and industries and a company's size, ownership structure and corporate governance (Lins and Servaes, 1999) furthermore, financial synergies can be positive if favoring mergers or negative if favoring separation (Leland, 2007).

One should bear in mind that the value returned on synergies can be dubious for some cases, occasionally value improvements are remarked for erroneous explanations. An example is the usage of accretive acquirments of targets that present inferior earnings per share (EPS) with the purpose of an immediate value improvement, which would not increase the value of the firm supplementary than synergies that are captured by investors. Conversely to this line of though, a study on EPS accretion discovered that it actually yields value, although this practice appears to be characteristic of enterprises presenting unsophisticated investors (Andrade, 1998). Alternative example of dubious synergy is the acquisition of forthcoming high growth companies, which are highly priced and may only yield value if the right price is paid.

Classically, DCF approaches appear as the recurrent valuation method for all these synergies. It is a multifaceted however consistent method that constantly demands a comparison among the combined firm and the ones deprived of synergy.

### 2.6.3. The Emphasis of the M&A

Researchers have shown that acquisitions collectively do create value for the shareholders of both the acquirer and the acquired company (Koller et al. 2010). This value creation through synergies is still a theme of discordance among authors, moreover there is an intermittent issue asked in M&A, that is whether to chase a diversified or, in opposition, a related acquisition strategy. Even though a diversified acquisition suggest that managers are determined to invest to make up for modest performance and reduce risk reassuring the survival of the company. Studies report that this type of acquisitions presents a poor performance when compared to comparable acquisitions. It is commonly conveyed that the benefits are stronger and easier to exploit in related acquisitions, leading, as result to higher returns (Bruner, 2004). Nevertheless, the conclusions on the effect of M&A transactions are not consensual.

#### 2.6.3.1. *Methods of Payment – The Optimal Structure of the Deal*

Developing the finest structure for the M&A is largely dependent on the acquisition itself, but there is still some useful recommendations on method of payment. The M&A financing decision can also have serious corporate control, risk bearing, tax and cash flow implications for the buying and selling firms and shareholders (Faccio, 2004). Additionally the financing methods can be either cash, stock, mixes of both existing the possibility of a contract whose payout depends on the performance of the target. Nevertheless, it is suggested by Bruner (2004) that such use of risk-management strategies can lead to invalidation of the contract invalidating any imbursement previously agreed.

Ultimately, the choice concerning cash or stock relies a set of three factors:

Primarily, an analysis of the accretion or dilution to the earnings that result from the merger is compulsory before any financing decisions.

According to a few authors, Travlos (1987), Wansley, Lane and Yang (1987) and Brown and Ryngaert (1991) it was found a noteworthy negative average returns to acquirers when the method of payment is stock rather than cash. One dominant explanation for this pattern is that stock financing creates an adverse selection effect similar to a seasoned stock offering (Faccio, 2004). Moreover, deciding amongst stock and cash financing depends on whether its stock is overvalued or undervalued, respectively (Myers and Majluf 1984) this consideration finds it support because managers possess private information about the company's financial position, being able to choose the best method for financing. Following

Heron and Lie (2002) and their study about the connection between payment category, they described no significant disparities in operating performance based on payment category, yet, returns on cash-based deals remained higher compared to stock-based deals. As this is not consensual Martin (1996) also classifies the form of M&A payment into cash and stock but it is recommended that it is not a straightforward decision as studies point that mergers tend to be financed specifically with stock whereas tender offers have cash as main source of finance.

Besides, it is also important to consider the weight that capital structure and rating agencies have in financing decisions. There is empirical evidence that the risk in cash transactions is mostly bared by acquiring shareholders while the risk is shared with the selling shareholders in the case of stock transactions (Damodaran 2005). Nevertheless, there is a risk that the use stock to finance the deals may symbolize a sign of low assurance regarding the deal.

The third factor is related to specific factors, for example, when a target's home nation offers tax benefits to the target firm or its selling shareholder in a stock merger or stock financed acquisition, we would expect to observe a higher proportion of stock financing (Faccio, 2004). Additionally tax repercussions should also be taken into account since cash is directly taxed whereas stock could be tax-deferred. As Damodaran (2005) defends, a profitable firm that acquires a money-losing firm may be able to use the net operating losses of the later to reduce its tax burden. Ultimately, when one considers issuing debt to fund a cash acquisition, one must consider that debt should reside attached to its funding assets, consequently, it is rationale that the borrower is the target company.

#### 2.6.4. Return on M&A

An important factor when considering synergies and the structure of the deal is the acquisition price, its importance resides in the fact that if the price paid for the growth exceeds the fair market value, the stock price of the acquiring firm will decline even though the expected future growth in its cash flows may increase as a consequence of the takeover (Damodaran, 2005). The value created for acquiring shareholders is directly dependent of the price paid for the target. Moreover, in the case that the premium paid for the target exceeds the value of the potential synergies that can be achieved, the transaction would return a value loss for shareholders ( Damodaran, 2005).

From a theoretical perspective, the share of synergy's benefits amongst the acquirer and the target firm will depend on the benefits added by each party for its existence. Essentially, Damodaran (2005) provides us with some examples of different distribution of benefits. If there is the case of a transaction where the acquiring firm pretends to explore a

tax benefit through an acquisition, the distribution of benefits would depend on whether there were several firms able to explore that tax benefit against whether there were target firms considering to assess that synergy.

Sirower and Sahni (2006), introduce the notion of target shareholders as the winners in a short-run period, presenting a Relative Total Shareholder Return (RTSR) averaging 20%. Corroborating the previous statement, Damodaran (2005) suggests that this higher return for target shareholders could be the fact that target companies are in the position of bargaining and create competition among bidders in tender offers.

Considering the position of the acquirers, there is typically a very diminutive, if any, set of benefits arising from synergies and on average they underperform their industry peers (Jensen and Ruback, 1983). The returns are not uniform, its variable conferring to the form of payment and mode of acquisition, even though there is empirical evidence supporting the hypothesis that cash financed acquisitions and tender offers would provide superior results. The overall idea is that the inefficacy in M&A transactions arise from the failure of managers in planning for the synergies leading to the payment of an excessive premium paid for the target firms. The generation of a negative shareholder result and an increase in the shareholders' value at risk (SVAR) is the result ascending in the case that synergies are not realized in the post-acquisition period (Sirower and Sahni, 2006).

One can reach the value created for acquirer through the following formula (Koller et al. 2010):

$$\begin{aligned} &\text{Value Created for Acquirer} \\ &= (\text{Standalone Value of target} + \text{Value of Performance Improvements}) \\ &- (\text{Market Value of Target} + \text{Acquisition Premium}) \end{aligned}$$

The SVAR was introduced by Sirower and Sahni (2006) and can be calculated following the formula, additionally it shows how much of company's value is at risk if no post-acquisition synergies are realized. The main rationale behind this concept is: The greater the premium percentage paid to sellers, the higher the SVAR

$$\text{Shareholders' Value at Risk (SVAR)} = \frac{\text{Premium paid for the target company}}{(\text{Market Value of the Acquiring Company})}$$

Bearing in mind the importance of the value of the potential synergies as the critical piece to crucial the premium (Sirower and Sahni, 2006), the model Meet the Premium (MTP) line delineates the premium paid for the target in relation to cost and operating synergies. This model provides a soundness check for evaluating a sensible price range in the transaction, given diverse mixtures of synergies.

In the model, defends that a reasonable premium should be beyond the MTP line – which is combinations of revenue and cost synergies that compensate the premium one offers, respecting for the same time the plausibility box restrictions - which are the specifications for the upper ranges for revenue and cost synergies that can be achieved. Furthermore, contrasting each company's market access and competences in some tactical or functional areas permits the determination of the type of synergies one can assume and whether they make operating sense.

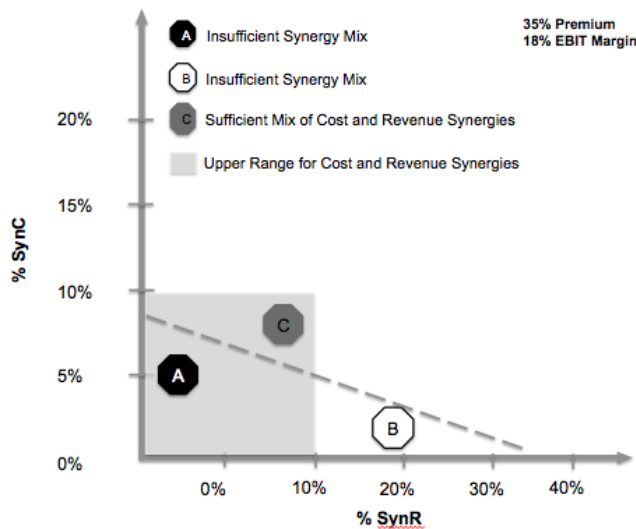


Figure 2 Meet the Premium Line – The Senergy-Premium Model

## 2.7. Conclusion

The question remains unclear, are M&A transactions adding value to shareholders or not?! For that, there is no clear answer. It is accepted that discoveries in M&A transactions are found to be a failure plus investigation is inconsistent in specifying clear conclusions on M&A efficacy. According to Bruner (2004) investigation has been guided founded on outcomes previously and afterward M&A although the appropriate practice is to compare the current situation with a hypothetical one if M&A had not occurred. On the other hand, research indicates that most M&A succeed to increase value to the economy in total. All in all the already current literature on the topic has indisputably added some appreciated understandings for currents managers and academics.

Generally speaking, M&A transactions add value for the economy in total since one part captivates a large percentage of gains, the sellers, offsetting the minor percentage losses of the acquirers. In addition, Huyghebaert and Luypaert (2013), defend that industry conditions bear an important influence on M&A value creation, but also that M&A transactions are critical creating value in scenarios of high-growth or very low sales and growth.

Understandably, a more expanded research on the different types of transactions that actually yield value for both parts in the transaction could bring additional understandings in the opportunities that managers have to enhance value for shareholders and for the economy as a whole.

Finally, even though M&A transactions are complex and difficult to value, there are cases at which M&A yield reasonable options to increase value for the companies and for the overall economy.

### **3. The Automobile Industry and Company Analysis**

#### **3.1. The Industry**

As a starting point one must understand that on a more purely economic plane, the automobile industry itself is a primary factor in the operation of the industrial system. The demands which makes upon raw materials, fabricated products, and corollary goods and services speak of its critical importance in the industrial structure.

The presentation of a full industry background study is an essential module when one considers an eventual deal. Such information provides the understanding of the specific characteristics of one industry in particular and contributes with several macroeconomic data that might have a particular impact in studying the industry.

The automobile industry, is a sector relatively sensitive to economic comings and goings, especially the European and American car market which have been historically correlated to consumer confidence. The analysis of developments in the industry could grant an additional in-depth analysis of the impact of macroeconomic events in the sector. At present date, the market have been presenting a strong performance over the past 12 months but one must consider that the sector continues to trade at ten-year relative lows to the market and remains the lowest rated cyclical sector.

Considering this specific case, it is relevant to mention that both companies operate in the automotive industry, more particularly in the passenger cars market sector. This industry is experiencing a process of change, with the major impact of the past four years of global economy recession having as a consequence major quality and production standards improvements, an example is the clear tendency to improve safety and fuel-efficiency characteristics, without correspondent increase in prices.

### 3.1.2. Overview

Global automotive industry is now at a healthier state, having recovered from the crisis and exhibiting a strong performance in Europe by the SXAP1 in 2012. This industry handled a rough environment, after a solid growth from 2004 to 2007, the period of 2008 and 2009 was challenging, the profitability and margins for suppliers declined below the break-even point, resulting in an unprecedented breakdown faced by the markets. There was even the necessity for a few administrations to assist their automobile industry. Production utilization in North America, Western Europe, and Japan dropped dramatically leading to lay-offs, plant closures to widespread job losses.

Helping reversing the expected collapse in global car sales and contributing to a major recovery of over 3% in the passenger cars market, against the initially expected breakdown of 17% and with a global breakdown of 14%, some states developed car purchase incentives. These systems were established and detained by states to assist the car sales expansion and oppose the negative analysts' perspectives.

As further consequence, in the past few years, many major auto manufacturers and suppliers have undertaken significant efforts to clean balance sheets, remove excess capacity, and restructure costs.

After this turbulent period, the estimated growth for 2010 was achieved for both, passenger cars and commercial vehicles, with a particularly fast recovery for the U.S. and emerging markets. The U.S. auto recovery demonstrated that with stronger balance sheets, legacy liabilities shed, debt reduction, and product/capital investment, this industry can return to consistent levels of profitability at lower annual sales volumes.

For 2012 the automobile sector was the top among the best performing segments in 2012, in Europe, it went up 35% compared with a rise of 15% in the Euro Stoxx2. This performance is assumed to be the product of a positive relative earnings momentum and a re-rating as the equity risk premium started to decline.

It is also noteworthy that the auto industry is expected to outperform in an environment of improving consumer confidence.

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<sup>1</sup> SXAP- Is the STOXX 600 Automobiles & Parts (Price) Index Capitalization-Weighted index which includes European companies involved in the automobiles & parts sector

<sup>2</sup> The STOXX Europe 600 Index represents large, mid and small capitalisation companies across 18 countries of the European region.

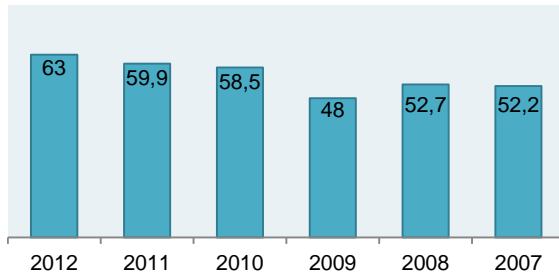


Chart 1- Worldwide passenger car registrations (y-o-y variation) Source: Bloomberg data

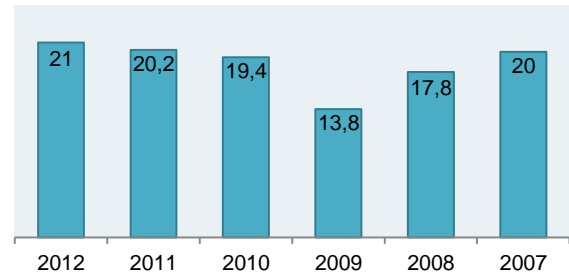


Chart 2 – Worldwide commercial vehicle registrations (y-o-y variation) Source: Bloomberg data

Considering growth expectations, in the U.S. the forecasts show a slow growth for most of 2013 as tax increases and government spending cuts offset private sector improvement, followed by a substantial acceleration in 2014 as fiscal policy turns more neutral. They general belief is that that the effect on employment is likely to be slightly less than the impact on growth as some federal agencies will reduce personnel costs through furloughs rather than layoffs, which would reduce the effect on employment. The U.S. remains the most profitable automotive market in the world, and the place where all global manufacturers need to succeed. But over the long term, emerging markets have much stronger growth prospects. This shift requires auto makers to preserve their competitive position in developed, mature markets, while also funding the investment necessary for longer- term growth elsewhere.

A higher preference to develop and produce electric vehicles, finding is support in both, customer demand and government incentives, noticeably makes environmental concerns emerge as a substantial factor in the industry. According Deloitte<sup>3</sup> the production of vehicles that are not propelled by an internal combustion engine, will progress up to a third of all cars purchased in developed countries in 2020.

In addition, there is a major industry player, with the influence to invest using incentive packages or providing emergency loans governments have a permanent control on the industry's trend. The continuous support to national corporations along with the approval of energy and environmental policies, will require modifications on the automotive sector over the next years, designing the expectation that suppliers and automakers will be experiencing intense changes.

<sup>3</sup> Deloitte Report – "A new era, accelerating toward 2020 – An Automotive industry transformed", 2009

An important characteristic of the Automobile industry is its dependence on an efficient supply chain, as it is as four sub-sectors that could be divided into, the Original Equipment Manufacturers (OEMs) - auto manufacturers do produce some of their own parts, but there are companies in this industry responsible for manufacturing everything from door handles to seats; Suppliers - hold a influential role in this industry, Dealers that make the product available to the customers and the after-market service providers that are responsible for the maintenance of the vehicles sold: air filters, oil filters and replacement lights are examples of products from this area of the sector.

Considered to be highly capital and labour intensive, the auto manufacturing industry has as major costs: the labour – there are substantial labour costs in designing and engineering automobiles; as well as the materials – depending on steel, aluminium, leather, tires which are repurchased from suppliers; and advertising - the auto industry has substantial advertising cost as well as high costs on market research to anticipate consumer trends and preferences.

### 3.1.3. Porter's 5 Forces

In order to understand the strategy behind the functioning of the automobile industry, the use of a Porter's Five Forces Analysis would provide further insight about the competitiveness, intensity and consequently attractiveness of a market.

#### **Potential Entrants**

High entry Costs – It requires a high investment to start manufacturing automobiles making it very difficult for the appearance of new companies. Large players can easily enter new markets - The emergence of foreign competitors with the capital, required technologies and management skills began to undermine the market share of more local companies.

#### **Substitutes**

High number of Players in the industry – There are many brands with a vast range of different vehicles.

Different Means of Transportation – Depending on the geographic location and access to means of transportation, there are buses and trains among many other options

#### **Industry Rivalry**

Oligopoly Industry – Automakers understand that price-based competition could affect returns and do not straightforwardly increase dimension in the market. Lately Price Competition occurred - Rebates, preferred financing and long-term warranties were strategies that helped collecting customers, although those strategies affect the profit margins for vehicle sales.

## Buyers

Highly price sensitive – Even though customers are vulnerable to prices they have low bargaining power as they never purchase huge volumes of cars. Customers have low price determining power- If the products offered by certain automakers are not as interesting, customers began looking for alternatives.

## Suppliers

Highly Fragmented Business - The automobile supply comprises many suppliers relying on one or two automakers to buy a majority of their products. Highly reliant on demand - Suppliers are extremely susceptible to the demands and requirements of the automobile manufacturer and hold very little power.

### 3.1.4. Global Supply, Demand and Production

Divided into two segments, the automotive industry is composed by two types of vehicles, passenger cars and commercial vehicles. One can have further insight about the top-ranking countries in new passenger and commercial vehicle registrations. Having a 4-year period (2004-2007) with strong and stable growth in the global automobile sales followed by a sudden decrease in sales and followed by a subsequent upturn came to provide evidence that there is a directly association between the automotive industry and the economic cycles.

#### 3.1.4.1. Supply

On the global production side, passenger cars are mostly produced in EU, China, Japan and NAFTA those four regions account for a total concentration of over 70%. On the other hand, the production of commercial vehicles occurs mostly in China and NAFTA accounting for almost 60% of total production, followed by the European Union with 9,9%.

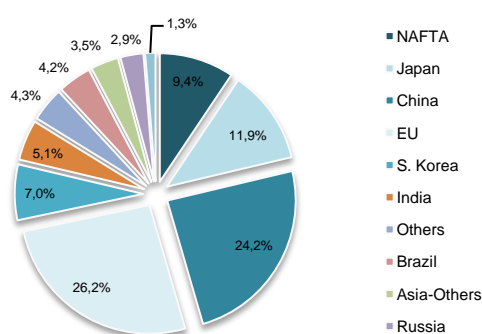


Chart 3 New Passenger Car Production Worldwide (%Share) – Year (2011) Source: Economic Report ACEA - 2011

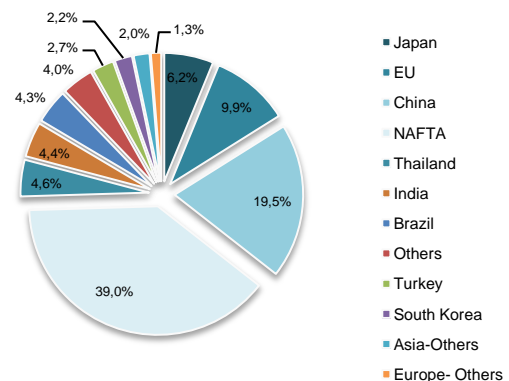


Chart 4 New Commercial Car Production worldwide (% share) – Year 2011. Source: ACEA Economic Report 2011

Considering the car production in a worldwide comparison, one can understand that there has been a trend of increasing market share for the car production in the BRIC, while the percentage of car production in the EU and NAFTA decreased over the past decade. It is noteworthy that the South **Korean market** share has been relatively constant over the period this period.

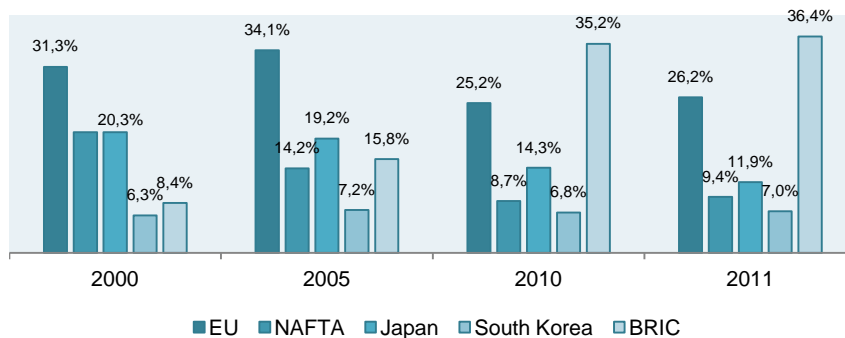


Chart 5 - Passenger Car Production: International Comparison (% share) years 2000 - 2011. Source: Economic Report: ACEA - 2011

As a final point it is important to mention that vehicle production followed the same trend in both segments, approximately. The main difference observed was in period of crisis for which period the graph visibly shows that the decrease in the production of commercial vehicles should a more sensitive behaviour than the segment of passenger. The rationale behind this would be inventory cost concerns. Manufacturers would prefer to keep a reduced stock of smaller passenger cars than large commercial vehicles which have higher costs. For this reason, the OEM strategy was to reduce the production of commercial vehicles taking into consideration the higher costs incurred in maintaining some vehicles in stock.

As a result of the decrease in the demand since the year of 2008, the companies in the automotive industry had to adapt their stock and output levels in order to maintain their survival and financial health. The measure adopted in reaction to the inhospitable market environment was to decrease production level of the plants. This economic crisis accelerated the need for a deep structural change in the automotive industry, setting the stage for sustainable growth. Currently, the industry is passing through a recalibration of its value chain and a consolidation trend is leading to companies to look for opportunities to increase in scale, streamline distribution, boost asset efficiency and provide access to previously limited markets.

### 3.1.4.2. Demand

Regarding the demand for new vehicles, measured through vehicle registrations for commercial and passenger, one can identify the biggest markets and its behaviour for the past few years.



Chart 7 Global New Vehicle Registration (2005-2012). Source: Bloomberg Data

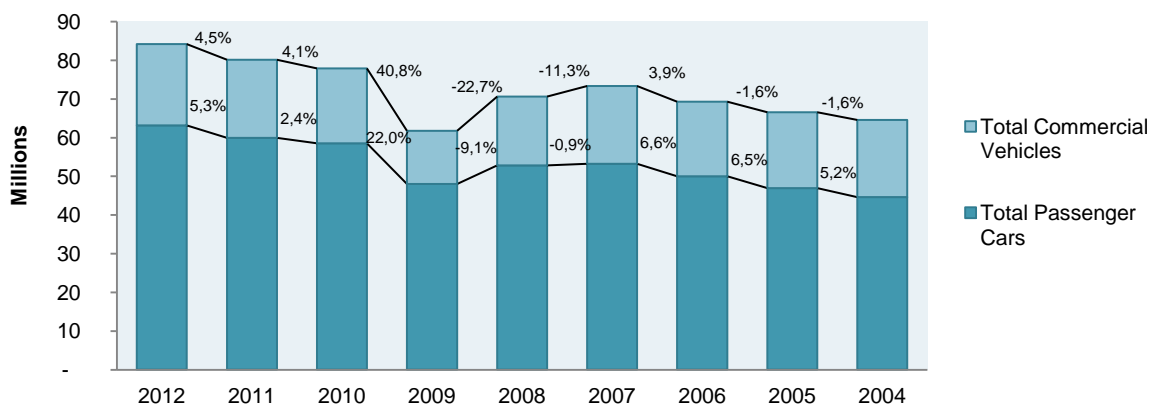


Chart 6 Global New Vehicle Production (2006-2012) Source: Bloomberg Data

Considering the following graphs, we can observe the market segmentation by countries in terms of new vehicles registered in 2011 (last period of report). The analysis of the demand, which is seen through the number of new vehicle registration, shows that the demand for vehicles resides in the European Union, NAFTA and China as top geographic locations. In 2011, figure 7 shows the group of countries with the highest Passenger Car registrations is NAFTA, followed by EU and China adding up to 62% of new cars worldwide in 2011. As for the Commercial Vehicle Registration, China was the clear location leading this segment with more than 23.6% of total worldwide demand of commercial vehicles.

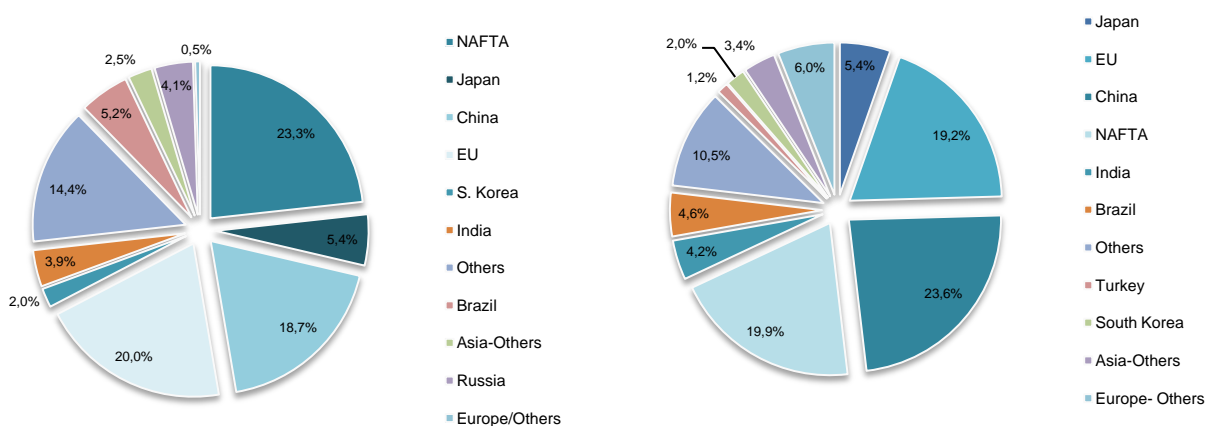


Chart 9 New Passenger Car Registration Worldwide (% Share) - Year 2011. Source: Economic Report ACEA - 2011

Chart 8 New Commercial Car Registration Worldwide (% Share) - Year 2011. Source: Economic Report ACEA . 2011

### 3.1.5. Special Focus –The Market for Premium Vehicles

Bearing in mind the focus of this research is the acquisition of Tesla by BMW, one must consider both companies operate in a specific market segment, the premium automobile market. For this reason, one should stress the fact that the most common aspect of premium vehicles are their high price, designing and engineering. The creation process of those cars targets affluent buyers, consequently those are commonly referred to as luxury cars. In the past, only high class wealthy individuals were able to afford luxury cars, currently, not only wealthy people can benefit from the comfort of this car segment since they are becoming easily affordable. Even though only one firm produces a certain brand of car, in the car industry the market structure is either a cartel or oligopoly.

#### 3.1.5.1. Top Luxury Vehicles Markets

Three years after a market cataclysm vaporized real estate and stock values, luxury automakers still face some significant changes. The main consequence led to luxury car companies reinventing themselves. In addition, among those changes, China is expected to become the largest premium car market, overtaking the United States and selling more than

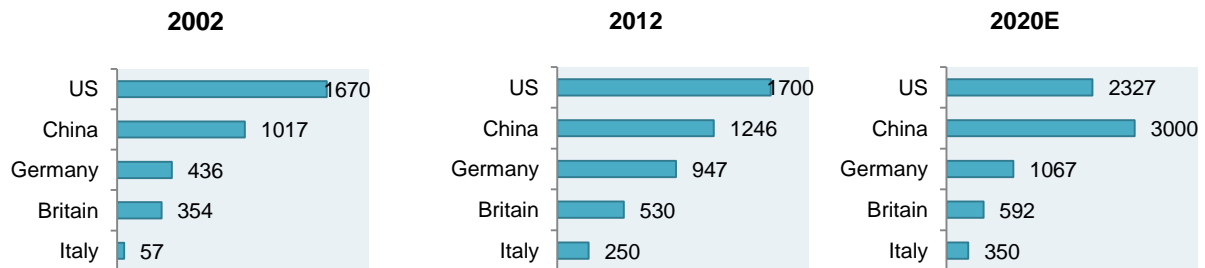


Chart 10 Global Premium Car Sales Ranking by Market. Source: HIS Global Inshight; McKinsey M-View, China Premium Car Research

2,3 million premium cars by 2016.

Considering the charts above, one can divide the market for premium cars in three geographic categories, the U.S. market, which is the largest market at present date, China which is a growing market for luxury goods and European Union ranking as the third biggest market for premium vehicles.

#### The European Union

Being the third largest market for luxury cars, the European Union's markets preferring premium vehicles are the German, British and the Italian, according to a McKinsey study in 2010. The trends in the EU suggest that all the high line manufacturers including BMW, Mercedes and Audi have aimed at the downsized segment of the luxury or luxury car market. As example Bentley downsizing refers to using a V-8 instead of a W-12, at Mercedes, V-6 volumes will eventually dwarf the V-8's.

BMW continues to phase out the legendary straight six in favor of more efficient four-cylinder engines. The market reflects some significant trends in not only with rising fuel prices but with increasingly urban environment. The EU market is characterized by technology driven premium tastes. Europe (including Russia and Turkey) accounted for 22% of global volumes in 2012, from 34% in 2000. During the same period, global volumes grew 51%. The five largest countries made up 71% of Europe's new car registrations in 2012.

## The United States

Luxury market in the U.S. is changing, consumers' are not the same as before the market crash of 2008 and the top 12 luxury brands accounted for only 10,8% of total U.S. car sales through 2012. Many households simply can't afford luxury vehicles any longer. Even though it is a revolutionizing market, around 1,7 million vehicles were sold in the year of 2012 and the predictions expect an increase to 2,3 million in 2020. Since early 1990's the U.S. market has been the largest market for luxury vehicles, although, it changed, the German and Japanese automakers are now among the top market share companies and the original American luxury brands lost competitive power.

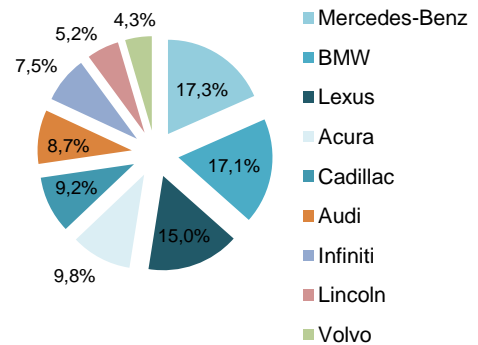


Chart 11 The Top Selling Luxury Cars in America.

Source: Douglas A. McIntyre

The Asian luxury companies, more particularly Lexus from Toyota Motors and Acura from Honda favour a strong position in the U.S. offering a good value relative to more expensive European luxury cars and holding a respectable market share. The U.S. luxury market is considered as the most volatile and intensely competitive, in 2012, Audi and Mercedes posted their highest sales ever and BMW had becoming the best-selling luxury brand in the U.S. overtaking Lexus.

## China

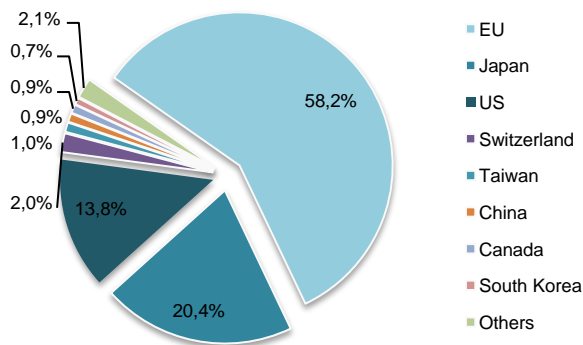
The Chinese market for premium cars has improved at an remarkable rate of 36% a year in the last decade. This growth is significantly faster than the 26% of annual growth in the overall Chinese passenger vehicle market for the equivalent period. Sales of premium cars in China accounted 1,25 million vehicles in 2012, making it the second biggest market in the world after the United States. It is expected that the premium car in China will grow at an annual rate of 12% through 2020, faster than the overall passenger car that expects a growth of 8%. The forecasts point that the Chinese market will reach 3 million by 2020, overtaking the United States. The Chinese market has some distinct characteristics that will require automakers to adopt a segment-based approach serving those customers. As example, car financing options and used car sales are less appreciated in China than in more developed countries. The most successful brands in the Chinese market are German Automakers accounting for 80% of market share. Other European, Japanese and U.S. brands make up the remainder.

### 3.1.6. Seasonality in the Automobile Industry

The automobile industry is subject to seasonal variations in revenues. Demand for automobiles is generally lower during the first and fourth quarters each year. In an industry classically subjective to cycle periods along the year, it is essential to contrast sales numbers in the same period of preceding year. For this reason, it is appropriate to adjust the annual rate of sales for its seasonality. This is normally referred as seasonally adjusted annual rate of sales (SAAR).

### 3.1.7. Research and Development

The vehicle manufacture industry is very much reliant on innovation, the intensive competition that characterizes global this industry seems to be the reason for high investments in research and development as differentiation factor. Companies constantly need to develop new models to keep up with the consumer tastes. The vehicle development trend is to advance batteries' capability of long-range touring without frequent recharging as well as bio-fuels for both diesel and gasoline engines. Moreover, investigations seek inexpensive catalysts for fuel cells and gasoline and diesel engine refinements to make these powertrains even quieter and more fuel efficient. Electric motor advances pretend to make electric vehicles practical as either the primary motive force or as part of a hybrid system mated with an internal combustion engine.



**Chart 12 Patent Applications filed by the Automotive Sector**  
 – Year 2011. Source: Economic Report: ACEA - 2011

Considering the fierce competition in the automobile industry, one can understand that investing on R&D, making this one of the top industries in terms of yearly R&D expenses, growing from 4% of annual proceeds for the past decade to approximately 5% at the present time. In addition, one can understand that the European Union holds the position as the

region with higher patents within the industry, followed by Japan and United States, the intellectual property right is the essence of present knowledge economy and would be able to hold the industry against strong competitive market force. Between 2006 and 2011, patent activity in the alternative-power space grew by 182 percent, more than any other technology area in the automotive industry, with a total of 22,255 unique inventions for the last year studied according to Thomson Reuters.

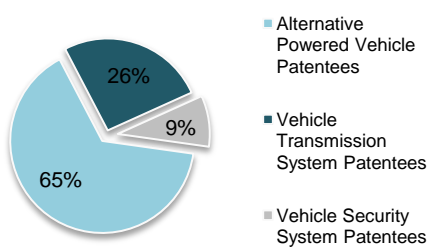


Chart 13 Patent Request by type. Source: ACEA 2011

### 3.1.7.2. Special Focus – The Alternative Power

This section will be focusing in a specific trend in the automotive market, the increasing investment in new technologies and the appearance of many option of alternative power. Alternative power vehicles cover from hybrids to hydrogen-powered vehicles. According to Reuters, alternative power patent activity increased 182% from 2006 to 2011, followed by vehicle security systems (54%) and transmission systems (48%).

Geographically, the top 20 automakers doing the most alternative power innovation are headquartered in just four countries: Japan (55%), South Korea (25%), USA and Germany (10% each).

According to Reuters, most patents in the automobile industry are now related to the development of alternative powered vehicles. Alternative powered cars are becoming very solicited, only in the first quarter of 2012, the Toyota Prius, the most famous hybrid vehicle, became the world's third bestselling car, with 247 thousand units sold in the first three months of the year. The aggressive R&D efforts of some of the leading manufacturers suggest that consumer options for alternative power will grow considerably in the coming decade.

According to Dr. Rainer Mathes, president of Prime Research, the study conducted by his company found that the plug-in hybrid is seen as the most important alternative powertrain solution in the future, being expected a downsizing and improved internal combustion engines for 2014 and beyond.

Additionally, a Roland Berger's report found that most of the growth will take place in powertrain components through 2020.

### 3.1.8. Business Essentials

An essential part in analyzing an automaker is to consider if a company is preparing makeovers or complete redesigns for any of its model. In an yearly basis, car companies revise their cars, this is a part of normal operations, the main issue relie if a company make a decision to develop a new design of a car. Changing and redesigning existing products can cause substantial delays and result in increased costs and slower revenue growth. Even though developing a new design may prove considerably profitable in the long run, it is an option that adds business risk.

Considering the OEM side, the life period of an automobile is very important. The longer a car stays operational, the greater the need for replacement parts. However, consumers benefit from the fact that new parts last longer. Additionally, important part of an automaker's income arises from the services offered with the new vehicle. As example, offering lower financial rates than financial institutions, the car company makes a profit on financing.

The leasing option also helped increase revenues, the leasing alleviate consumer uncertainties concerning resale value, and creates a sense of affordability for the cars. IN the automaker's perspective, leasing is a strategy that helps changing the true price of the vehicle throughout financing costs, increasing sales. On the other hand, leasing requires the automakers to accurately judge the value of their vehicles at the end of the lease making it a difficult task to profit on leasing.

### 3.1.9. Latest Trends in the Global M&A Market

The industry is in a healthy position, the automobile manufacturing industry accounts nearly 3-4% of the total GDP<sup>4</sup> to the U.S. economy and almost 6% of the E.U.'s GDP, according to a Frost and Sullivan's report. Being one of the major industries in the world and having the capacity to disturb markets and influence a country's international position or comparative advantage in trade. This, industry has been facing an increasing concentration for the last decades trough M&As causing significant changes in the competitive landscape in Europe. There have been some M&As of importance between automotive manufacturers, as example we can mention two mediate cases, the Daimler-Chrysler merger and the acquisition of Volvo by Ford. One should also mention recent economic miscarriages, as the divestment of Rover by BMW and more recently Chrysler by Daimler, those examples intensify the necessity to evaluate the real incentives and all the factors that may affect value creation.

Since the beginning of the 20th century, the automotive industry has experienced many consolidations. A first example in the history of OEM transaction is the acquisition of the British Vauxhall and the German Opel by an U.S. company GM in the years 1925 and 1929, respectively. Following the last decade of numerous M&As, which includes transactions: of Chrysler and Mitsubishi by Daimler-Benz and the acquisition of Jaguar, Volvo and Land Rover by Ford. There was also the takeover of Seat and Skoda by the German Volkswagen, as well as the alliance between Nissan and Renault. In line with the Daimler-Benz strategy, additional companies developed the strategy of geographic market expansion through acquisitions. As example Renault and GM acquired the Korean producers Samsung and

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<sup>4</sup> Gross domestic product is the market value of all officially recognized final goods and services produced within a country in a given period of time.

Daewoo, in the years 2000 and 2003 respectively. This clear trend of consolidation clearly makes us expect that only number of manufacturer will survive in the future, being clearly located in Europe, U.S. and in Japan. For the past few years, the trend of consolidation among the car producers has increased, and nowadays the top 10 automobile manufacturers account for over 70% of global car market share.

However, the consolidation procedures of car manufacturers are not always cases of success. There are cases of failure, for instance the acquisition of Rover by BMW, terminating in 2000 and the divestment of Chrysler by Daimler-Benz in 2007. Some cases that would need to be evaluated on their future performance still exist. On the other hand, one can mention highly fruitful consolidations, like the acquisition of Skoda and Seat by VW and the cooperation between Renault and Nissan. Moreover, it is common to observe strategic alliances amongst other car manufacturers, the cooperation of BMW and Ford in engine production and development to the shared car production between Peugeot and Toyota are examples of positive agreements.

There can be several alternative reasons for automobile companies engage in M&As. Being the prime motivation the creation of synergies, there can be identified several other explanations for corporate transactions to occur, being mainly strategic motivations, one can identify the inclusion in industry specific requirements, the existence of scale requirements due to globalization, the existence of speed and cost consideration of growth, the expansion of product and service range, the diversification and reduction of risk and leveraging of core competencies and technological changes.

The mergers in the automotive sector are complemented with some specific characteristics. Being one of the most accepted the ones of economies of scale, and bearing in mind economies of scale can be production linked and reached only through the combination of purchasing and production. Nevertheless, production-linked economies of scale are improbable to be realized throughout M&As in the automotive sector since scale economies can be found, in general, at the plant level and not at the company level, for this reason one should consider the output per plant and not the total firm productivity. Additionally most cost savings can be arising from parts such as R&D, because this functional area has significant expected costs in the automotive industry, comprising a large share of the preproduction expenses of a car manufacturer. However, companies have been able to cooperate to acquire technology from others. The cooperation between BMW and Peugeot in the development of a new small sized engine for their models of Mini, or concerning Porsche and VW in the creation of a sizeable range of standardized parts for their SUVs, are two examples that did not require full scaled M&As.

As we can see from the figure above, after a sharp increase during the first half of 2011, deal volumes and deal values have slowed in 2012. Europe's debt crisis continues to weigh heavily on the European auto sector, which in prior years has been the most active participant in global automotive M&A. The sector transacted 490 deals with a total disclosed value of \$30.2 billion. This represents an 18% and 33% decline in deal volume and value when compared to 2011, where a total of 594 deals were completed for a disclosed value of \$44.9 billion.

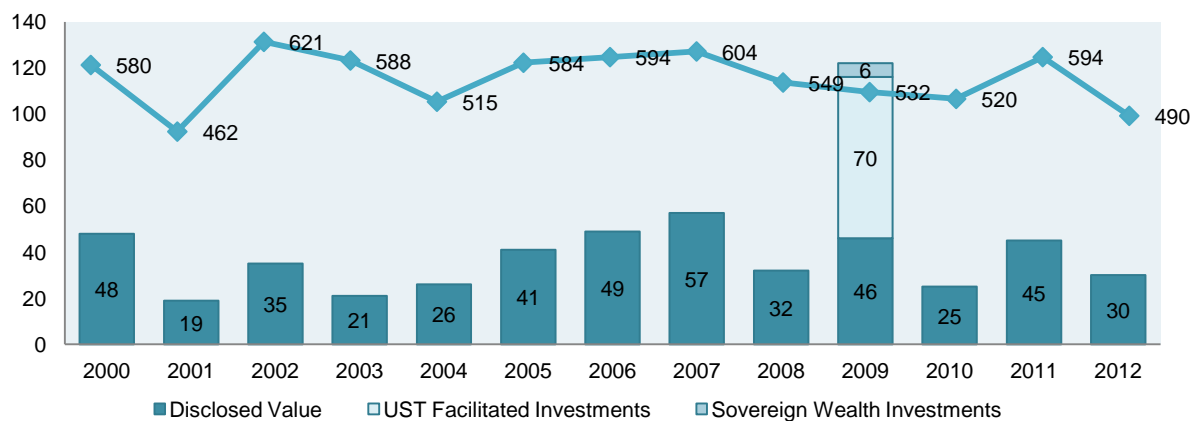


Chart 14 Global automotive M&A deal volume and Value - (2000-2012). Source: Thomson Reuters and PwC - Automotive M&A insights 2012

Finally, the pursuit of power is a main reason for M&As. Companies chase the control in quantity, price or nature of the product sold, with the purpose of creating extra profits.

Conversely, the increase of vertical integration was only accomplished by a few automotive manufacturers, and as a consequence of the concentration in the supply industry the institution of market power has been strictly restricted.

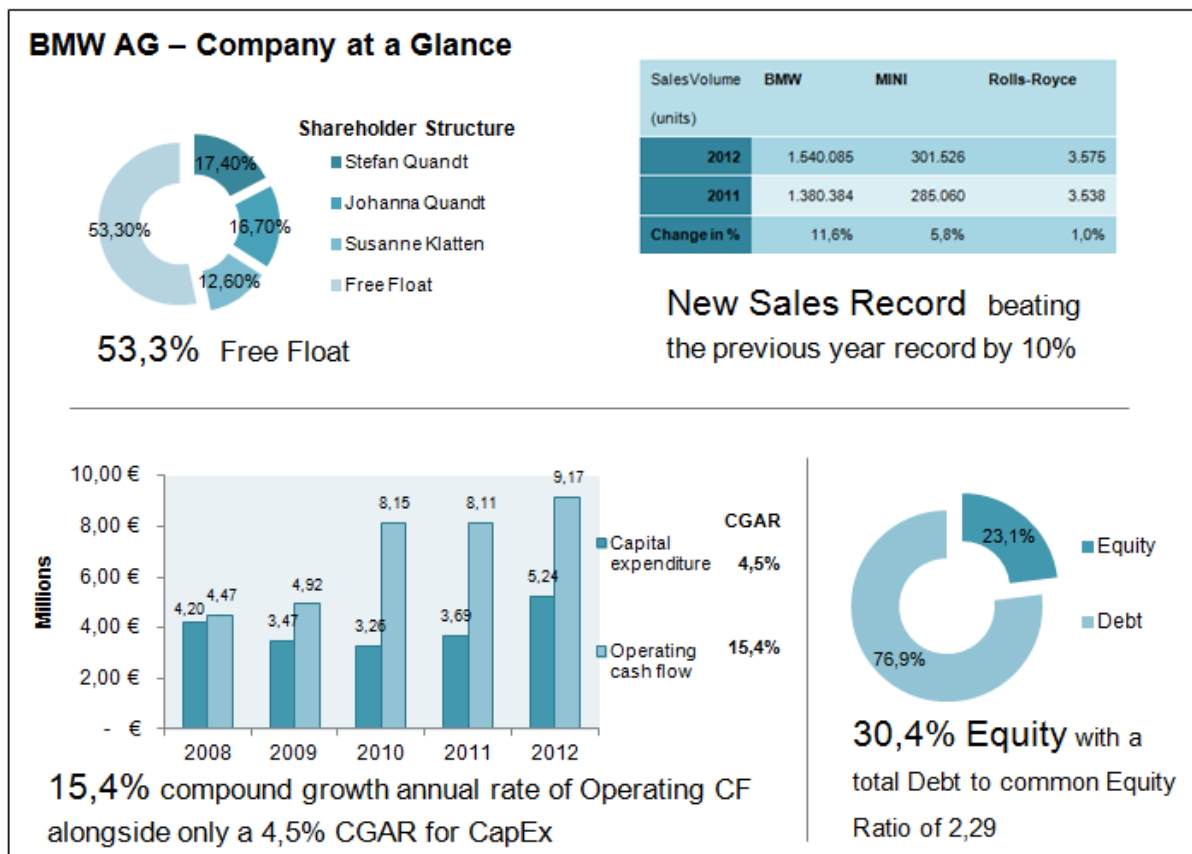
Altogether, one can mention arguments that do not completely support the motives for automotive M&As, and a few fundamental incentives that might influence their subsequent performance. Even though the potential creation of additional value appears to be narrow in the automotive industry, being the decrease in R&D expenses the most expected to originate substantial synergies.

#### 4. The Companies

As the rationale of this paper is the discussion of a potential acquisition, this section will provide further insights about the companies' main operational business and what makes them different from other firms.

#### 4.1. BMW - Bayerische Motoren Werke (:BMW GR)

A company founded in 1917, with the original purpose to produce engines for airplanes and only in 1952, BMW entered for the first time the luxurious automobile segment. Issuing for the first time in 1989, the BMW Group issued preferred stock. The BMW Group is now one of the ten largest car manufacturers in the world with a market capitalization of Eur. 43,5M and, with its BMW, MINI and Rolls-Royce brands, owns three of the soundest premium brands within the car industry. The group also operates a successful financial services business and produces motorcycles. The company's determination is to generate profitable growth and above-average returns by focusing on the premium segments of the international automobile markets. The company's brand is extremely strong and is associated with high performance, engineering excellence and innovation. BMW enjoys a market-leading position in global premium cars, and is the best positioned manufacturer on the industry positioning framework, with the best in class EBIT margin.



In 2012 BMW sales increased by 10%, MINI by 5% and Rolls-Royce by 1%, the brand that presented the highest revenue growth for the period was Rolls-Royce.

More than 1,84 million BMW, MINI and Rolls-Royce vehicles were delivered to customers in 2012, beating the previous year's record by more than 10%. All three of the group's brands set new records. The price of BMW common stock climbed more than 70% from the end of 2007 to the end of 2012, contradicting the DAX5 that fell almost 5,6% for the same period.

Regarding the ownership structure, BMW's capital is fairly distributed amongst its three main shareholders, the inheritors of Herbert Quandt holding 46,7% of BMW group. Herbert Quandt was responsible for the revival of BMW from bankruptcy and was responsible for the capital injection that made BMW able to develop their first middle class car and thereby enter the broad market. The remainder 53,3% of the company is shared by small investors, being the free float.

The company grants a healthful capital structure that comprises 30,43% equity and 69,57% debt. In the past few years, and as a reaction to the 2008 crisis, the company increased its ability to increase operating cash flows maintaining nearly the same capital expenditure levels. BMW has a positive working capital and generates a financing source through the operating cycle, inventories and receivables are higher than payables. This, represents the customary financial structure for a manufacturing firm, its capital structure enables BMW to generate positive net cash that could be reinvested.

In 2012, BMW group reported annual revenues totalling almost EUR €76 million, and a net income exceeding EUR€ 5 million, arising from all its business segments.

BMW group has averaged a positive revenue growth of 8.45% year over year (y-o-y) from 2009 to 2012. As one can see from figure 14, the average compound annual growth rate for the 2008-2012 period was 11,5%, being China the market with the highest growth in this period (39,2%). Most of the revenue accrues from three car brands, BMW in total reports for 83.36% of the revenues arising from the sale of the automobiles.

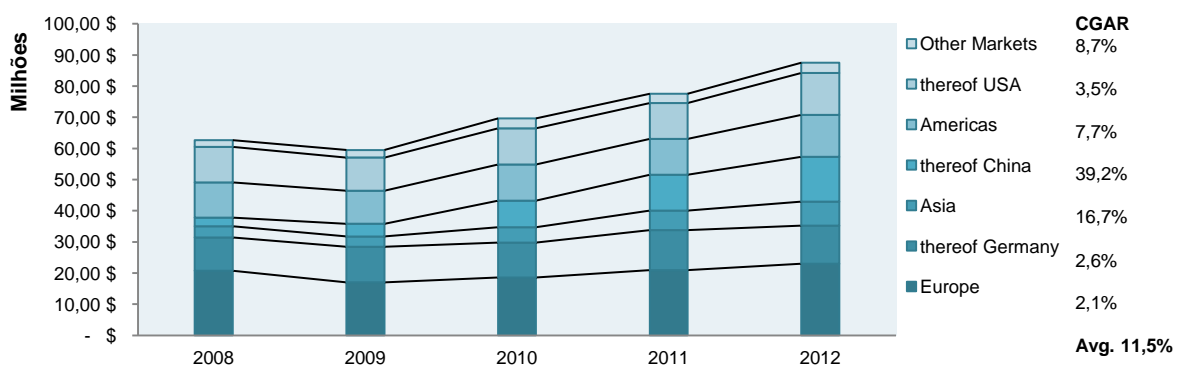


Chart 15 BMW Group revenues by region - 212. Source: BMW AG Financial Report

<sup>5</sup> DAX - Stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange.

However, it is expected that BMW will face noteworthy changes, the market expectations predict that BMW will need to absorb structural costs in the next few years, as the company seeks to address emissions targets by the addition of a new front wheel drive platform the company will need to invest in electric vehicle technology.

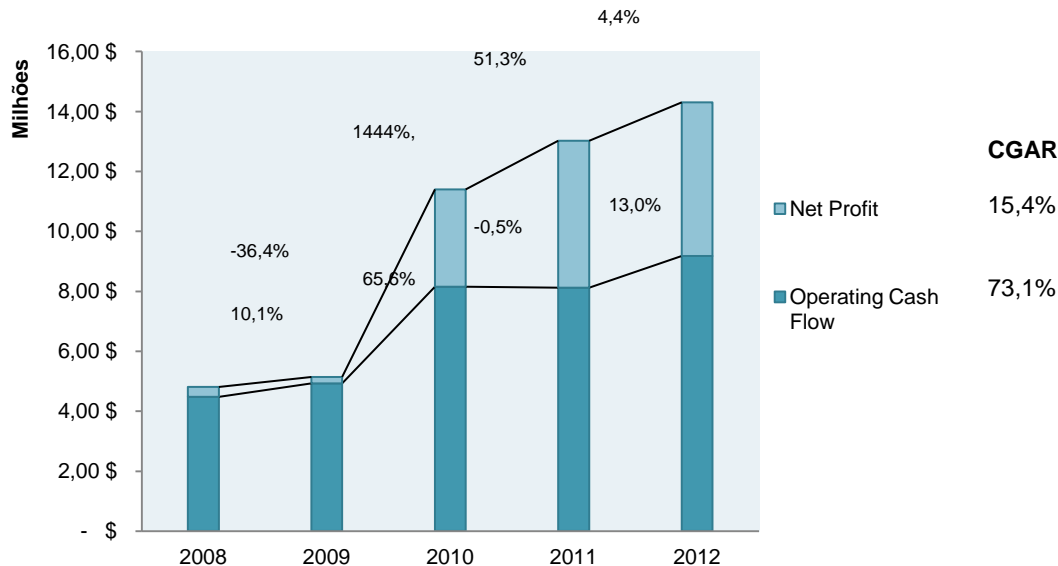


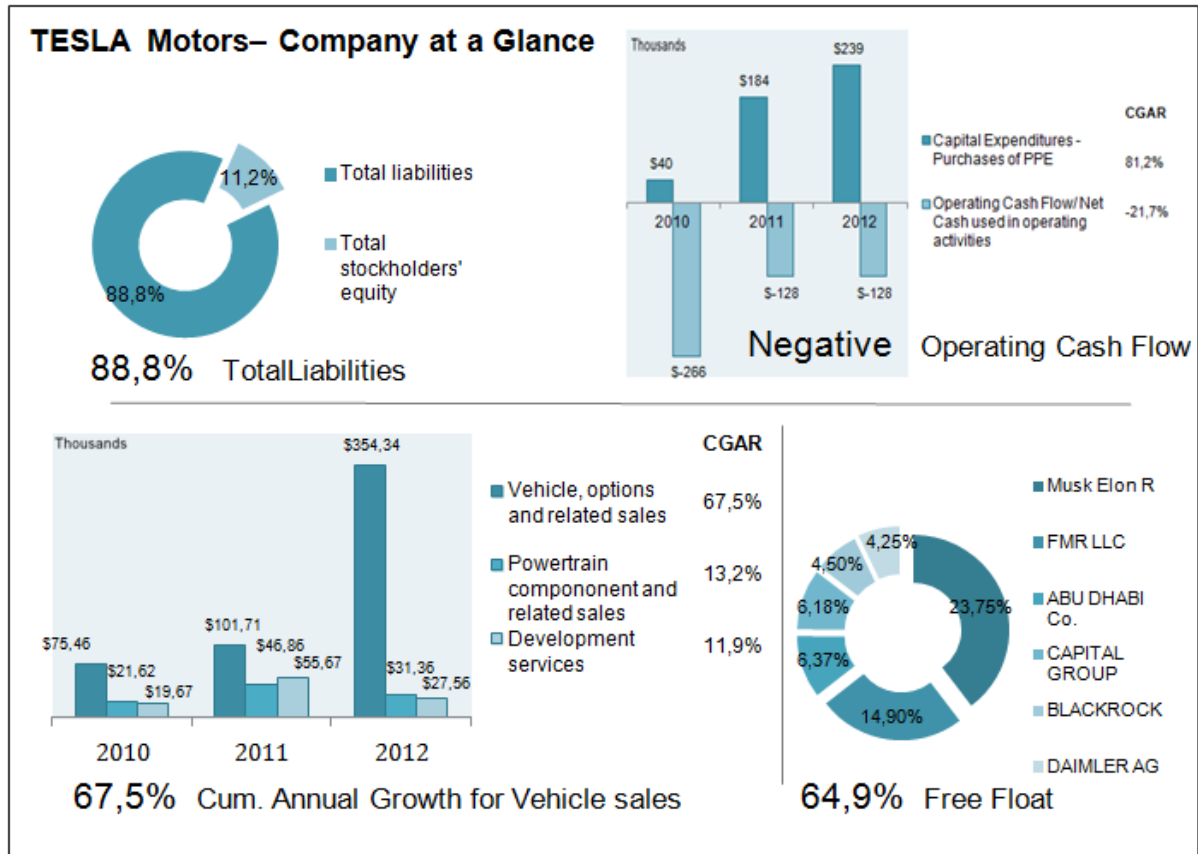
Chart 16 BMW Group net profit as percentage of Operating Cash Flows - (2008-2012). Source: BMW 2012 Financial Report

Regarding BMW group's profitability, one can mention the company handled very well the post crisis period, being able to generate an impressive growth in the net profit, the year 2009 to 2010 the period on which BMW showed the most impressive recovery. With a CGAR of 15,4% of the Net Profit for this period, and an impressive 73,1% growth of the group's Operating Cash Flow the Group shows an impressive path of increasing efficiency.

#### 4.2. Tesla Motors (:TSLA US)

Founded in 2003, this recently founded company envisions commercializing electric vehicles all the way to mass market. Tesla's initial strategy was to commercialize the T-Zero prototype electric sports cars created by AC Propulsion, a premium sports car designed to the early adopters, Tesla Roadster was launched in 2008 and by December 31. 2012, approximately 2.450 units were delivered across 30 countries. The objective is to move as rapidly as possible into more mainstream vehicles, including sedans and affordable compacts, Tesla also developed an innovative distribution model based on Company-owned

sales and service centres. Tesla's strategy of selling sleek, eco-friendly designs at high margins echoes Apple Computer's business model, and differs greatly from its industry peers Chrysler, Ford and General Motors in Detroit, which have been struggling to evolve



their aging lines to meet the increasing demands for electric and hybrid vehicles (Sun, 2011).

Tesla Motors uses proprietary technology and its responsible for developing, manufacture and sell high-performance fully electric vehicles as well as powertrain components. In addition to developing our own vehicles, the company provides services for the development of full electric powertrain systems and components and sell electric powertrain components to other automotive manufacturers, operating as an OEM. Automotive sales consist primarily of revenue earned from the sales of the Model S, Tesla Roadster, vehicle service, and vehicle options, accessories and destination charges as well as sales of regulatory credits.

The company provides services and powertrain components to Daimler AG for its Smart fortwo, A-Class, and B-Class electric vehicles. Additionally, they developed a full electric powertrain system for Toyota Motor Corporation for use in its RAV4 EV and began shipping production components to Toyota in 2012. Being a recently public traded company, with its IPO on 29th June 2010, and with an initial 49.87% free float, Tesla's major shareholder is its co-founder, Elon Musk, also known as the founder of Paypal, due to consecutive cash offerings it increased the number of publicly traded shares to 64,9% . One should add that

among shareholders there are two companies in the automobile industry, Daimler AG, which is the main holder of Mercedes-Benz and Toyota which is currently the biggest car producer. The company grants a tense capital structure comparing 11.2% equity and 88.8% debt. Tesla Motors has a negative working capital and generates a positive working capital need through the operating cycle, inventories and receivables are of lower value than payables. Vehicle, options and related sales for the year ended December 31, 2012 were \$354.3 million, an increase from \$101.7 million for the year ended December 31, 2011. The increase in vehicle, options and related sales was primarily attributable to the commencement of Model S customer deliveries in June 2012 and subsequent ramp as well as sales of regulatory credits, partially offset by a decrease in the number of Tesla Roadsters sold as we completed production of the Tesla Roadster in January 2012 and have been selling our remaining inventory primarily in Europe and Asia.

The significant increase in production and delivery of vehicles in the United States allowed the company to sell more regulatory credits to other automotive manufacturers. powertrain component and related sales for the year ended December 31, 2012 were \$31.4 million, a decrease from \$46.9 million for the year ended December 31, 2011. The decrease in powertrain component and related sales was primarily due to fewer shipments of battery packs and chargers to Daimler. Tesla expects its capital expenditures in the fiscal 2013 to be significantly less than those of 2012, since the majority of the investments, as the Tesla Factory and Model S development, are concluded. On the other hand, this reduction is expected to be partially offset by expenditures related to expanding service and store network developments.

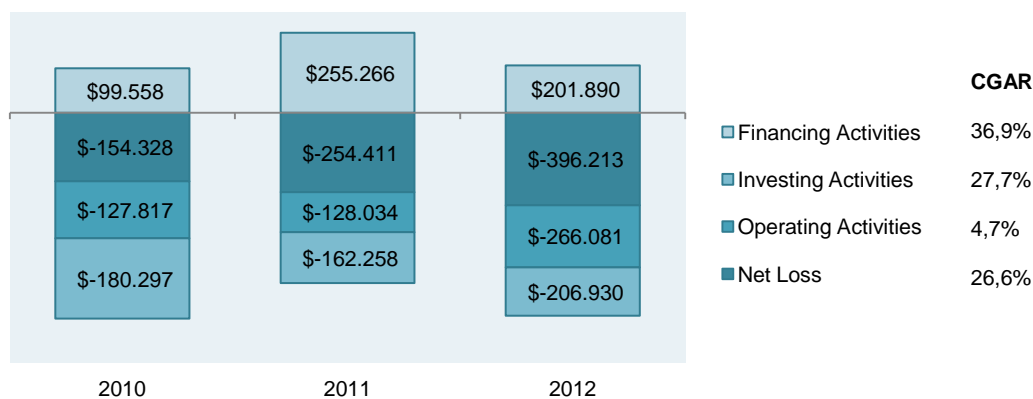


Chart 17 Tesla Motors Activities breakdown - (2010-2012). Source: Tesla 2012 Financial

Being a new company, it remains within a nascent industry – compared to the 150-year-old internal combustion vehicle industry, Tesla is still in an initial phase for its operations, for that reason its capital structure is still facing changes. Tesla incurred in significant losses since its foundation, using approximately \$709.2 million of cash in operations through the end of 2012. Despite the tense financial condition, the company has grown from a single retail store (through which It markets its vehicles) in 2008, to 18 stores worldwide, a 350,000square-foot production facility and global sales in at least 30 countries. Furthermore, Tesla expects its sources of liquidity, which includes cash, cash equivalents, cash held in the department of energy, along with the company’s projections of cash flow from operating activities, will provide the adequate liquidity Tesla needs. Even though Tesla has yet to earn a steady profit, it has a market cap of about \$4.79 billion and with per share prices consistently trading in the \$40/share range – off its all-time highs, but at the high end of its historical range.

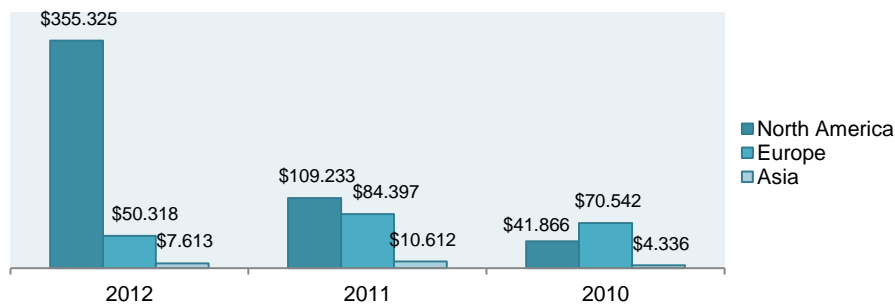


Chart 18 Revenue by Geographic Region Breakdown. Source: Tesla Financial Report

### 4.3. Performance in the Stock Market

Stocks in Germany had a positive performance since the beginning of 2013. The DAX Index is the benchmark index for the German equity market. It tracks the performance of 30 selected German stocks traded, which represent around 80% of the market capitalization listed in Germany. The European debt crisis has created large uncertainties in the global financial markets, especially in the United States. One of the reasons why the European debt crisis is having an impact on the performance of the U.S. equity markets is that combining US and Europe account for 40% of the world GDP, so any slowdown in their economies has a huge impact on investor confidence. In the U.S. market, the Dow Jones

continues to make new highs, all the while, the S&P 500 is about to test the October 2007 record high, it is also conceivable the index to dance around the October 2007 high.

BMW's share price, have been relatively volatile over the last years, in the past few years, the stock found its minimum stock price of €17 in early October of 2008, jumping to a historical maximum of €75.93 in the beginning of January 2013. Since then, BMW is expected to demonstrate a gradual decline in operating margin which leaves investors careful about the overall stock's relative performance.

Since its IPO, on June 2010 on which the stock's offering price was \$17, Tesla's stocks followed a path of increasing value to find its maximum of \$39.48 in February 2013. Showing a relatively low volatility for its period and with a price target of \$45, the primary downside risk that Tesla faces nowadays resides in the execution on the Model S in the near term.

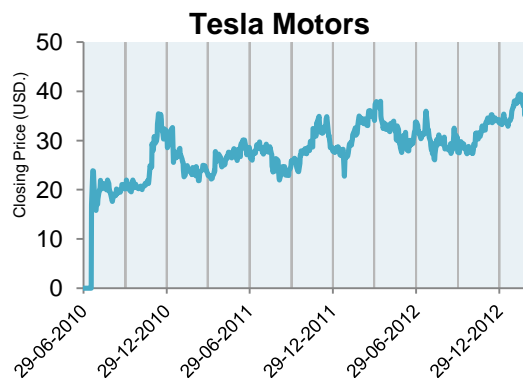


Chart 19 Tesla Motors Share Price Evolution. Source: Bloomberg Data

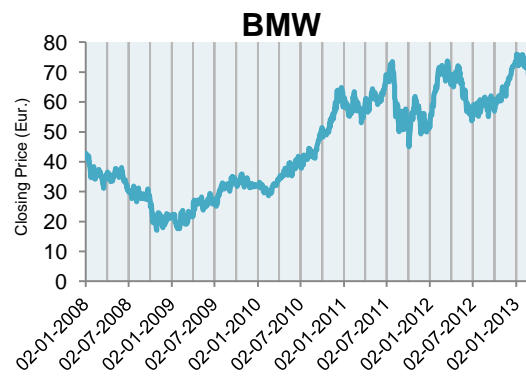


Chart 20 BMW AG Share Price Evolution. Source: Bloomberg Data

## 5. Stand-Alone Valuation: The Acquirer and the Target

In the first chapter of this thesis, there is the presentation of FCFE, DDM, FCFF WACC-based, FCFF-APV based as well as the Relative valuation, all those are different valuation methods. Considering this universe of different valuation methods, I thought that the ones that best adequate to the specificities of BMW AG and Tesla Motors were three among those methods.

<sup>6</sup> Index of 500 stocks chosen for market size, liquidity and industry grouping, among other factors. The S&P 500 is designed to be a leading indicator of U.S. equities and is meant to reflect the risk/return characteristics of the large cap universe

Bearing in mind this paper's objective is to develop and M&A deal in the challenging environment of the automotive industry, I found that the right application of the FCFF-APV, FCFF WACC-based and relative valuation methods were the option best suiting the case and would bring an adequate result.

### 5.1. Tesla Motors, The target firm

As Tesla is a relatively new firm in an early stage in its life cycle, Tesla presented negative earnings in 2012. Those negative values for earnings can be explained because Tesla is a firm in a business that requires huge infrastructure investments up front, as the development of its production plants, those classes of investments will often lose money until the total of those investments are in place. Once the investment phase is complete the firm will be able to generate revenues, returning positive earnings.

Furthermore, when firms report negative earnings, the following points should be taken into account by the analysts: The credibility of the management making the claim; the amount and timeliness of the information provided with the claim; consider confirming reports from other companies in the industry and finally, it should be assessed of how persistent is the problem, as if there is the case of poor earnings persisting over multiple periods, it would be more likely that the firm in case is facing a long-term problem.

As Tesla's business requires a large infrastructure investment early in the life cycle and the firm has to wait for a long period before it can generate earnings, to meet those initial investments, it was necessary for the firm to borrow large amounts to fund its infrastructure, the consequence is that the company faces a rather tricky combination of negative earnings and high leverage.

In conclusion, Tesla Motors presents itself as a case where traditional discounted cash flow valuation has to be modified or at a minimum, adapted, to provide reasonable estimates of value. This evaluation would bring us additional judgement of whether the firm's negative earnings will be reversed, and if so, when.

#### 5.1.1. Revenue Forecast

In the previous section, I presented Tesla's main business segments. Tesla's operations can be divided between: vehicle, options and related sales, powertrain components and related sales and development services. As this company is an automobile start-up, along with a revenue and historical operating margin analysis, I had to consider comparable firms and market trends to add value to my projections.

Considering the geographic distribution for sales and revenues, one can understand there are three markets, North America, Europe and Asia which accounts in 2012, for 86%,

12% and 2% of revenues, respectively. Furthermore the majority of the firm's investments have been made in the U.S. and European market, with the acquisition and development of plants in Palo Alto, California and development in Tilburg, Netherlands. As the company is delivering model S only in the U.S. and plans to start delivering the model in E.U. in the middle of 2013, entering the Asian market only by 2014, I found it of extreme importance to divide the projections by market. My methodology was to focus on revenue growth so that I could get a measure of pace of growth and it was considered that revenue growth is less volatile.

#### 5.1.1.1. Vehicle Production

As Tesla introduced the Model S in the US market in a first stage, following the European and Asian markets and considering this information and bearing in mind Tesla is a company providing new technology in the market, positioning this company in a niche growing market, sales projection will rely less on industry consensus. Additionally, market expectations for the production of Electric Vehicles were taken into account. A few studies were considered providing sales forecast for BEVs<sup>7</sup>, providing average annual sales of 380.000 vehicles by 2015, totalling 1% of global automobile sales. Analysis of some of the most credible recent forecasts indicate that BEVs could account for as much as 53% of all electric vehicle sales through 2020 and 5% of total global automobile sales (around 5 million units) at this stage of BEV industry development, forecasting future sales volumes is complicated and speculative. In any event, two leading studies detailing projected BEV production by the Boston Consulting Group and Deutsche Bank, predict annual sales of up to one million BEVs by 2015 in North America alone. The following highlights several

**Tabela 1 Global Battery Electric Vehicle - Sales Forecast**

Global Battery Electric Vehicle - Sales Forecasts					
Sales Forecast for BEVs	BEVs Sales	Sales period	-	Sales (units)	CGAR (%)
Strategy Analytics (3/09)	500000/yr	by 2015	Sales 2012	90000	
Goldman Sachs (7/10)	1,7 million /yr	by 2020	Expected sales by 2015	380000	61,63%
Pike Research (9/10)	340000 /yr	thru 2015			
Pricewaterhouse Coopers (10/09)	300000/ yr	by 2015	Expected sales by 2020	1500000	42,14%

additional, credible medium-term average annual BEV global sales estimates.

Being one of the most critical inputs in a valuation process, especially for firms as Tesla, with prospects of high growth, this estimate is an important task. As Tesla is a recently created firm, there is not much historic information. For this reason in such companies, with

<sup>7</sup> Battery Electric Vehicle

negative earnings, one can understand that a positive estimation of the earnings is not a possible approach for this case. In addition, the presence of negative earnings, volatile growth rates overtime and the rapid changes that high growth firms go through over time make historical growth rates unreliable indicators of future growth for this firm. Even though, I found it appropriate to incorporate information from historical growth into estimates of future growth for the two subsequent years, as a measure of growth phase. I also took a look at growth in a yearly basis in the hope this could bring additional information of the changes as the firm becomes larger. The application of the historical information served as the basis for the near future, because this is quite an innovative industry that can face changes. The historical growth in the overall market was also taken into account as it incorporates information about the cyclical nature of the automobile market.

Concerning the high market demand for the BEV's and the low level of supply, it is expected that Tesla faces extremely high demand in the next two years, after that, it is expected that most car producers insert electric models as an option.

In addition, as Tesla is introducing its Model S in the three different markets in different time periods, the division by markets in the estimation of growth appears to be the most reliable strategy in the estimation of future revenue. Moreover, for the latest years of valuation it was considered that U.S. and Europe, being the most mature markets, would grow at the same phase in long-run. The forecast in the growth for revenues also took into account the following issues:

- Growth in revenues decrease as firms revenues increase
- Compound growth rates in revenues over time could seem low estimates
- The size of the business in \$ amount compared to the market

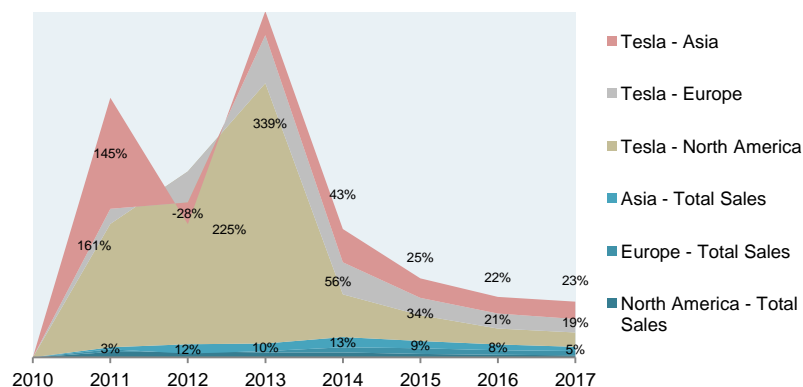


Chart 21 Tesla Motors expected revenue increase (2010-2017)

### 5.1.2. Expense Forecast

The expense forecast is performed on a consolidated level due to Tesla's presentation of the financial statements. The categorization of the operational expenses included cost of goods sold (COGS), research and development (R&D), selling general and administrative expenses (SG&A) and employee stock option expense (ESOE). Due to the different nature of those expenses, the impact of each category in the operations was assessed in a specific manner.

#### 5.1.2.1. *Cost of Goods Sold*

The cost of goods sold comprises the expenses arising from manufacture, distribute and support the products. Over the last three years, these expenses varied significantly, representing between 70% and 92% of revenues. As there are no older financial information, and bearing in mind COGS has a high correlation with revenues (99, 39% for the period of 2010-2012), to maintain the consistency of the model it was considered that higher growth should traduce lower margins but, at the same time, higher revenues eventually would have to deliver positive earnings. Additionally, assume that Tesla's business would converge to the average operating margin of competitors seemed too conservative, for this reason I was assumed that as the business grows and production levels stabilize, margin would improve from current values to target levels.

Moreover, it is expected that Tesla's operations reflect a trend towards cost reduction which is expected to continue in the future. There could be mentioned two main reasons to support this assumption. The first would be the clear reduction of costs within the automobile industry as a whole. The second would be based in the rationale that as a manufacturing company, Tesla's management outlined a fairly credible path to cost efficiency, which in time would include reducing labour hours, overtime and premium freight as product matures. It is important to mention that, being a new company and expecting to launch a new model in the near future, the Model X in 2014 the cost of revenue is expected to be higher than the average of the industry.

#### 5.1.2.2. *Research and Development (R&D)*

R&D expenses include expenses related to all the products pre-production activities, which comprises manufacturing preparedness, process validation, prototype builds and extensive testing as well as the development of the Tesla Factory. As the construction of the Tesla factory in Palo Alto was concluded in 2012, it is expected that R&D expense decreases in 2013, maintaining higher values when compared with the general automobile industry figures. Tesla has an highly differentiated business model, appealing product

portfolio and leading edge technology, even though the value for R&D expense is expected to converge, in its late years of forecast, to the average of a peer group, this peer group comprises the top 4 companies in the automobile industry providing an R&D expense of 7, 91% for the last years. For the most recent years of forecast the value I considered was the average top 20 R&D expense as percentage of sales averaging a 14% growth per year, the source of this data was a study developed by Booz & co. "The Global Innovation 1000". As of the historic of Tesla's R&D expenses, it has been driving most of the revenues, which is a consequence of the specificity of this business, requiring a very high up-front investment.

#### *5.1.2.3. Selling, General & Administrative expenses (SG&A)*

SG&A expenses consist primarily of personnel and facilities costs related to our Tesla stores, marketing, sales, executive, finance, human resources, information technology and legal organizations and fees for professional and contract services. Counter to the traditional auto industry's sales model of franchise dealerships, Tesla markets and sells its vehicles directly to consumers. The company sells online, through its global network of company-owned stores, over the telephone or in-person at its headquarters and via corporate vents. Tesla own stores located in highly visible, premium outlets in major "trend-setting" metropolitan markets, it plans to open a total of 50 stores worldwide over the next several years. The administrative expenses as a percentage of revenues are relatively unstable for the last three years, for this reason, and bearing in mind most of the development and initial investment phase is almost concluded, it should be expected SG&A margins to yield much lower values than the average industry value, as this company is applying a different distribution strategy. Additionally, there are lower costs associated with the ownership of an electric car, electricity costs less than diesel or gasoline, Tesla explains electric cars have less mobile parts resulting in much lower maintaining costs. The average SG&A expense for a group of 44 OEM's, with the average past data of the last ten years was of 12, 02% of sales. Considering Tesla's characteristics, I found it should be expectable for Tesla costs to be much lower, considering SG&A expenses to be 6% of Tesla's revenues.

#### *5.1.2.4. Depreciation and Amortization (D&A)*

Being a non-cash expense, Depreciation and Amortization brings close the reduction of the book value of a company's property plant and equipment over its estimated useful life, reducing the reported earnings. This item was not highlighted in Tesla's financial statement, being commonly included in the cost of goods sold. As a consequence, D&A expenses were considered to be averaging 20 years, considering building and other assets. Furthermore, I added the depreciation values associated with future capital expenditures (50% of Capital Expenditures).

### 5.1.3. Operating Expenses (OPEX)

In the calculation of the total OPEX, I tried to base my assumptions in the most approximate information available in order to develop a consistent model. When forecasting most operating expenses, I found it reasonable to compute COGS, R&D and SG&A expenses as a percentage of revenues adjusting the values in accordance to the expected trends in the industry. Considering D&A, it was my opinion that this would not be calculated as percentage of revenues, instead it would be a percentage of existing assets.

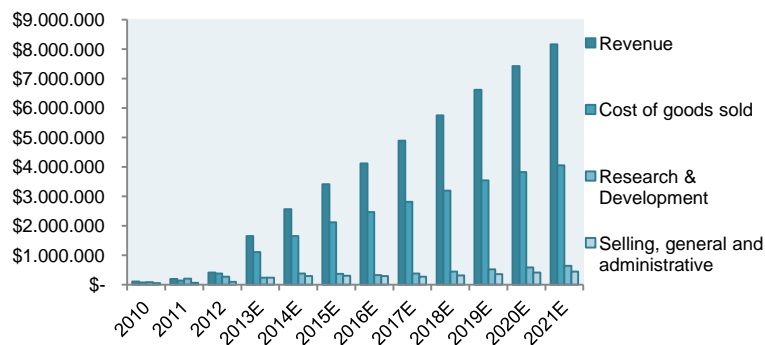


Chart 23 Revenue and Expense Forecast

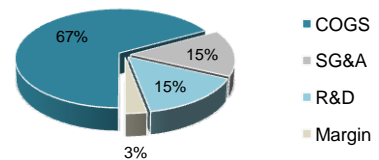


Chart 22 Trading Costs Breakdown

### 5.1.4. Operating Working Capital

Calculated as the difference between current assets and current liabilities, net working capital represents operating liquidity available to the business. This metric specifies the firm's ability to convert its resources into cash and by quickly turning resources into cash, increasing the firm's ability to reinvest. In order to develop the forecast for net working capital variations, one should comprehend the company's consolidated balance sheet statement.

As the company is still developing its business, my assumption was that I should only use the LTM references in forecasting the operating working capital as Tesla is designing its policies in operations. I considered that normalizing the available references would impact the net working capital variations and possibly not illustrate the reality.

#### Current Assets

Firstly, it should be clarified that accounts receivable (A/R) include amounts related to sales of powertrain and regulatory credit to other vehicle manufacturers. This line of current

assets accounts for the amount of products Tesla sold on credit. A/R is classically projected through the DSO<sup>8</sup> according to the formula:

$$DSO = \frac{A/R}{Sales} \times 365 \text{ days}$$

From this formula one can obtain the measure of the number of days that a company takes to collect its revenue after a sale has been made. For the case of Tesla, it was considered the LTM DSO with respect to trade receivables.

Concerning inventory levels, in order to measure the company's performance that gives investors an idea of how long it takes a company to turn its inventory into sales. I used the value of a company's inventories. The projection of this value is developed according to the following formula:

$$DSI^9 = \frac{Inventory}{COGS} \times 365 \text{ days}$$

In what concerns Tesla, DSI was projected having as target the industry average, values which the company is expected to meet has demand for Tesla Models increase. The reference used was 36 days, which is, according to Damodaran, the average value for a group of 12 companies in the automobile industry.

The projection of current income taxes was developed as a percentage of net consolidated revenues. Working capital needs also account for Loans and receivables as Tesla is developing an option to lease cars.

### Current Liabilities

Including all the company's debt and obligations that are due within a year. This line traditionally accounts for short term debt, accounts payable and accrued liabilities. The first line is A/P<sup>10</sup> which refers to the amount Tesla owes for products and services already purchased. The projection of current liabilities is based on the DPO, following the formula:

$$DPO^{11} = \frac{A/P}{COGS} \times 365 \text{ days}$$

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<sup>8</sup> Days Sales Outstanding (DSO)

<sup>9</sup> Days Sakes of Inventory (DSI)

<sup>10</sup> Accounts payable (A/P)

<sup>11</sup> Days Payable Outstanding (DPO)

DPO is an indicator of how long a company is taking to pay its trade creditors. This formula was applied in the projection of A/P, Other liabilities as well as financial liabilities. I used industry average levels as target DPO days.

Concerning the projection of future accrued expense, as this refers to remuneration and rent and taxes that have already been incurred but not yet paid. This was projected as a percentage of revenue, considering the average of an industry's representative group. As "Financing Liabilities" account for capital lease obligations and long term debt portion, those values were computed according to the information provided by Tesla in its annual report of 2012.

#### **5.1.5. Financial Leverage**

Being relatively high when compared to industry, the financial leverage of the company is assumed to converge to the industry average in the period of forecast. I was considered that the change in financial leverage does not directly affect the variables previously mentioned, but will affect the ultimate value of the company through the discount rate. For Tesla, the average market of the debt-to-equity ratio is of 0, 17, considering the average for the peer group is quite different, 0, 34. I adjusted the value for Tesla's ratio to 0, 2, considering the leverage value of the remaining companies. This debt ratio is considerably lower than the industry's values. Consistent with these arguments, it is assumed that Tesla slowly will increase its debt ratio to the industry average, in the long-term, so that the company can benefit higher tax shields.

#### **5.1.6. Valuation Methods Assumptions and Results**

As mentioned before, I found it relevant to apply three different valuation models to value both companies: DCF, WACC-based and APV-based approaches and relative valuation. I hereby present the implicit assumptions in these models.

#### **5.1.7. Cost of Capital**

Once the forecast for all the essential components of free cash flow is complete, the following step is to calculate the cost of capital for Tesla. The cost of capital is an essential part as it permits us to discount the future free cash back to current levels and consequently find the enterprise value of the company. As the literature review explains, the cost of capital in the Free Cash Flow to the Firm model corresponds to the weighted-average cost of capital. This measure is based on the CAPM model. Bearing this in mind; the assumptions about the CAPM will be outlined below, following the estimation of the WACC, which also includes the cost of debt.

As all the components of CAPM model are of equal importance, the data one use must reflect the reality in order to provide a reliable estimate of enterprise value.

An initial component of the CAPM model is the risk free rate. This rate should be set equal to the rate of return of a long-term government bond with ten years or even longer duration. Government bonds, for the sake of simplicity, are assumed to carry no risk. As the recent turmoil in the financial markets has resulted in rate of returns on bonds with long duration to drop to historical low levels, I used the average for the three month period (from October to December, 2012). Tesla's operations are primarily situated in the United States, and considering the fact that the majority of its investors have their origins in that geographic region; it was considered that the use of an American risk free rate of return based on U.S. 10-year Treasury bond would yield an accurate proxy for the risk free rate of 1, 75% (U.S. Department of Treasury, 2012 – three months average).

The second component necessary to the calculation of the cost of equity is the company beta this is a measure of Tesla's systematic risk. There are two kinds of betas, the unlevered and the levered for each company. As the levered beta is based on the value of the unlevered beta, the later will be discussed first. I calculated the beta by calculating a linear regression of the Tesla's daily returns from the date of its IPO, 28th June of 2010 to the last day of 2012, against the daily returns of the S&P500, which I considered to be the most accurate measure of market behaviour for a company in the U.S., for the homologous period. The value for the raw beta was of 1, 05. The unlevered beta, assuming an industry debt-to-equity ratio of 0, 25 will be met resulted in an unlevered beta equal to 0, 898 for Tesla.

The third component would be to find the market risk premium. The calculation of the historical market risk premium was calculated by computing the geometric average of the daily returns of the market for a period of ten years past data from the 1st January of 2002 to the last day of 2012. The index I used as representation of the market was the S&P 500, which is a stock market index, based on the common stock prices of 500 top publicly traded American companies. This index tracks a different number of stocks and weighs the stocks differently. The value I obtained for the risk premium was of 2,634%, as I considered this value too low, I considered Koller et al. (2010) that classifies as the appropriate range from 4, 5% to 5, 5% as the most accurate estimate, using the value of 5, 5%.

Gathering all the information one would need, the unlevered cost of equity yields a rate of 6,7 % whereas the levered cost of equity is of 7,9%. The calculation of WACC requires the assessment of the cost of debt.

As Tesla is currently rated, and its coverage ratio would not be a valid option, due to the company's negative EBIT, as most of the debt is quite recent, I find this risk free rate would be yielding an inaccurate estimate as it would provide a low value. For this reason, I considered the Standard & Poor's, methodology when assessing the debt issuer risk characteristics. The first measure was the book value of long term debt divided by the market value of common equity, then the income before extraordinary items divided by net sales for the three pas years and the standard deviation of daily stock returns as a proxy for market risk. When assessing Tesla's characteristics and comparing to the industry's bond characteristics, the conclusion I reached is that Tesla's debt would be rated in the market as non-investment grade. For this reason I considered the company's cost of debt to be the default spread of a company with the worst investment grade (12%) and added the respective default spread. Moreover, as the Department of Energy of the U.S. government, granted a subsidized loan for the construction of a production plant, I adjusted this cost of debt ten percent, as one should expect subsidized loans to yield lower interest rates. The final cost of debt I obtained, taking the company characteristics into account was of 10, 3%.

Regarding the tax rate and in order to maintain the consistency of this valuation the marginal tax rate used in this process was of 16,24%. This rate represents the global blended tax rate for the industry, according to Damodaran's estimations. All the variables required to calculate the WACC are now in place.

It is also important to mention that, as Tesla's debt to enterprise value ratio is only of 12, 7%, which would not be sustainable in the long term, I found that Tesla's peer group composed of 44 companies, average a debt level of 18,3%, but as this would represent significantly change Tesla's structure, and this could be difficult for the period of forecast, I adjusted Tesla's target debt level to be increasing ten percent. Finally, applying all the parameters to the free cash flows and assuming a long-term sustainable growth rate of 1, 50% which is following the growth estimation procedure suggested in the literature review. The parameters I assumed were the automobile average return on invested capital (source: Damodaran's) and the reinvestment rate of the industry, the value for growth I reached was of 1, 5%. Accounting for net debt which is adjusted for off-balance-sheet items, the value of pure equity is \$ 5.856.448, or \$49, 63 per common share.

Tesla Motors - Valuation Parameters	
Risk Free Interest Rate (10y U.S. Treasury Note)	1,75%
Risk Premium (Koller et al., 2010)	5,50%
Tesla Motors Expected Tax Rate	16,24%
Target D/E	20%
Target D/(D+E)	12,68%
Cost of Debt	12,38%
Unlevered Beta	0,89
Levered beta	1,05

### 5.1.8. APV Method

Applying the valuation using the APV framework implies that one divides the valuation process into three (or more) components. The valuation, following this process, focuses on the unlevered value of the company, the value of any tax shields and the probable bankruptcy costs.

The discount rate of each component must reflect the overall risk of the components of the company. Moreover, one should mention that a possible negative point in this evaluation model is that the estimation of a reliable value for the cost of bankruptcy may prove difficult.

The first component of the model is the unlevered value, i.e. the value of the company as if it was financed entirely with equity. By discounting the FCFF by the unlevered cost of equity (6,7%), we reach a value for the company, assuming no debt, equal to \$ 7.035.180.

#### 5.1.8.1. Tax Shields and Cost of Financial Distress

An important component of the APV method is the tax shield. Tax shield comprises the tax benefits that a company gains from the debt it holds. Even though the probability of default could be found by analyzing historical default rates based on credit ratings (Damodaran, 2006), Tesla Motors does not emit bonds, tax shields arise from the company's loans. The first step to calculate this value is to estimate the values of net debt for the next ten years, which is the explicit period. The following step is to multiply net debt by cost of debt (12,3%), obtaining the value of interest. Accordingly, the real savings in tax payments correspond to the product of interest and tax rate (16,24%). The present value of tax shields (PVTs) can be obtained by discounting the value of tax shields by its cost of debt.

Table 2 Tax Shield Calculation - Tesla

	Tax Shield										
	Forecast										T.V.
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Short-Term Debt	\$ 195,9	\$ 450,2	\$ 500,6	\$ 546,6	\$ 580,5	\$ 657,5	\$ 744,0	\$ 830,5	\$ 910,8	\$ 984,8	
Interes Bearing Debt =TL-(payables +accruals)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Long-Term Debt	\$ 436,6	\$ 499,9	\$ 519,1	\$ 575,4	\$ 624,2	\$ 675,7	\$ 727,0	\$ 774,9	\$ 857,1	\$ 945,1	
<b>Net Debt</b>	\$ 632,6	\$ 950,1	\$ 1.019,7	\$ 1.122,0	\$ 1.204,8	\$ 1.333,2	\$ 1.471,1	\$ 1.605,5	\$ 1.767,9	\$ 1.929,9	
<b>Net cost of debt</b>		12,375 %	12,375 %	12,375 %	12,375 %	12,375 %	12,375 %	12,375 %	12,375 %	12,375 %	
<b>Tax Rate (Tc)</b>	16,24%	16,24%	16,24%	16,24%	16,24%	16,24%	16,24%	16,24%	16,24%	16,24%	
<b>ITS</b>	\$ -	\$ 19,1	\$ 20,5	\$ 22,5	\$ 24,2	\$ 26,8	\$ 29,6	\$ 32,3	\$ 35,5	\$ 38,8	\$ -
	\$ -	\$ 17,0	\$ 16,2	\$ 15,9	\$ 15,2	\$ 14,9	\$ 14,7	\$ 14,3	\$ 14,0	\$ 13,6	\$ 126,7
<b>PVTS</b>	\$ 180,0	\$ 146,8	\$ 122,8	\$ 122,1	\$ 122,0	\$ 122,2	\$ 122,6	\$ 123,5	\$ 69,0	\$ 112,7	

In my estimates, I tried to calculate the probability of bankruptcy considering that Tesla is a start-up company in the automobile industry. For this I tried to estimate how many companies within this industry fill bankruptcy as a percentage of all the start-up companies. The information I found, yielding an accurate estimate was a study<sup>12</sup> providing a percentage of survival rate of Silicon Valley high-tech firms. The value I found as an estimate of cost of financial distress was of 16%.

It should be taken into account that calculating this implied probability was not as straightforward as it may seem, the calculation of the probability needed a certain critical approach in the selection of companies and in measuring what would be the total number of bankruptcy filings. Considering this firm specific case it is expected to yield a relatively high probability of default.

In addition, the bankruptcy costs associated with a potential situation of distress was set equal to the same as referred in the literature review, as there are quite a few estimates I found that follow Altman's study (1984) and use 16,7% as combined direct and indirect costs would be a reasonable assumption, if one considers further research on this issue, there is also Andrade & Kaplan (1998) presenting results that point to a cost of financial distress between 10% and 20% of firm value. Additionally, CFD must be discounted back at the same discount rate of tax shields.

<sup>12</sup> U.S. Bureau of Labour and Statistics – Annual survival rate of Silicon Valley high-tech firms, by age of firm (1991-2009)

Table 3 Bankruptcy Cost Calculation - Tesla

Bankruptcy										
Atman's Suggestion	Estimating Probability of Default - "Annual Survival rate of Silicon Valley high-tech firms"									
16,70%	16%									
	Forecast									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Unlevered firm Value</b>	\$ 7.035	\$ 6.750	\$ 7.382	\$ 7.636	\$ 7.809	\$ 7.890	\$ - 7.892	\$ 7.892	\$ 7.906	\$ 7.906
<b>Distress Sale Value</b>	\$ 1.175	\$ 1.127	\$ 1.233	\$ 1.275	\$ 1.304	\$ 1.318	\$ - 1.318	\$ 1.318	\$ 1.318	\$ 1.320
<b>π</b>	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
<b>Cost of Financial Distress (CFD)</b>	\$ 1.175	\$ 1.127	\$ 1.233	\$ 1.275	\$ 1.304	\$ 1.318	\$ - 1.318	\$ 1.318	\$ 1.318	\$ 1.320
<b>Discounted CFD</b>	\$ 1.175	\$ 844	\$ 9	\$ 8	\$ 7	\$ 6	\$ - 5	\$ 4	\$ 3	\$ 3
<b>Expected Bankruptcy cost (SUM)</b>	\$ 2.061									

Once the costs associated with financial distressed are calculated, the value of the unlevered firm should be multiplied by the percentage loss and then by the default probability.

Concluding, the value of Tesla Motors calculated through the APV method following the formula suggested in the literature review. The values one should add to the base-case are the present value of interest tax shields (PVTS) adjusted by the probability of default [1-P(D)] is \$151.998, whereas the cost of financial distress adjusted to the probability of default [P(D)] is \$643.152. All together, Tesla's enterprise value (EV) calculated by the APV method is \$6.544.026, subtracting net debt value the value Tesla's equity will be \$5.911.468. Consequently, the price for Tesla Motors arising from the APV method valuation is \$50.1 per share.

### 5.1.9. Peer Group and Relative Valuation

Valuations using WACC or APV methods tend to focus in big part only in the individual assumptions about a company's growth. The use of relative valuation methodologies is the way to add to valuation information about the market itself and ensure the effectiveness of the values calculated with the previous methods, the relative valuation provide a value for the assets based upon how similar assets are currently priced in the market.

The selection of the comparables of Tesla Motor involved a few considerations. First, as Tesla has higher growth it should be compared with new firms with equivalent growth

drivers. Secondly, it should be used a measure of growth and also risk. Considering a comparable firm is one with cash flows, growth potential, and risk similar to the firm being valued. In addition, I considered that an accurate relative valuation would be difficult if the objective was to find a group of publicly traded firms in the electric vehicle sector. As this would reveal as quite a hard task, and considering Tesla's particularities, the approach to follow would be to run a cluster analysis that would provide me with comparable firms for growth and capital structure. The option I found was to consider all firms in the non-financial firms, for this I considered a broader group consisting of high-end luxury manufacturers, auto technology companies, and the Nasdaq-100 considering it comprises the group of high growth companies that have revenue growth characteristics similar to what one would expect from Tesla over the next few years.

As a result of the cluster analysis, the peers I found with comparable growth and capital structure were not in the same industry, but still comparable in these metrics. Furthermore, I tried to incorporate companies with similar characteristics that would bring additional industry insights. Porsche was selected as a company strategically aligned with Tesla. Spykercars, which is an automobile start-up, was also an option as this company finds the same investment phase as Tesla. Bearing in mind many big car manufacturers are developing a part responsible for the production of the batteries in order to have electric vehicles available for sale, E-one mole Energy corp, which is a company responsible for the development of batteries for cars, was added to provide insights about this specific market field.

Considering the ratios available, one can see Tesla is not in line with the industry in a few cases, there are also ratios would not allow any accurate estimation. For the average of each of the five ratios, this analysis considers a downward (Min) and an upward (Max) adjustment of 10% in the calculation of a price target to Tesla Motors. The first multiple calculated is the price-earnings ratio. this could only be calculated in the future as in the past Tesla did not present any earnings.

This was the result of a focus on development and growth instead of profitability. Regarding the price-to-sales and price-to-book ratio, the higher value than its peers may mean that there are high growth expectations from the market for Tesla.

Table 4 Peer Group Valuation - Tesla

Wheighted Valuation		
Valuation	Wheighted Valuation	
	2012	2013E
P/Sales	\$ 1.502	\$6.010
P/Book	\$13.351	\$20.841
EV/EBIT	n.a.	\$473
EV/EBITDA	n.a.	\$ 2.474
<b>Average</b>	<b>\$7.426</b>	<b>\$ 2.474</b>
<b>Valuation Per Share</b>	<b>\$62,34</b>	<b>\$63,14</b>

The following enterprise-value multiples have the advantage of not being manipulated through changes in the capital structure. However, the enterprise value to EBIT is still a negative value for 2012. The last ratio is usually the best and reveals an interesting value for Tesla's analysis. The method of multiples proved to be useful as a complement to WACC and APV methods. The price is slightly higher than the price target calculated, considering the \$7.426.782 obtained as total value and the \$62,94 as target value per share. This lead us to the several limitations associated with using multiples in Tesla Motors.

First of all, Tesla's dimension is much smaller than the peer automobile companies. Second Tesla is not a pure automobile company since its revenues follow different drivers than the average companies in the industry.

### 5.1.10. Output of the Valuation

The valuation of Tesla Motors through the three different methods was positively functional as a reinforcement of the values obtained. In fact, the price target of \$50 per share is supported by all methods and it represents a ten percent upside potential of BMW Group's price as of December 31<sup>st</sup>, 2012 (\$33, 87). This consistency in the results obtained is very positive and it is reasonable considering that the capital structure of the company is relatively stable and the same assumptions were used in all three methods.

Table 5 Output of the Valuation - Tesla

<u>DCF - WACC</u>	<u>APV Method</u>	<u>Comparables</u>
Valuation	Valuation	Valuation
<b>5.856.448</b>	<b>5.823.376</b>	<b>7.685.614</b>
Valuation Range	Valuation Range	
[5.204-6.677]	[5.773 - 6.185]	

### 5.1.11. Sensitivity Analysis

As James and Koller (2000) suggested, any valuation spreadsheet should be ready to perform a sensitivity analysis, by performing various scenarios related to these risks and assessing how projected cash flows respond to risk shifts and one can understand the possible results and impacts in a valuation scenario.

Taking into account that the estimation of future WACC leaves some uncertainty, high range of values can be the outcome of the valuation, as a change in one percent in WACC, as well as in the terminal growth rate (TGR), the valuation different valuations per share were considered. Considering these possible scenarios, the results obtained achieved a minimum share price of \$44,1 and a maximum of \$56,6.

Table 6 Sensitivity Analysis WACC/ TGR - Tesla

Price per Share - WACC / TGR Variation							
	1,20%	1,30%	1,40%	1,50%	1,60%	1,70%	1,80%
7,5%	52,8	53,4	54,0	54,6	55,2	55,9	56,6
7,6%	51,6	52,1	52,7	53,3	53,9	54,5	55,2
7,7%	50,4	50,9	51,5	52,0	52,6	53,2	53,8
7,8%	49,2	49,7	50,3	50,8	51,4	51,9	52,5
<b>7,9%</b>	48,1	48,6	49,1	<b>49,6</b>	50,2	50,7	51,3
8,0%	47,1	47,5	48,0	48,5	49,0	49,5	50,1
8,1%	46,0	46,5	46,9	47,4	47,9	48,4	48,9
8,2%	45,1	45,5	45,9	46,4	46,8	47,3	47,8
8,3%	44,1	44,5	44,9	45,3	45,8	46,2	46,7

In addition, it is important to explain that in the APV model, each cash flow has a probability distribution associated with it, leading to the possibility that the realized value may be different from what was expected. The sensitivity analysis provides a more complete picture about the estimates used as cost of debt and probability of bankruptcy.

Table 7 Sensitivity Analysis Cost of Equity / TGR Variation - Tesla

Price per Share - Cost of Equity / TGR Variation							
	1,35%	1,30%	1,50%	1,65%	1,82%	2,00%	2,20%
4,9%	87,0	86,1	89,8	88,8	93,3	97,1	101,7
5,4%	71,2	70,5	73,2	72,4	75,5	78,1	81,1
6,0%	58,1	57,7	59,5	59,0	61,1	62,8	64,9
<b>6,7%</b>	47,3	47,0	<b>49,4</b>	47,9	49,4	50,5	51,9
7,4%	39,1	38,9	39,8	39,5	40,5	41,4	42,3
8,1%	32,1	32,0	32,6	32,4	33,1	33,7	34,4
8,9%	26,2	26,1	26,5	26,4	26,9	27,3	27,8

The first APV analysis considered was to assess the consequence of changing the cost of equity one percent upwards and downwards, as well as the terminal growth rate, maintaining the rest constant. The result was a very high variance in the price per share, yielding from a minimum of \$26.1 to \$101,7 per share.

In addition, the effect of varying the probability of default and the cost of debt effects was considered. The results yielded a much lower variance in the target price. The reason for this lower variance can be explained by the low levered structure of the company.

Table 8 Sensitivity Analysis Cost of Debt / Probability of Default Variations - Tesla

Price per Share - Cost of Debt / Probability of Default Variations							
	11,35%	12,61%	14,01%	<b>15,57%</b>	17,13%	20,7%	22,8%
9,4%	49,2	49,9	49,9	49,9	49,9	49,9	49,9
10,4%	49,1	49,8	49,8	49,8	49,8	49,8	49,8
11,4%	49,0	49,6	49,6	49,6	49,6	49,6	49,6
<b>12,4%</b>	48,9	49,6	49,6	<b>49,4</b>	49,6	49,6	49,6
13,4%	48,9	49,5	49,5	49,5	49,5	49,5	49,5
14,4%	48,9	49,5	49,5	49,5	49,5	49,5	49,5
15,4%	49,0	49,5	49,5	49,5	49,5	49,5	49,5

### 5.1.12. Comparison with Equity Research Reports

In order to understand possible differences between this valuation and the valuation provided by other players in the market, equity research reports were consulted. The result provided a result consistent with the results obtained by the DCF and APV models and confirmed by an overview with researchers meeting the target stock price.

Table 9 Equity Research Reports Comparison - Tesla

Institution of Research	Analyst	Recommendation	Target Price (€)
Needham & Co.	Michael Lew	Buy	\$38,0
Wunderlich Securities	Theodore O'Neil	Buy	\$49,0
Goldman Sachs	Patrick Archambault	Buy	\$45,0

In the reports mentioned above, most of the forecasts accounts only until 2011 or the first semester of 2012, in this case the lower estimates for those reports could be explained by risk inherent that Tesla faced by not having its production plant ready. The success of the plant development project ensured the firm with the production of 25 thousand units, allowing Tesla to meet the orders it already had.

## 5.2. BMW Group, the Acquirer Firm

BMW Group sells BMW, Rolls-Royce and Mini cars and BMW Motorrad and Husqvarna motorcycles. Being the third most valuable brand in the automotive industry, BMW is valued on its engineering capabilities, skilled workforce and quality products. As producing quality cars and hiring skilled workforce results in high costs for the company, BMW cost structure is higher than of its biggest competitors such as Toyota, GM and

Volkswagen. BMW group manufactures and sells three brands, those brands perform well in their segments, but it is important to understand those brands are unable to server larger market needs. BMW Group defends corporate sustainability is firmly established as a guiding principle of the company's strategy and culture.

BMW has posted a record set of financial results for 2012, the company benefited from rising sales in its traditional heartland markets, such as Western Europe and Germany and the US, while the company also enjoyed very strong sales volumes growth in emerging markets with China once more posting the most impressive overall growth rate. As a result of this, good sales momentum should be maintained, although there are concerns over the ongoing development of the global macroeconomic situation, with obvious reference to the developments in the Euro zone.

### **5.2.1. Revenue Forecast**

As I presented in the previous section, BMW Group can divide its business in three parts, the automotive production and sale, the motorcycle production and the financial services responsible for the credit financing lease contracts placed with dealers and retail customers.

#### *5.2.1.1. Automotive Revenue Forecast*

The BMW Group was able to increase its sales by 10.6% in the three brands it produces. BMW was able to increase its sales in 11.6% to 1.5k units, MINI increased 5.8% from 285k to 302k in 2012 and Rolls-Royce grew its sales in 1% to 3.6k in 2012 (2011: 3.5k).

The automotive production is the most important business segment for the group, historically accounting for about 90% to 92% of the consolidated group revenues. Considering its most important geographic locations, BMW Group owns 29 facilities across 14 different countries and sells cars across the globe. In order to provide an accurate estimate, the forecast for the next five years of automobile sales for the group was developed, in separate, for four different regions that represent the most representative markets for BMW Group. Those regions are Europe, Asia, Americas and Other Markets.

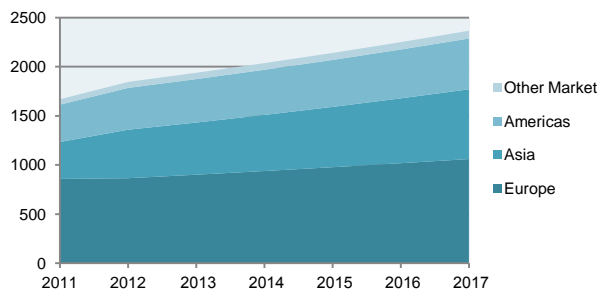


Chart 24 Revenue Forecast (2011- 2017)

As source of automobile sales forecast, I used the worldwide passenger vehicle registrations LMC automotive forecasts, which is a company responsible for developing macroeconomic forecasts and the leading consultancy company for the automobile sector. As the company provided vehicle registrations divided by country, those were grouped in order to meet the geographic locations BMW Group presented as its four existing markets. For each region, it was calculated a CAGR, for the same period (2013-2017), and for each year I developed a forecast for the total units sold by BMW Group.

In order to calculate the total revenue, I calculated the average retail price for the cars sold. This was calculated for the years 2008 to 2012, in order to provide a more reliable understanding of the company's price trend. The product of the average retail price and the unitary sales forecast provided the estimation for the revenues arising from the automotive sector.

### 5.2.1.2. Motorcycle Revenue Forecast

Considering the motorcycle segment of the company, one should understand that it can present some differences when compared with the automotive industry. Recently, the global motorcycle industry has witnessed high growth during the last five years and is expected to continue its growth with a CAGR of 4.9% over the next five years. The revenue forecast for this segment of the Group's revenues was developed in accordance to the "Global Motorcycle Industry 2012-2017: Trend, Profit, and Forecast Analysis."<sup>13</sup> This report provided an expected CGAR of 4.1% for 2013-2017 for the motorcycle industry. As the period of, is in accordance with the period of forecast I developed, and I considered this as a reliable estimation for the revenue growth for this business sector. It is important to

<sup>13</sup> "Global Motorcycle Industry 2012-2017: Trend, Profit, and Forecast Analysis." - Lucintel

understand that this represents around 2% of the group's total revenues, being the automotive business the main focus of this company.

### 5.2.1.3. Financial Services Revenue Forecast

As a subsidiary of BMW Group, the Financial Services offer not only individually tailored leasing plans and financing packages, but also expert investment advice to the Group's private and corporate customers. This segment is assigned an important task in the strategy of the premium provider. Considering the main focus of this analysis is to provide a reliable valuation of a company in the automobile sector, I focused on the contracts by each region as I considered there could be cultural and economic specific issues for each region. The forecast for the revenue arising from the financial services was calculated as a percentage of the growth in automobile sales but also of the weighted GDP and Inflation by region. Revenue Services account for around 25% of the Group's total revenue.

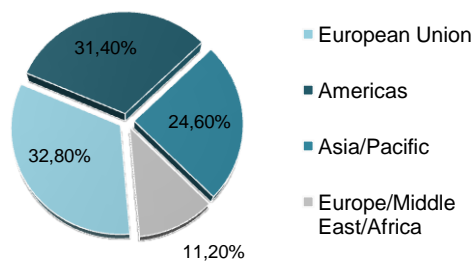


Chart 25 Contract's Portfolio, region breakdown

### 5.2.1.4. Other Entities and Eliminations Forecast

Eliminations comprise the effects of eliminating business relationships between the operating segments. The other entities accounts for the holding and Group financing companies which are not allocated to one of the other segments due to its specificities. The Other Entities segment is assessed on the basis of profit and loss before tax. Considering these are very specific segments, and that their marginal contribution to the group revenues, the forecast for the revenue arising from other entities was considered to be growing at the weighted GDP growth added to the respective inflation, for the different geographic regions were BMW Group operates.

In what concerns Eliminations, as it is related to the Group's specific "modus operandis", it was used the ten years historic growth rate.

### 5.2.2. Expense Forecast

The expense forecast is performed for each of the three different business segments. The categorization of the operational expenses included cost of goods sold (COGS), research and development (R&D) and selling general and administrative expenses (SG&A). Considering the BMW Group is reporting in accordance to IFRS standards, as it is imposed by the IASB, BMW treats R&D costs as part of cost of goods sold and not as a separate entity. However this change did not impact the R&D expenditure values, the financial statements for the previous years were rearranged in order to comply with the most common expense organization.

### 5.2.3. Cost of Goods Sold

The cost of goods sold comprises the expenses arising from manufacture, distribute and finance the products developed by the Group. Looking at the historical average cost of goods sold, as a total percentage of the group's revenues, I found that this value has been around 78%, which is a value slightly better than the industry average of 82%. Nevertheless, in the recent years there has been an increase in raw material prices of metals and oil, which shows an increasing trend for the costs of the company. In opposition to this trend, BMW Group, and the overall industry, has been focusing on cost reduction. Considering those two different trends, I found that the most accurate forecast of COGS would be to consider the values in the previous years.

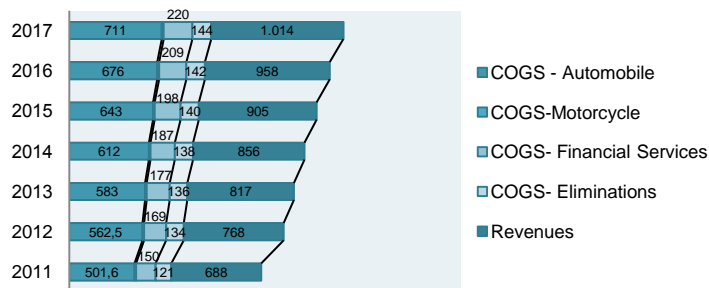


Chart 26 Total Revenue and Cost of Goods Sold

Considering the historical available information, the cost of goods sold, as been highly correlated with total revenues (Correlation of 99.48%), COGS and Revenues yield the same CGAR for the forecasting period (4,4%).

#### COGS – Automotive

In the forecast of the COGS for the automotive segment of the Group, I considered the average cost per unit for the period 2008 to 2012. Considering the average cost of vehicles was of €30.446/unit, and the standard deviation of the average cost per unit was quite small (ST Dev of 0.2834), I considered that this cost should be defined at the minimum historic for the period, which would translate the positive expectations regarding the company efficiency (the value was of €30.056/unit in the year of 2011). The product of the

average cost per unit and the forecast for vehicle sales in units would total the expected value for the COGS in the automotive sector for the Group.

#### COGS – Motorcycle

Considering the BMW Group's new strategy development in its motorcycle segment, which should traduce the takeover of Husqvarna Motorcycles with Pierce Industrie AG, with effect in the first semester of 2013, I considered that the historical average cost of goods sold as a percentage of total revenue would be changing over the forecasting period. This estimation, was adjusted downwards, as one would expect since Husqvarna and BMW Motorrad were included in different segments. The COGS for the motorcycle segment for BMW was expected to be of 79.15% of the segment's total revenues.

#### COGS- Financial Services

Considering the COGS of the financial services comprise the loan and lease financing, to both retail customers and dealers, in order to maintain the simplicity of the model, and considering the low standard deviation for the average COGS as percentage of revenues (ST dev of 0.05) as well as the clear trend of decreasing this percentage show, I considered the COGS would be considered as the minimum percentage of the 2008 to 2012 period (the value was of 85.74% in the year of 2011).

#### COGS- Eliminations

As part of the intercompany transactions, it is recognized in the financial statements of both units as if it were an arm's-length transaction. Looking at the historical behavior of this accounting line, the cost of sales, which were higher than the value of recognition for the eliminations in the years 2008 to 2010 and for the two most recent years the value for COGS was lower than Eliminations, for this reason and in order to add this pattern to my estimations, I developed a forecast of COGs for Eliminations based on the average historic percentage of COGs over Eliminations.

### **5.2.4. Research and Development (R&D)**

Research and development expenditure increased in 2012 by 17,2% to €3.952 million, which represents 5.2% of total revenues, mostly on projects securing the Group's future (value for 2011 was of €3.373 million, representing 5.3% of revenues). Considering a recent study in the automobile industry, provided by the Automotivenews (2010), one of the major priorities in the automotive industry is the technology, being so, the investment in R&D is a major driver of competitive advantage within the industry. BMW Group main development is the environmental friendly solutions, which the Group called Efficient Dynamics strategy. In a technology manufacturing market BMW Group understand its high dependency on technologic advances, and favors a good position considering its major rival, Daimler which still lacks of public perception as innovative in comparison to BMW.

Considering the environment within the automotive sector, recent empirical work finds that R&D expenditures are quite pro-cyclical. According to a study from the Queen's Economics Department, a study<sup>14</sup> about the pro-cyclicality of the R&D expenditures defends that one should consider a business cycle in order to understand the R&D expenditure as an intrinsic part of the long-term growth process. In accordance to this study, I consulted the historic R&D spending, as percentage of revenue from 2003 to 2012, which I considered to be a business cycle. Obtaining the average of 5.2% for this period, I considered this value to be a reliable estimate of R&D expenses for the period of forecast.

#### **5.2.5. Selling, General & Administrative Expenses (SG&A)**

The Administrative expenses totaled, in 2012 €1.860 million (value of €1.623 in 2011) comprising expenses for administration not attributable to development, production or sales functions. On the other hand, selling expenses comprise marketing, advertising and sales personnel costs. As the SG&A expenses have been around 10% for the period 2003 to 2012 and as the strategic analysis does not outline significant changes to sales, the value used in the forecast was the average for the ten year period SG&A as percentage of revenues. The value used in the forecasting period was an average value of 9.82%.

#### **5.2.6. Other Operating Income and Expenses**

In the past periods, operating income and expenses have nearly equaled out. Considering the low volatility of those values, for the period 2006 to 2012, the average income and operating expenses, as percentage of revenue were considered as reliable estimates. The average income and expenses are respectively 1.43% and 1.58%, respectively.

#### **5.2.7. Depreciation and Amortization (D&A)**

Depreciation and amortization relates to non-current property, plant and equipment, intangible assets and leased products. Considering the historic percentage of Depreciation and Amortization as percentage of fixed assets, one can understand that this value have been quite volatile, for this reason I considered that the past three years averaging 5.08% would be a reliable estimate for the forecasting period.

#### **5.2.8. Operating Expenses (OPEX)**

In the calculation of the total OPEX, I tried to base my assumptions in the most approximate information available in order to develop a consistent model. The forecast of total operating expenses comprises COGS, R&D and SG&A and the operationale margin left, which is very close to the historic average.

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<sup>14</sup> "Intrinsic Business Cycles with Pro-Cyclical R&D" – Department of Economics Queen's University  
Author:Lloyd-Ellis

Considering the figure, one can understand that the biggest portion of cost is Cost of Goods sold, which includes raw materials, direct labor and utility costs. Selling, General and Administrative expenses follow has the biggest expense of the company being research and development in the third position as the biggest expense. The company has an Operating Margin of 11%.

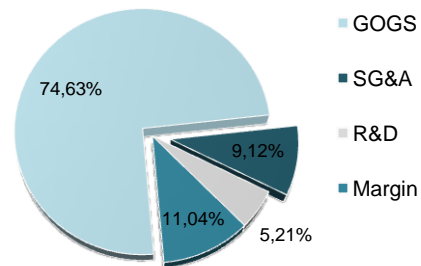


Chart 27 Trading Costs Breakdown ( Values presented as % of sales (year: 2012)

It would be important to mention that the exposure to the raw materials, metals in specific is inevitable, although the Group tries to minimize its exposure by hedging with futures, and passing it through to the customer in the form of higher prices.

### 5.2.9. Operating Working Capital

Representing the liquidity available to the business, the operating working capital corresponds to the operating liquidity available to the business. Compared to Working capital, Operating working capital narrows the scope of Current assets and Current liabilities by strictly taking into account operating current assets (Accounts receivable and inventory) and current liabilities (Accounts payable).

#### 5.2.9.1. Current Assets

Initially, it should be explained that accounts receivables (A/R) include amounts related to sales of powertrain and regulatory credit to other vehicle manufacturers. This line of current assets accounts for the amount of products the Group sold on credit terms.

There should be taken into account that during the period of financial crisis, cash and cash equivalents have risen significantly, in the specific case of BMW those values have risen around 3% of revenue, totaling more than 15% of total revenue. Considering the future, each of Operating Working Capital components will evolve according to its average weight in current assets in the forecasting period. The exception was the line for Assets held for sale, which was consider to be an exception in 2012, as BMW Group defined a new strategy for its motorcycle sector and decided to sell the Husqvarna motorcycles brand. This general approach is not optimal but is certainly the best option considering BMW Group is a fairly stable company and that this valuation was developed without inside information.

#### Dividends

In accordance to the information provided by the Group, its dividend distribution policy take into account the generation of cash-flows, growth opportunities, capital structure

optimization plan and investors' expectations. The average payout ratio, will be at least of 33%.

Over the last decade, BMW Group had quite volatile dividends in value, but it kept a continuous trend of increasing payout ratio, which consequently led to increasing value of the dividends in value. The dividend distributed to shareholders, went from a minimum of €0.3 in the exceptional difficult period of 2008 and 2009 to a maximum of €2.5 in 2012. This increase can be explained by the changes in the competitive environment and by the financial crisis that required companies to build strong balance sheets. Considering dividends should not decrease because it is essential to meet investors' expectations. All in all, dividends per share are expected to keep the 2012 performance for the near future. On the whole, one should mention that the dividend policy does not impact valuation with the WACC method but its discrepancy can be high when using APV.

### 5.2.10. Financial Leverage

Tabela 10 BMW Group Rating History

BMW AG Rating History				
Year	Short-term Rating		Long-term Rating	
	S&P	Moody's	S&P	Moody's
1998	A-1	-		
1999	A-1	P-1		
2000	A-1	P-1		
2001	A-1	P-1		
2002	A-1	P-1		
2003	A-1	P-1		
2004	A-1	P-1		
2005	A-1	P-1	A+	A1
2006	A-1	P-1	A+	A1
2007	A-1	P-1	A+	A1
2008	A-1	P-1	A	A2
2009	A-2	P-2	A-	A3
2010	A-2	P-2	A-	A2
2011	A-2	P-1	A-	A2
2012	A-1	P-1	A	A2

As it is an industrial firm, BMW Group could be considered as and highly levered company. As one would expect for such companies, most of the company's financing is arising from borrowings than from shareholders equity. Considering the net debt, in value, it has been increasing at a steady stage and it is expected to maintain this trend. Furthermore, as BMW Group's debt is rated by the different rating agencies on its different loans, the cost of debt was assessed by calculating a weighted average cost for short term and long term averaging the Moody's and the S&P ratings. The result was a cost of debt of 3.51%.

The target capital structure was expected to maintain the current values, as the company had stable values overtime, the value of 69%debt was considered to be average and is expected to remain constant. In addition, BMW Group's debt holds an A-class credit rating for all the periods of historical rating available with the rating agencies certifying the sound solvency position for the Group's debt. The recovery of credit markets and the maintenance

of a pure business risk should grant BMW Group a long term investment grade. BMW AG's Historical Rating

### 5.2.11. Valuation Methods Assumptions and Results

The valuation models applied in this case correspond to the ones applied in Tesla's valuation: DCF, WACC-based and APV-based approaches and relative valuation. I hereby present the implicit assumptions in these models.

### 5.2.12. Cost of Capital

After estimating the value of future cash flows the following step would be to determine an appropriate way to discount them back. The methodology to follow will be to discount the cash flows at the weighted average cost of capital, the WACC, with the FCF method and at the unlevered cost of equity with the APV method.

As all the components of CAPM model are of equal importance, the data one use must reflect the reality in order to provide a reliable estimate of enterprise value.

An initial component of the CAPM model is the risk free rate. Knowing what you can make on a risk free investment is a prerequisite for any type of corporate financial analysis or valuation. Considering BMW Group is a German company. Within the Euro zone, the German Euro bond rate is likely to be closer to the risk free rate in Euros than any other bonds. Additionally, the recent turmoil in the financial markets resulted in rate of returns on long term bonds drop to historically low levels. The value I used as risk free estimate was the average for the last three months of 2012 daily rate of the 10-year German Government Bonds. The value obtained as risk free rate was of 1.42%.

Secondly, I computed the BMW Group's systematic risk, this value, which corresponds to the company's beta, was of 1.229. This value was the coefficient arising from the regression between the Group's stock daily returns, starting at the beginning of the year 2008 to the last day of 2012 in opposition to the FTSEurofirst 300 Index. The choice of this Index in opposition to the German DAX Index, relies after considering that the monetary union integration in the Euro-area and the inexistence of intra Euro-zone currency risk lead to the Euro industry effects to have a bigger importance than the country returns. For the case of Germany, the study of "Euro-zone equity returns: country versus industry effects"<sup>15</sup>

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<sup>15</sup> "Euro-zone equity returns: country versus industry effects" Eiling, Gerard and de Roon

shows that in the European countries with strong linkages to Germany (France, the Netherlands, Belgium, Austria and Finland) the industry factors dominate.

According to Kaplan & Peterson (1998), one should use the average beta for the European OEM sector in BMW Group's analysis. Damodaran's website suggests that the unlevered beta in this industry is of 0.79. In addition, I calculated the unlevered beta for BMW obtaining a beta of 0.84, due to the proximity of those values. I found that it would be a close estimate to use the second value as input due to its proximity to the industry average.

Furthermore, in my estimation of the market risk premium, I considered Koller et al. (2010) that classifies as the appropriate range (4.5% to 5.5%). A different approach would be to estimate the premium through surveys and use the implied risk premium but Damodaran (2011) argues that the resulting premiums tend to vary depending on who the targets are in the survey, seeming to have little prediction of future premiums. For this reason I considered that the use of a 5.5% would be a realistic estimate.

Adding the pieces together, the CAPM should consist of a risk free rate with duration of 10-years, a beta that could represent the industry and estimation for the equity risk premium. Estimating the levered cost of equity, the value I obtained was of 8.2%, whereas the unlevered cost of equity yields a rate of 5.2%. Whereas the unlevered cost of equity is applied directly if one follows the APV methodology, the WACC calculation requires the consideration of the cost of debt as well as capital structure.

In addition, I also assumed the effective tax rate to be constant across all business segments. The value used as effective tax rate, was the average of the profit before tax as a percentage of net profit. The value I obtained was an effective tax rate of 31.7%.

The DCF model used for BMW Group's called for discounting FCFF at a WACC, following this methodology I obtained a weighted average cost of capital of 4.2%.

<b>BMW AG - Valuation Parameters</b>	
Risk Free Interest Rate (10y German Government Bonds)	1,42%
Risk Premium (Koller et al., 2010)	5,50%
BMW AG Effective Tax Rate	31,70%
Target D/E	68,83%
Target D/(D+E)	69,00%
Cost of Debt	3,51%
Unlevered Beta	0,83
Levered beta	1,23

Finally, when applying the cost of capital to the free cash flow forecasted for BMW I was able to estimate the enterprise value, equity value and value per share.

In order to convert the enterprise value to equity value, there was subtracted the short-term and long-term debt as well as debt equivalents and hybrid securities.

The long term sustainable growth rate is set at 1.83%, which is the value arising from the product between the reinvestment rate and return on invested capital as mentioned in the literature review. The total equity value adds up to €47.731 million, equivalent to €72.81 per share. The obtained value per stock is in line with both the average price of 2012 which was of €63, 44 and with the maximum value per share sold during this period (€73, 16).

### 5.2.13. APV Method - Tax Shields and Costs of Financial Distress

As an advantage of the APV method, one can do a breakdown of the valuation into an operational part and a financial part. Bearing this in mind, the main focus of this section is to consider the effects resulting directly from the financial part of the company; those parts are the tax shields and the cost of financial distress.

The Enterprise value of BMW Group could be calculated by the APV method, the calculation of the Enterprise Value and Value unlevered follows the following formulas:

$$\text{Enterprise Value} = \text{Value of Unlevered Firm} + \text{PV of Tax benefits} - \text{Expected Bankruptcy Costs}$$

$$\text{Value of Unlevered Firm} = \text{Current Firm Value} - \text{PV of Tax Benefits} + \text{Expected Bankruptcy Cost}$$

Applying this methodology, BMW Group's enterprise value calculated by the APV method adds up to €105.100 millions whereas the Equity value of the Group's equity was of €47.702 million. In turn, the price target for BMW Group using the APV method is €72, 76 per share.

The value of Tax shields is the reflection of the tax savings BMW Group achieved by incurring in debt. As BMW Group's current capital structure is 69, 5% debt and the debt target is expected to remain the same. Justifying this stability of the capital structure are the facts that BMW already enjoys the best ratings of all European car manufacturers. In order to compute the value of interest expense, I calculated the product of net debt and the cost of debt (3, 51%), the following step is to calculate the real savings in tax payments multiplying the effective tax rate (31, 7%) by the interest expense. To obtain the present value of tax shields (PVTS), the savings will be discounted at the cost of debt. In sequence, the terminal growth rate of tax shields is considered to be equal to the terminal growth rate of cash-flows.

Table 11 Interest Tax Shield Calculation - BMW AG

	Tax Shield						
	2012	Forecast					
		2013	2014	2015	2016	2017	Terminal
Short-Term Debt (Fin. Liabilities)	39.095 €	41.264 €	44.057 €	47.467 €	51.514 €	56.244 €	
Interes Bearing Debt =TL-(payables +accruals)	88.223 €	91.104 €	94.744 €	101.245 €	108.586 €	116.826 €	
Long-Term Debt (Fin. Liabilities)	30.412 €	32.219 €	33.557 €	35.555 €	37.668 €	39.903 €	
Cash and Cash Equivalents	8.370 €	8.950 €	9.376 €	9.922 €	10.500 €	11.112 €	
<b>Net Debt</b>	61.137 €	64.533 €	68.238 €	73.099 €	78.682 €	85.035 €	- €
<b>Net cost of debt</b>	3,51%	3,51%	3,51%	3,51%	3,51%	3,51%	3,51%
<b>tax Rate (Tc)</b>	31,68%	31,68%	31,68%	31,68%	31,68%	31,68%	31,68%
<b>ITS</b>	€ 681	€ 719	€ 760	€ 814	€ 876	€ 947	€ 964
Discounted Tax Shield		€ 694	€ 709	€ 734	€ 763	€ 797	€ 48.240
<b>Valuation Interest Tax Shields</b>	<b>€ 44.285</b>	<b>€ 43.941</b>	<b>€ 44.790</b>	<b>€ 47.234</b>	<b>€ 46.526</b>	<b>€ 45.816</b>	

Finally, tax shields only occur in the inexistence of distress. Considering this, this cost of Bankruptcy produces a negative impact on the company's value and increases with financial distress. As the rating agencies provide estimates regarding the BMW Group, I considered that the weighted average rating would comprise the best estimation of probability of default, this probability was of 0, 733%. In addition, as Altman suggests in his study about bankruptcy costs, I considered that the bankruptcy cost would yield 16, 70% of the company's value of assets. Concluding, the value for the expected bankruptcy cost was calculated by subtracting the distress sale value to the value of the unlevered firm and multiplying it by its cost of financial distress, obtaining the value of €348 million as expected bankruptcy cost.

#### 5.2.14. Peer Group and Relative Valuation

In relative valuation, the value of an asset is compared to the values assessed by the market for similar assets. In order to provide an accurate relative valuation it is essential to identify the comparable firms and obtain its market values.

The selection of the comparable companies of BMW Group involved a few considerations. My first approach was to look for the companies that have a strategic alignment with the OEM. After using my own judgment and gathering a group of 13 comparable companies, I identified three drivers that would yield a close estimate in the definition of my peer group. I considered EV to BV, Price to EBITDA and Total Market Cap. My choice relied on P/EBITDA considering this metric excludes interest, taxes, depreciation and amortization and could be a better approach to compare the underlying businesses of companies with different amounts of debt, or requiring big upfront capital investments. The second, Enterprise Value to Book Value was chosen in order to add some perception of how the market perceives the company. And total market cap was considered to be a good proxy of the company's net worth. After choosing the characteristics, the methodology I followed was to run a cluster analysis that would provide me the peer group.

**Table 12 BMW's Peer Group Characteristics (values in millions) - BMW**

Companies	Peer Group							
	Beta	Revenue	EBITDA	Fin Leverage	Net Income	Number of shares	Market Cap	Free Float
TOYOTA MOTOR CORP	1,25	20.914 €	2.426 €	2,91	962 €	3,447997	20.205.266€	76,9%
VOLKSWAGEN AG	1,08	€ 193	24 €	4,17	22 €	0,29509	73.489€	8,4%
FORD MOTOR CO	1,42	€ 127	13 €	11,99	6 €	3,860354	60.453€	99,2%
DAIMLER AG- REGISTERED SHARES	1,28	€ 114	12 €	3,725	6 €	1,067868	50.681€	88,1%
NISSAN MOTOR CO LTD	1,23	n./ a.	1.114 €	3,46	342 €	4,520715	4.692.502 €	50,6%
<b>Average</b>	1,25	€ 5	1 €	5,25	0 €	0,002638	5.016.478 €	64,6%

Looking at the financial ratios, one can understand that BMW Group is in line with the industry in some of them. For the average of each of the five ratios, this analysis considers a downward (Min) and upward (Max) adjustment of 10% in the calculation of a price target for the BMW Group. The adjusted average of the five financial ratios used in BMW Group's relative valuation support the price targets obtained using the WACC and the APV methods.

On the negative side, there are several limitations associated with the use of multiples in BMW's valuation. First of all, BMW Group is smaller than some of its peer companies. Secondly some of the companies have its premium market allocated to specific geographic regions eg: Nissan's luxury brand, Infiniti, is specifically developed for the North American market.

Table 13 BMW Group Comparables Valuation - BMW

Equity Valuation		
Multiple	2012	2013E
PER	34.870 €	43.175 €
P/Sales	27.218 €	89.067 €
P/Book	77.217 €	81.623 €
EV/EBIT	54.740 €	24.216 €
EV/EBITDA	21.789 €	24.762 €
<b>Min</b>	<b>21.789 €</b>	<b>24.216 €</b>
<b>Max</b>	<b>77.217 €</b>	<b>89.067 €</b>
<b>Average</b>	<b>43.167 €</b>	<b>52.569 €</b>
<b>Adjusted Average</b>	<b>57.635 €</b>	<b>71.213 €</b>
<b>Valuation Per Share</b>	<b>88 €</b>	<b>80 €</b>

### 5.2.15. The Output of the Valuation

The valuation of BMW Group through the three different methods was positively functional as a reinforcement of the values obtained. In fact, the price target of €80 per share is supported by all methods and it represents a ten percent upside potential of BMW Group's price as of December 28<sup>th</sup>, 2012 (€72, 93). This consistency in the results obtained is very positive and it is reasonable considering that the capital structure of the company is relatively stable and the same assumptions were used in all three methods.

Table 14 Output of the Valuation - BMW

<u>DCF - WACC</u>	<u>APV Method</u>	<u>Comparables</u>
Valuation	Valuation	Valuation
<b>52.238 €</b>	<b>52.286 €</b>	<b>50.780 €</b>
Valuation Range	Valuation Range	Valuation Range
[45.047 - 60.559]	[29.087 - 65.342]	[23.762 - 75.477]

### 5.2.16. Sensitivity Analysis

Considering the possibility that the assumptions in which the valuation model may not concretize in the future, it is important to consider the different impacts the company may face in the future. The automotive industry is characterized by a fierce competitiveness and very dependent on the technology developments, those factors make the future projections very uncertain. Consequently, the elaboration of a sensitivity analysis might be useful to assess the impact of possible deviations from the assumptions made on the final value.

The first sensitivity analysis considers variations WACC and Terminal Growth. Consequently, the previous results are considered as a base case scenario, in the case, it is

assumed that WACC is one percent lower and one percent higher whereas the terminal growth rate is assumed to be ten percent higher and lower as well. The six digression hypothesis considered have an enormous impact on the price target, that in this case fluctuate between a minimum of €68,7 and €92,4.

Table 15 Sensitivity Analysis WACC / TGR Variation - BMW

Price per Share – WACC/ TGR Variation							
	1,34%	1,48%	1,65%	<b>1,83%</b>	2,02%	2,22%	2,44%
5,54%	84,4	85,6	86,9	88,2	89,6	91,0	92,4
5,04%	81,6	82,8	84,0	85,3	86,6	87,9	89,3
4,58%	78,9	80,0	81,2	82,5	83,7	85,0	86,3
<b>4,16%</b>	76,2	77,3	78,5	<b>79,7</b>	80,9	82,1	83,4
3,75%	73,7	74,7	75,9	77,0	78,2	79,4	80,6
3,37%	71,2	72,2	73,3	74,4	75,5	76,7	77,8
3,04%	68,7	69,7	70,8	71,8	72,9	74,0	75,2

The application of a sensitivity analysis in the APV model valuation provides additional information as one can assess not only the adjustment of terminal growth rate and cost of equity, but also intrinsic variables such as the cost of debt and the costs of financial distress. Accordingly the sensitivity analysis for the changes in the value unlevered, considering the variations in the cost of equity and terminal growth rate, assuming constant cost of debt and cost of financial distress were calculated.

Table 16 Sensitivity Analysis Cost of Equity/ TGR Variations - BMW

Price per Share – Cost of Equity / TGR Variations							
	1,34%	1,48%	1,65%	<b>1,83%</b>	2,02%	2,22%	2,44%
3,52%	123,2	133,5	146,8	164,7	186,9	218,5	266,9
3,91%	100,0	107,2	116,3	128,1	142,2	161,2	188,1
4,35%	81,2	86,4	92,7	100,8	110,1	122,2	138,5
<b>4,83%</b>	65,9	69,6	74,1	<b>79,8</b>	86,1	94,1	104,5
5,31%	54,3	57,1	60,4	64,6	69,2	74,8	82,0
5,85%	44,4	46,5	49,0	52,1	55,5	59,6	64,6
6,43%	35,9	37,5	39,4	41,7	44,2	47,2	50,9

In addition, it was considered a sensitivity analysis to understand the effects of varying the items indexed to the calculation of the costs of financial distress as well as the interest tax shields, maintaining the base-case value constant.

Tabela 17 Sensitivity Analysis Cost of debt / Probability of Default - BMW

Price per Share – Cost of Debt / Probability of Default Variations							
	0,38%	0,48%	0,60%	<b>0,74%</b>	0,89%	1,07%	1,29%
2,56%	80,7	80,3	79,9	79,3	78,7	77,9	77,1
2,85%	80,7	80,3	79,9	79,3	78,7	78,0	77,1
3,16%	80,7	80,4	79,9	79,3	78,7	78,0	77,1
<b>3,51%</b>	80,8	80,4	79,9	<b>79,3</b>	78,7	78,0	77,2
3,87%	80,8	80,4	79,9	79,3	78,8	78,1	77,2
4,25%	80,8	80,4	79,9	79,4	78,8	78,1	77,3
4,68%	80,8	80,4	80,0	79,4	78,8	78,1	77,3

Considering the output of the sensitivity analysis, the enterprise value diverges considerably with changes in the cost of equity when compared with in the adjustments performed in the cost of debt and cost of financial distress. One should mention that the variation is perceptibly minor in the cases of variation of WACC and cost of debt analysis.

### 5.2.17. Comparison with Equity Research Reports

To provide further insight about the overall valuation of this company, equity research reports were consulted. Even though the reports presented slightly different target prices, the average target price yields a very close valuation to the one presented in this chapter.

Table 18 Equity research Comparison - BMW

Institution of Research	Analyst	Recommendation	Target Price (€)
J.P.Morgan	Peng Cheng	Buy	€ 87,00
Natixis	Georges Dieng	Buy	€ 72,00
Edelweiss	Aashiesh Agarwal	Hold	€ 73,90

## 6. Valuation of the Merged Entity

As it was mentioned in the literature review, the best approach to value the opportunities arising directly from the combination of two firms is to estimate the value for the synergy by the difference between the value of a merged entity with potential improvements and the sum of the values of each separate entity as suggested by Damodaran (2005).

Consequently, one should build a new valuation model where Tesla motors and BMW Group estimates are combined and the value of synergies can be isolated. For the sake of consistency, it is necessary to ensure that the assumptions considered in the standalone valuations are reflected except for the areas in which synergy is expected to occur. The value of synergy can be obtained by the difference in the results of the merged entity and the valuation reflecting the new improvements (synergies).

In this case, I propose the acquisition of Tesla Motors by BMW Group. Considering both companies as participants of a broadly consolidated industry, but still highly competitive, the global OEMs struggle to lead in premium car design and technology, to early capture the emerging customer trends. Being this a manufacturing industry, mergers and acquisitions serve to reduce operating costs and immediately serve customers at a local level.

### **6.1. Valuation of the Merged Entity without Synergies**

The main purpose of this section is to guarantee that the new valuation model reflects the same structural assumptions considered for the previous valuations. Consequently, in a case where no synergies are considered and the assumptions from the standalone valuation remain the same, the result achieved should be equal to the sum of the values of each standalone firm. The logic explanation of this equality of values is that diversification in publicly traded firms do not provide any value gain.

#### **6.1.1. Adjustments to the Valuation Model**

##### *6.1.1.1. WACC for the Merged Firm*

The assessment of different valuation methodologies provides a more comprehensive perception on the value of both companies, by stressing financial information and guaranteeing that the different techniques result in close values. As I considered the standalone valuation of both companies, to provide coherent values, the methodology I will use in the valuation of the merged firm is the DCF WACC-based approach.

One of the first decisions that must be made when executing valuations of cross-border investments is the choice of which currency to use in forecasting free cash flow and measuring WACC.

Considering a considerable share of all equity trades is international, the application of a global market risk premium was considered to make intuitive sense, for this reason the risk premium in use was the same for both standalone valuations and for the valuation of the merged entity. It was also considered that there would be no need for adjustment of foreign-currency risk as the foreign-currency and foreign-investment risks are already captured in the spot and forward exchange rates.

##### *6.1.1.2. Currency and Tax Rate*

An important step when considering corporate acquisitions with international components is to consider two main issues that affect such valuations, which tax rate to use, whether the domestic or foreign and the choice of currency in which to execute the analysis.

As explained in the literature review, there are two equivalent cross-border techniques. In this specific case, discounting Tesla's U.S. dollar cash flows at an American discount rate would be equivalent to converting each U.S. dollar cash flows at a forward rate and discounting them all at a German discount rate.

Considering that when developing a merger or an acquisition the figures have to be in a common currency, the second technique mentioned above would yield an accurate estimate. The methodology to apply is to convert the dollar values from Tesla Motors in Euros converted at forward exchange rates.

Another important point to refer is that both U.S. GAAP and IFRS apply the current method if the companies are located in a moderate-inflation country. All balance sheet items except for equity are translated at the year-end exchange rate. Translation gains and losses are recognized in the equity account and do not affect the net income.

In search of a conservative approach regarding the tax rate, as the literature suggests, my option would rely in the higher rate. Tesla Motors is expected to have a tax rate of 16,24% while the effective historical tax rate BMW Group supports is 31,7%, the highest value.

### **6.1.2. Conclusions**

An initial step in the valuation process is the valuation of the merged entity relying on the same assumptions made before and considering that synergies are inexistent. For this specific case, the equity value obtained through the WACC and APV methods was 57.172 million in simultaneous. This value corresponds to a very close value of the sum of BMW AG (52.285 million standalone) and Tesla Motors (4.423 million standalone), the result from the DCF valuation is 0,86% higher, whereas the result arising from the APV is 0.81% higher than the sum of the two companies individual valuation, this could be interpreted as a consequence of having an higher tax rate in what would be Tesla's debt.

Additionally, one should mention that this valuation assumed the capital structure of the new entity would maintain BMW Group's capital structure as there would be no necessity of increasing the debt level in this specific acquisition.

## 6.2. Analysis of Synergies

### 6.2.1. Synergy creation - Strategic View

The assumption that there would be a considerable value creation with the merger of these two different players in the automobile industry relies in the understanding that it would be an incisive strategy in the automotive market if BMW Group bought Tesla Motors.

In this transaction, BMW would be acquiring an option to expand in an emerging market rather than a set of expected cash flows, and Tesla, a small company, integrated in “niche” and at the same time an “emerging” would be granted access to a higher-scale manufacture structure.

Furthermore, it is very important to explain a crucial factor in this merger – access to new technology. As it was explained before in the industry review, recent study in the automobile industry, provided by the Automotivenews (2010), identified technology as one of the major priorities within the industry.

In addition, further research provided by Reuters<sup>16</sup> identified alternative power as the fastest growing segment of auto industry R&D, with a 182% increase in patenting activity between 2006 and 2011.

#### 6.2.1.1. BMW Drive I project

In line with transaction, there should be explained the BMW's position in the electric vehicle production market:

The Drive I project: Planned for 2013, BMW plans to start a series production of the BMW i3 and the BMW i8 – two future-oriented cars featuring electric drive concepts and an innovative lightweight body construction. The BMW Group focuses in Leipzig the production of vehicles featuring electric drive and CFRP lightweight body construction. To this end, the company invested up to 2013 around 400 million Euros in the extension of the plant, thereby creating approximately 800 jobs. The Leipzig factory is expected to be able to produce up to 30.000 units of EV's per year.

BMW's immediate rival in the plug-in luxury segment, particularly in the U.S. market, is Tesla Motors Inc. The Tesla Model S luxury sedan has up to 265 miles of driving range.

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<sup>16</sup> “Auto Industry sets Sights on Alternative Power” – IP Market Report, January 2013

### 6.2.2. Understanding the layers of value creation


As this is a merger of reduced scale when compared to the industry, the cost reduction would not be significant in BMW's side to explain the merger for itself, there were considered different layers of value creation.


The first effort in this merger would be to preserve pre-merger value and maintain the core business. Following to that, there should be considered the traditional value creation efforts to achieve economies of scale and enhanced efficiency. Finally, there should be considered the capability-based openings to create value by transforming functions, processes and/or business units.

The following matrix was adapted in order to explain the three different levels of value creation in this transaction:

**Table 19 Possible Synergy Matrix**

	Cost	Capital	Revenue
Seek select transformational opportunities	<ul style="list-style-type: none"> <li>Redesign distribution sales and promotion across brands</li> <li>Outsource/Offshore</li> <li>Establish industry alliance for distribution and customer assistance services</li> </ul>	<ul style="list-style-type: none"> <li>Optimize hedging and risk positions</li> <li>Reconfigure warehouse network to optimize tax spend</li> </ul>	<ul style="list-style-type: none"> <li>Redesign routes market and optimize distribution network</li> <li>Enter new possible channels for both companies</li> </ul>
Capture combinational synergies	<ul style="list-style-type: none"> <li>Duplicate Overhead</li> <li>Overlapping sales branches</li> <li>Procurement</li> <li>Market research spend</li> </ul>	<ul style="list-style-type: none"> <li>Cash Flow and liquidity positions</li> <li>Lower funding rates</li> <li>Leverage Production capacity</li> </ul>	<ul style="list-style-type: none"> <li>Cross-fertilizing products</li> <li>New channels and geographies</li> </ul>
Protect base business	<ul style="list-style-type: none"> <li>Protect current customer accounts and sales volume</li> <li>Prevent talent poaching</li> <li>Manage labors to avoid potential adverse actions and business disruptions</li> </ul>		

 Business Opportunities

 Typical Synergy focus

Understanding this deal type, it is possible to sum up the synergies suggested in the previous matrix:

- Created higher market access for products by establishing industry alliances for distribution and customer assistance services and optimize warehouse networks.

- Acquire capabilities quickly by enter new possible channels and geographies for both companies.
- Pick and develop winners early by granting lower funding rates, higher cash-flows and leverage production capacity.

To sum up, BMW should consider Tesla as an opportunity to expand the existing business lines and capture transformational and combinational sources of value.

In the assessment of synergies in this case, two synergy types were considered: Transformational and Combinational synergies.

Combinational synergies, which rely on merging operations, resulting in, scale economies and scope economies and value protection by ensuring business continuity.

Transformational synergies typically arise from unlocking one or more long-standing constrains on a business. It is important to focus selectively in this synergy type– set target functions, processes, capabilities that make revolution performance possible and profitable.

### 6.2.3. Combinational Synergies

Building a combined baseline involves overviewing the operating expenses, revenue, and balance sheet for the Group. The acquisition of Tesla Motors would allow BMW build new strategic areas and their R&D portfolios.

#### 6.2.3.1. Combinational Synergy - Manufacturing

As mentioned in the industry review, there were some cases of consolidations among the automotive companies in a close past. After studying a few past deals, there were considered two interesting cases, the Renault-Nissan and the Fiat-Chrysler alliances. Even though in different scale, there were still operationale similarities to this case, leading to the conclusion that those integrations would provide a good synergy benchmark.

In fact, the deal suggested here look like the Fiat-Chrysler alliance in a few points.

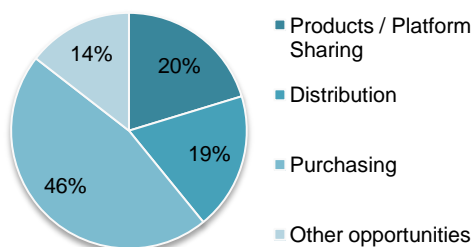


Chart 28 Synergy Breakdown – Fiat Chrysler

Connecting a unique European competitor with a carmaker from United States (Tesla) is an option aimed at achieving sustainable competitive advantage.

In the development of the decision tree for estimating overall manufacturing synergies, the synergies arising from Fiat-Chrysler's case were considered as the benchmark.

Considering the existence of overlapping operations in manufacturing a decision tree was developed:

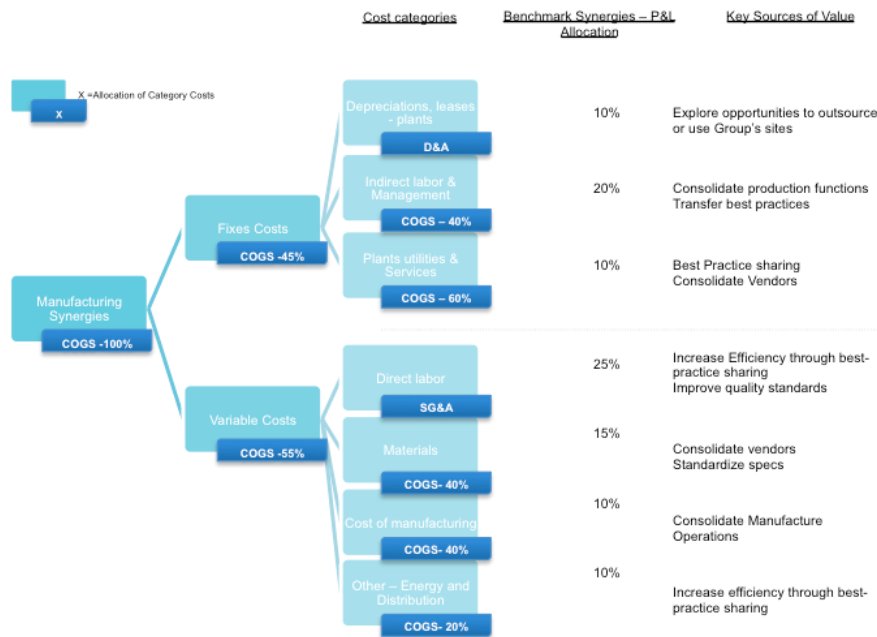


Figure 3 Manufacture Synergy Estimation Tree

#### Combinational Synergies in Manufacturing – assumptions

As Tesla motors owns a very specific “know-how” regarding the production of battery electric vehicles, the sharing of architecture in the powertrain engineering would result in a lower investment in alternative energy engines by BMW Group, in its BMW I electric project.

The manufacture of all EVs would be shared for BMW Group models and Tesla, with shared vehicle and powertrain engineering, simplifying the process of manufacturing and logistics. In addition, global production would gain in efficiency as Tesla motors would be able to capitalize its production by using BMW Group’s plants and BMW would also be able to produce electric vehicles in the Tesla’s plant in United States.

The share of vehicle and powertrain engineering would simplify the process of manufacturing and logistics. There would be cross-manufactured models in the Group’s plants. Furthermore, an acquisition by a large automaker would give Tesla access to a worldwide network of established dealerships and service centres. This could help the more traditional customers to feel more comfortable with a company that operates with the regular service network, instead of relying solely on the “mobile service” that company provides.

### *Special Focus – Increased Global purchasing*

An electrically driven passenger vehicle can be viewed as a modification of a conventional vehicle. The differences are primarily in the powertrain and the energy storage system. Both vehicle types have similar bodies, with such components as doors, windows, seats, instrument panels and controls. They have very similar chassis components, such as brakes, suspensions, wheels and tires and bumpers. Combined, these components account for 70-80% of the total vehicle cost, according to a study conducted by the United States Department of Energy\*.

Therefore, Tesla would be provided with the establishment of a global network of suppliers. With the existence of a standard protocol, Tesla could improve its global performance by leveraging on the BMW Group's order volumes

The allocation of the manufacturing synergies would be kicking in for Tesla in the beginning of 2013. For BMW, synergy was considered to exist only in what concerns the production of EV's, corresponding to around 3% of total automobile sales production.

#### *6.2.3.2. Combinational Synergy – Research & Development*

Research and Development trends clearly move towards the introduction of more technologies into most OEM vehicle programs. Fuel efficiency, weight reduction and advanced infotainment are a few examples where OEMs will increase investment. Considering this specific case, Tesla currently has 35 patents and 280 patent applications. By acquiring Tesla, a traditional automaker won't have to spend a lot of time and money developing the technology itself.

Considering the existence of those synergies in Research and Development a decision tree was developed in order to provide estimation:

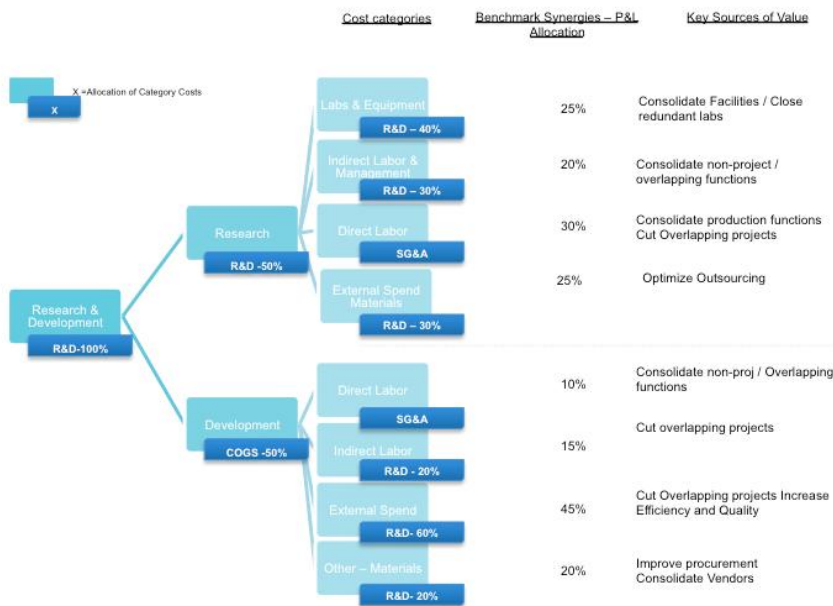


Figure 4 Research and Development Synergy Tree

#### Combinational Synergies in R&D – assumptions

As most of R&D initiatives would be taken in a co-development environment. As an example, both companies should undertake battery development in a shared basis, this would lead to a consolidation and cut of overlapping projects of at least, 45% in project expenditures added to the labs and equipment overlaps and labor savings. At the same time, BMW and Tesla would model production in a platform sharing production, both in Leipzig and California's plants. As a consequence of the existence of new talent within the company, there would also be overlapping functions in the workforce.

On the other hand, the vehicle designing, as an example, should be separately developed in order to maintain each brand's particularities in what concerns the automobile's design.

#### 6.2.4. Transformational Synergies

Transformational efforts typically run in parallel with established integration processes. In order to bring additional value to this merger, this section will focus on the opportunity that this transaction brings to create transformational value. Most importantly, it was considered the possibility to stretch BMW's capabilities in new ways, requiring a bigger departure from the traditional approach to integration. Even though transformational approaches are usually far more fluid and experimental it should involve unusual combinations of human resources, processes and technology.

#### 6.2.4.1. Development of New Processes

BMW would have the opportunity to radically change its go-to-market model and client relationships:

In opposition to the traditional auto industry's sales model of franchised dealerships, Tesla markets and sells its vehicles directly to consumers. It sells online, through its global network of company-owned stores, over the telephone or in-person at its headquarters and via corporate events (Tesla, 2011). In this regard, Tesla's sales strategy follows the strategy of Apple Inc.

Much like Apple, Tesla plans to improve and expand its sales/distribution capabilities by opening company-owned retail stores in key cities throughout the world in quality shopping venues located in up-scale markets.

Tesla customers deal directly with a Tesla-employed, highly trained and knowledgeable sales and service staff, creating a differentiated buying experience from the typical buying experience customers has with traditional automobile franchise dealers and service centers.

In this case, the merger would create value by rebuilding the acquirer company's traditional dealership-based selling system, replacing it with a profit model that cut costs dramatically. The combinational aspects of the deal did not go ignored, but they also did not mean the business would dismantle a process and program that represented BMW Group's decades of efficient operations. The effort would help BMW to embrace a new model that would maintain its strategy of procurement excellence.

Considering a process of vertical integration, which is the case, would be very risky for BMW Group as a whole, it would be expected the company would start to follow this strategy only on its Electric vehicles. Consequently, the synergy arising from this new sales approach would be the part corresponding to the EV's – 3% of total automobile production, resulting in higher revenue of 6%, which is the average difference between the retail price and the manufactured product price.

For synergy estimation, Sirower & Sahni (2006), suggest one wait some time (around 100 days) after the start of consolidation before starting the implementation required.

#### 6.2.5. Financial Synergy

The consolidation of two different entities can result in the combination of different financial forces leading to an additional source of synergies. In most cases, these effects take the form of higher cash flows or the reduction of the costs associated to the company there were considered two possibilities:

Firstly, with the combination of the two firms, Tesla Motors will be able to grant more access to debt financing than if it was considered individually. The BMW Group would be able to provide Tesla with lower cost of debt by borrowing for the group as a whole. BMW

Group is expected to maintain its leverage ratio, whereas Tesla may increase its level of debt.

Furthermore, as it was explained in the literature review, it is important to maintain a conservative methodology and hold the higher tax rate when merging the two companies. This fact increased the value of the merged entity, without synergies, in 0,86% and 0,81% in DCF and APV methods, respectively. The conclusion we can defend is that the cost of paying more taxes is compensated by the implicit benefit in the discount factor.

#### 6.2.6. Costs associated with Integration

An additional important step would be to recognize that the exploitation of the opportunities arising from this transaction comes at cost that must not be overlooked. Bearing in mind the previous sections focused on the opportunities arising from this deal, the following step would be to value the total net synergy by taking into consideration the cost of the integration processes and subtract the value from the sum of all the other synergies mentioned.

Generally, in mergers and acquisitions, the sooner managers integrate their companies, the faster they ensure the realization of the expected synergies and reduce the general risk associated with the operation.

An important type of integration cost is directly related to the process of exploiting synergy. Reduction of the workforce and the disinvestment in R&D should involve costs at least, resulting from compensation payouts for the discharged workers. Furthermore, the alignment of all the different skills should be sustained by valuable consulting projects.

#### Overall assessment of Integration Costs

In general, the estimation of the costs associated with the integration for the proposed deal appears as a difficult process. For this reason, the case of some acquisitions in the industry was used as a reference for the cost estimation. Additionally, there was also considered the average suggested for acquisitions of public companies in the automotive sector (2012 Automotive M&A Insights).

As there are no equal transactions, the approach was to assess if the transactions would fit in the valuation model. As all transactions provide specific characteristics about the companies in case, the value considered as an appropriate benchmark for modeling purposes was the median of 1,61% corresponding to Hyundai-Kia's cost synergies. After imputing those changes to my valuation model, there shall be an appreciation of results and adjust accordingly, if needed.

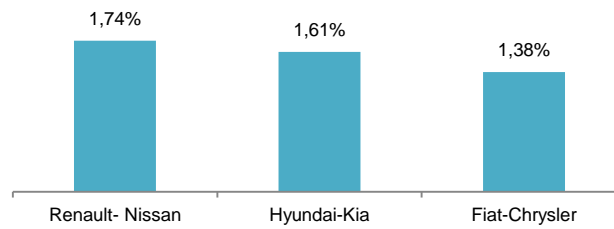


Figure 5 Cost of Integration as a Percentage of Total Sales

### 6.3. Valuation of the Merged Entity with Synergies

Once the synergy assumptions are defined, the following step would be to calculate the total net synergy. This is the difference between the value obtained in the valuation of the combined company incorporated with all the synergy assumptions and the value of the model without any synergies.

Nevertheless, a profound comprehension of the value of total synergies would be necessary to understand the value allocation that one expects to be created by each synergy assumption. For this reason, each synergy assumption was integrated autonomously into the valuation model without synergy. In opposition, the expenses associated with the integration of the new entity were calculated by the difference between the final enterprise value with or with no integration costs.

#### 6.3.1. Valuation Considerations

The cost and revenue synergies calculation for both companies, considered the base-case enterprise value, from the DCF-WACC valuation, as the basis to measure every source of synergy.

The consequence is that the increasing potential, in BMW's share price that arises from the difference in the valuation models and the prices at which the companies are currently traded, will not be accounted for when referring to the impact of synergy achievement.

This increasing potential will be accessed separately, and will be considered together with the final takeover offer. It is also important to mention that every synergy achievement will be built and measured on top of the DCF-driven valuation. Furthermore, the development of the synergy achievement scenario follows Damodaran's suggestion of valuing the synergy by computing the difference between equity value of the merged firm with and without synergy. Net synergy corresponds to the value from which integration costs are subtracted.

#### 6.3.2. DCF- WACC Based Results

After building a model that takes into account all the synergy assumptions, the value of net synergy amounts to € 2.650 billion or, instead, 54,8% of Tesla Motors' base-case equity value, as an average of the three models considered.

Synergies - Identification			
Combinational	Value of Synergy	EV with Synergy	EV without Synergy
<b>Manufacturing - COGS</b>	472.446 €	122.678.731 €	122.206.285 €
<b>D&amp;A</b>	188.352 €	122.394.637 €	122.206.285 €
<b>SG&amp;A</b>	147.351 €	122.353.636 €	122.206.285 €
<b>R&amp;D</b>	243.625 €	122.449.910 €	122.206.285 €
<b>Transformational</b>			
<b>Revenue Increase</b>			
<b>Sales Integration</b>	2.269.945 €	124.476.230 €	122.206.285 €
<b>Financial Synergy</b>			
	466.804 €	122.673.089 €	122.206.285 €
<b>Integration Costs</b>			
	-1.138.008 €	121.068.277 €	122.206.285 €
<b>Total Synergy</b>	3.788.524 €		
<b>Total Net Synergy</b>	2.650.515 €	124.856.800 €	122.206.285 €

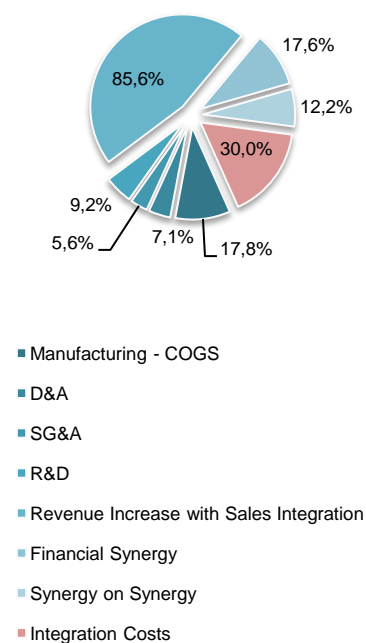


Table 20 Synergy Breakdown and Chart 29 Synergy Breakdown

The biggest part of the value improvement emerges from revenue synergy. This higher part of total synergies is also the most risky part to realize due to the transformations in the company's strategies it assumes.

Combinational synergies show the most of the company's savings by combining the production of EV's for the company's and leveraging production across its plant's locations.

In order to bring the industry experiences, past cases of strategic alliances were considered, being important to mention that those cases have a different scale in what concerns to company sizes and market:

Renault-Nissan claims € 1.5 billion in cost synergy, in 2009. This deal provides an average yearly cost synergy of € 1.138 billion per year (as an increase in EBIT).

Hyundai-Kia partnership was considered to have created a total of € 5.6 billion, during the years of 1999 and 2004 (i.e. six years). During the explicit period in analysis (i.e. five years), the proposed deal is expected to reach € 2.6 billion.

Synergy on synergy is 12.2% of total synergy, and it is a direct consequence of having a case with simultaneously, revenue synergy and improvements on the operating margin.

### 6.3.3. Distribution of Synergy Benefits

The overall assessment of the synergy benefits calculated before, took into account the knowledge and industry skills that each company would share. Bearing in mind the uniqueness of those company's skills one can understand that, by the BMW Group's sight, most synergies arise from the share of a leading new technology and from the divestiture in the electric vehicle program the group was investing in.

Regarding Tesla's side, synergies are created mainly on higher negotional power, as well as access to a developed vehicle production capacity and industry "know-how".

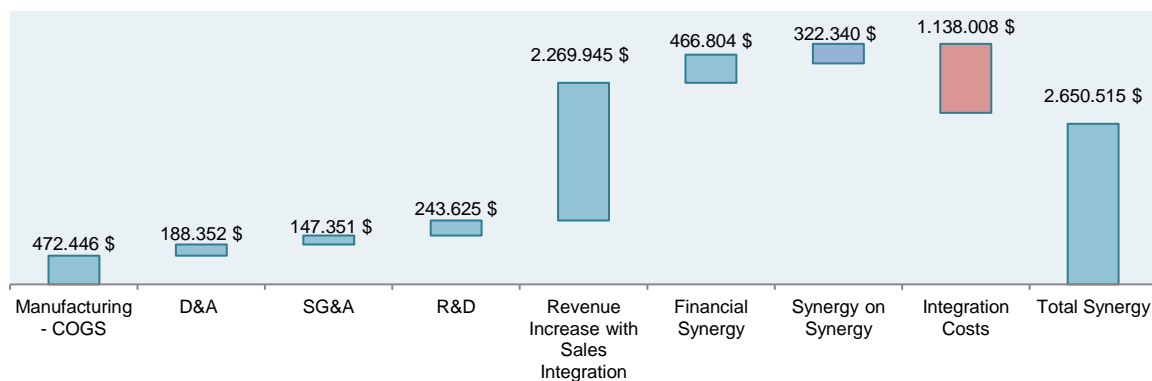


Chart 30 Synergy Waterfall

It should be mentioned that looking at the synergy waterfall, it is visible that the biggest allocation of synergy corresponds to Revenue synergies, this would translate a long-term strategy adopted by the company and not an immediate value, as it would be the case of combinational synergy.

All things considered, a proportional division of synergies based on enterprise values (EV) as well as growth potential seems to be the best framework to reflect both the skills contributed by each operator and their relative negotiation powers. An important, element in the automotive market is scale, which, in turn would favour Tesla Motors' enterprise value to be associated with an operator of relative importance in a market.

## 7. The Acquisition

Considering there are several ways of realizing a deal, this section would clarify the financial structure of the transaction and explain the advantages and disadvantages of each one.

The most rationale result in a consolidation process between BMW Group and Tesla Motors would be the one that the first operator acquires the second. BMW is significantly bigger than Tesla, which is a relevant within an industry where production scale matters.

In addition, there are reasons to believe Tesla's shareholders would be prepared to sell their position to a bigger automobile manufacturer, has Elon Musk, Tesla's Chairman

recently mentioned he would not consider stepping away from Tesla until the company achieved proportions within the automotive industry. In addition, there are reasons to believe that the other shareholders would be willing to sell their position within the firm for if the offered price is fair.

Another reason justifying BMW Group acquisition of Tesla is that BMW current focus on organic growth would be reaching its maturity in a close future. The main driver for this acquisition would be approaching an aggressive strategy to increase market share in the premium vehicle's segment where the company faces the German fierce competition of Daimler and Volkswagen Group. This competitive environment leaves limited growth potential for BMW, therefore a consolidation with Tesla could improve the company's competitiveness, especially in markets such as the U.S. and the Chinese. On the other hand, The auto industry is notoriously difficult for start-ups. By going alone, Tesla is severely disadvantaged in scale, established distribution channels, production expertise, and financial resources.

## 7.1. Form of Acquisition

As it was mentioned in the literature review, acquisitions can take several forms with relevant impact on the outcome (Damodaran, 2002). Bearing in mind these case particularities, it would be recommended that BMW Group acquires Tesla through a tender offer targeted directly to the company's stockholders.

The suggestion for this form of acquisition is that BMW Group makes a proposal to buy Tesla Motors' outstanding stock at a specific price and then communicate this offer advertising and mailings to stockholders. This strategy would be a way to avoid addressing Tesla's management and board of directors directly. Another important point, would be that the proposal's offer price be high enough to be perceived as friendly. The main objective would be to make the process fast and easy.

### 7.1.1. Target Shareholders

According to Bloomberg data, among the top-5 shareholders, is Elon Musk, FMR LLC and Blackrock which are mutual funds and provides financial services, Abu Dhabi Co. Which is a global energy company followed by Daimler AG, which is a major player in the automotive manufacture industry.

Considering that all investors have a sophisticated approach regarding their investments, this takeover offer might be considered as a very attractive one. This investor could be attracted by two factors:

Tesla's share price is undervalued according to most estimation

The existent illiquidity in capital markets and the riskiness associated with Tesla, alternative energy and propulsion systems are gaining more attention as gasoline prices continue to their steady upward trend, and there is no guarantee that consumers will adopt EVs as the alternative. Furthermore, Tesla's financial risk is the greatest threat to the company's future. Historically, Tesla's cash inflows have come primarily from financing, leaving it with dangerously high levels of debt.

Tesla's current stock price is still predominantly based on investors' expectations for future earnings.

After analyzing the auto industry conditions and Tesla's financial situation, the company's cutting edge technology, positive brand image, and potentially enormous synergies make it a likely acquisition for a luxury automaker seeking to enter the growing EV markets.

To conclude, even though most of investors may not be strategic blocks for the deal, it is expected that Daimler would be. Daimler and BMW's direct competition may affect its position regarding this transaction. Consequently it is the way BMW Group proposes to share synergy with Tesla an important factor to a successful bidding process.

#### 7.1.2. Distribution of Synergy Benefits

Assuming that there may be other bidders that may play its role in this deal, BMW management should adjust, cautiously, how much synergy they would be willing to share with Tesla's shareholders. In addition, the negotiation power of each player would also be influencing the final outcome of this action.

In the case of BMW acquiring Tesla, most synergies arise from the access that is granted to Tesla to an higher-scale production level. Regarding the combinational synergies, most of them are created mainly on Tesla's side and occur due to BMW's capabilities. An analysis of the uniqueness of skills would demonstrate that BMW's position in the EVs could also be achieved in a consolidation in a few other small producers with different capabilities. In turn, Tesla's capabilities could also be levered in a consolidation with another premium automobile manufacturer.

Otherwise, BMW Group should be attracted to Tesla's culture of innovation that has propelled it to technologically lead to launch their internally developed EVs (BMW included). In addition, Tesla had done a great job of advancing its technology to the point that EVs actually look like a feasible alternative to gas-powered cars.

On the other hand, a luxury automaker like BMW would sync perfectly with this brand image. BMW prides itself of its cutting-edge technology, class, style, very similar to Tesla.

In turn, BMW, which has sufficient cash flow to fund development without taking on potentially debilitating levels of debt like Tesla currently has to do.

Considering the overall synergy assessment, the impact of net synergy, in Tesla, is larger in numbers and percentages than it is in BMW Group. There are, essentially, two reasons for that to happen, synergy was measured as a percentage of sales and size, and BMW is much larger in such terms.

In the post-recessionary context of auto industry, M&A activity is expected to slow-

**Chart 32 Total value creation Synergy Waterfall**

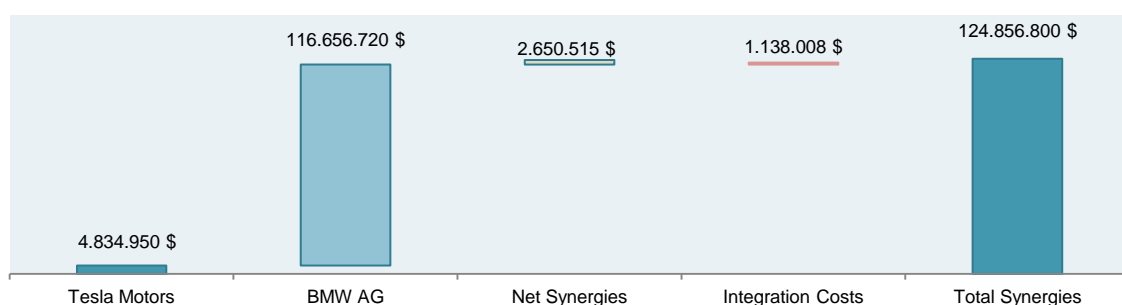
down. The values of disclosed deals will, most likely, follow the same tendency, creating opportunities for more difficult for Tesla to operate independently.

Bearing in mind everything mentioned before, a proportional share of synergies based on its achievement would be the best framework to reflect both the skills contributed by each manufacturer and their relative negotiation powers.

Even though scale is, in fact, a key element in the automotive industry, each company holds an interesting in its specific market. As a result BMW Group would be ending up receiving around 85,6% of the value of net synergies.

### 7.1.3. Premium Offered

Tesla's average market capitalization during the past year was around 2,5 billion Euros. It is also important to understand the case's particularities, being a start-up Tesla's overall valuation can be considered as quite subjective and it would be relying on most of operations future success and not actual performance. Bearing this Tesla's particularity in mind, the value considered as a reasonable Market Capitalization proxy was the average for the past trimester. At the same time, Tesla's standalone valuation suggests equity value of around 4,8 billion Euros. Considering that the Equity value, itself suggests an upside potential for Tesla's Equity of 79,3%, this difference result in huge differences considering



**Chart 31 Total Value Synergy Waterfal**

the premium. Structuring the bid based on the theoretical value and adding a premium for the synergies that it creates, yields an effective offering price of \$5.2 billion

Table 21 Acquisition Description

<b>BMW Group's Acquisition of Tesla Motors Inc. (Eur, million)</b>	
Value of Synergies	2 650 515 €
<b>% attributable to BMW Group's</b>	<b>85,6%</b>
<b>% of synergy paid to Tesla Motors</b>	<b>14%</b>
Value of synergies paid to Tesla Motors	380 570 €
Tesla's Market Cap (average last year)	2 702 729 €
Tesla's Equity Value	4 846 911 €
Tesla's Equity Value with synergy	5 227 481 €
<b>Premium</b>	
To Average Market Cap	93%
To Equity Value	8%

In addition, BMW's current shareholders will only accept the decision of acquiring Tesla Motors if they perceive that the transaction delivers future value. For this reason, it is essential to analyze the value that is created through the eyes of the shareholder to avoid the risk of overpaying.

The value creation that scores for the acquiring company's shareholders can be calculated using through the formula stated below.

Value Created (Acquirer)

$$= (\text{Standalone Value of Target} + \text{Value Enhancement}) - (\text{Market Value of Target} + \text{Acquisition Premium})$$

At first, assuming that all the potential synergies will be realized, yields a value for BMW Group's shareholders of €5.175 million. Compared to the theoretical value of the BMW's equity value, this is equivalent to an increase of around 10,0%. On the other hand, if the expected synergies turn out to be non-existent, the premium of €380 million paid for Tesla Motors added to the equity value difference to market (€2,144 million), which would be additional loss in case company's prospects don't realize. Overall the acquisition would be a direct loss for BMW's shareholders in €2.524 million. This loss will lead to a reduction in the equity value of 4,9%. These calculations unveils that the there is a higher upside potential compared to the downside potential, which in effect yields a positive expected value for shareholders if both situations are equally likely.

#### 7.1.4. Method of Payment

The way BMW Group finances its acquisition of Tesla Motors represents an important decision considering it can produce effects on the outcome of the deal. In fact, Bruner (2004) suggests that the terms of the transaction have a significant influence on M&A profitability for the buyer.

As several studies reported that stock-based deals are associated with negative returns to the buyers at deal announcements, whereas cash deals are neutral or slightly positive. It is important that BMW present its investors secure synergy forecasts and it is imperative that the Group express assurance to the benefits forecasted.

Deciding to acquire Tesla whether with cash, stock or mixes of both depends on three major factors. Initially BMW Group is currently slightly undervalued (8,7% upside potential) which would result in a dilution if new shares were issued. Summing up, if BMW was to issue new stock, the consequence would be that the issuing price would be lower than a fair price.

In addition, it is reasonable to think that BMW would want to limit the amount of debt they take on, in order to maintain their financial flexibility. Adding to this point, the company has a positive first-rate pricing in the debt market. This lead to the conclusion that the company is not in the need of additional funds, it uses its position as an opportunity to lower the total cost of capital. Nonetheless, this does not mean the company wouldn't be able to issue additional debt. BMW possesses many of the characteristics needed to issue substantial amounts of debt to finance a potential acquisition.

As a final point, deciding between cash or stock should take into account the impact on capital structure and rating agencies' deliberations. Ultimately, even though BMW's acquisition of Tesla should an all-cash merger, with no occurrence of exchange of stock and with BMW purchasing the majority of the common shares outstanding of the target company using only cash. This would certainly occur if one considers that the purchasing company is much larger than the company it is acquiring.

This all-cash transaction is expected to occur with no buyer financing, simply because the company doesn't need to. A cash transaction will grant BMW with a tool to express to the market its confidence in the potential synergies, and that it is ready to carry all risks associated with the realization of these.

The overall effect of the acquisition can be assessed in the following table:

Table 22 Effect on BMW's Investment Grade and Cash Balance

Effect on BMW's Investment Grade and Cash Balance					
€ million	BMW Group	Tesla Motors	Cash Balance	Merged Entity	Merged Firm w/ extra leverage
Revenue	76.848.000 €	313 €	2012	76.848.313 €	76.848.313 €

Cash & Equivalents	Cash	8.370.000 €	152.889 €	10,9%	8.522.889 €	8.522.889 €
Debt		101.448.000 €	749.331 €		102.197.331 €	107.424.812 €
Net Debt		61.137.000 €	479.030 €	<b>After Acquisition</b>	61.616.030 €	66.843.511 €
EBITDA		8.300.000 €	-238.783 €	4,1%	8.061.217 €	8.061.217 €
EBIT		4.771.014 €	-191.027 €		4.579.987 €	4.579.987 €
Financing Costs		-481.000 €	-1.384 €		-482.384 €	-523.310 €
<b>Net Debt/EBITDA</b>		<b>7,4x</b>	<b>n.a.</b>		<b>7,6x</b>	<b>8,3x</b>
<b>Interest Coverage Ratio</b>		<b>9,9x</b>	<b>n.a.</b>		<b>9,5x</b>	<b>8,8x</b>

Weighting all aspects, the potential higher gearing effect and the firm's capability to pay this acquisition in cash as well as the size of the transaction and the potential increase exposure of the company to adverse economic conditions would lead to the conclusion that the best approach would be an all-cash financed acquisition.

This would preserve BMW's financial flexibility and would maintain the actual credit ratings, leaving more elasticity for BMW to have a satisfactory post-merger integration.

General rule, the market reacts positively to leverage-increasing transactions, sustained by the implicit positive cash-flow variations. In opposition, management wouldn't risk higher gearing, if the probability of failing principal and interest payments on debt was high.

#### 7.1.5. The Takeover Offer

All the facts necessary to proceed with the offer are available at this point; BMW will take a bold step and make a shot to buy the entire stock of Tesla Motors.

The circumstances defined so far for BMW's takeover offer of Tesla are all reliable with the purpose of guaranteeing a good reaction from the market. Essentially, the 93% premium over Tesla's average market capitalization and the aspiration to pay the transaction with cash from internal funds support this idea. It is important that BMW's offer is perceived as friendly and, at the same time BMW must provide the market with a detailed analysis of all the benefits arising for each company after sealing the deal.

In addition, the merger would enable the integration of two strong brands that together can revolutionize the automotive industry, not only in the source of power for the vehicles but also in the way vehicles are delivered to the final customer.

Once the transaction is anticipated, Tesla's shareholders and administration (including the main shareholder Elon Musk) may not react positively. For this reason it is crucial all the investors captures the vital details of the deal in order to change their general opinion.

It is rather important to maintain a friendly approach as several studies also reported larger announcement returns to bidders in tender offers may reflect bargain prices as well as the expected economic benefits from replacing management and redirecting the strategy of the firm- a strategy that would go against the underlying objectives of this transaction.

Finally, BMW should present its tender offer to the existing shareholders of Tesla motors. The total price offered for the acquisition of all shares, will be \$6.902 million, corresponding to \$60.27 per share, entirely cash financed transaction.

#### **7.1.6. Other Potential Bidders**

The triumph of the transaction linking BMW and Tesla motors can be prejudiced by a probable counter-bid of prospective rivals. For this reason it is important to be attentive of all the players in the industry that may be willing to challenge BMW's through a counter offer of Tesla Motors.

##### *7.1.6.1. Daimler Stake in Tesla Motors*

During the fourth quarter of 2011, Daimler and Tesla engaged in an agreement to assist with the development of a full electric powertrain for a Daimler Mercedes-Benz B-Class EV vehicle.

"Daimler Guaranty" means that certain guaranty by the Borrower of the obligations of Tesla Motors Ltd. under the Daimler Development. The arrangement between Daimler and Tesla has a few barriers to potential acquisitions, for example, Daimler has a right of notice on any acquisition that Tesla receives from any company.

In conclusion there could be the case that the Daimler-Tesla agreement could be more than a simple transfer of capital and electronic powertrain products. On the other hand, Tesla was very cautious in its contracts to specifically protect its intellectual and technological property from being transferred, keeping its competitive advantages. Daimler owns a 4.7% investment in Tesla Motors.

##### *7.1.6.2. Toyota Motors Stake in Tesla Motors*

Another existing potential bidder could be Toyota Motors, which entered in a supply and services agreement for the supply of a validated electric powertrain system, including a battery pack, charging system, inverter, motor, gearbox and associated software, which will be integrated into an electric vehicle version of the Toyota RAV4. Additionally, Toyota Motors owns about 2%.

After researching on this theme, it was found that BMW and Toyota also have a few partnerships regarding the creation of fuel-cell systems, lightweight materials and lithium-air batteries. Considering the partnerships Toyota has for technology development deals to share spending on vehicles, it is expected that Toyota Motors does not enter in has a bidder for Tesla in order to maintain its strategic alliances.

### 7.1.7. Execution Risk

There can be identified several risks associated with the deal. As explained in the literature review, there are three distinct stages in a M&A transaction being all of them have inherent risk. At first and in a pre-announcement stage there could be different perceptions about M&A and different expected deal structures. Another point is that, there can be different expectations about the new roles to perform in the merged entity in a pre-merger stage. Finally, the phase where risk is higher is in the integration stage, this is the point where the practical implementation of M&A practices and policies occurs.

Moreover, there should be mentioned types of risk associated with M&A transactions. Cultural issues, with considerable empirical support to show that top management decisions are affected by national culture; this would be an issue to regard, if one bears in mind that the overall success of the deal relies upon the management of different cultures. In order to achieve an efficient flow of joint ideas and strategic management the universe of stakeholders, from both companies, should respect their fellow colleagues, and their values.

As a concluding thought, cultural integration can play an important driver to the success of this integration and realization of synergy.

#### BMW previous merger experience

It was 1994 when BMW acquired the long established U.K. carmaker, Rover. Rover was positioned primarily in the volume market, possessing only Land Rover, one of the world's most prestigious off-road vehicles manufacturers, whereas BMW operated at the upper end of the market, producing world-class vehicles of excellent quality. In 2000 this integration process eventually failed and parts of Rover were sold. BMW hold Mini but sold Land Rover to Ford and Longbridge to the Phoenix Group.

The synergies were considered to be arising from a few particularities: Rover had learnt lean manufacturing experience from Honda and BMW was technologically and financially rich.

#### Main Problems:

There were problems because of cultural differences between the British and German managers. There was arrogance on both sides. The British would not learn from the Germans, even though they had done little research and development because they had to struggle to survive each day.

Another problem was at BMW's side, there was a critical delay of two years in understanding the problems and the Rover mindset. Ultimately, the strife led to the situation where BMW has lost more executive directors in one year through resignation than in the previous 40.

## 8. Conclusion

Integrated in an industry where the macroeconomic context will play a fundamental role in the success of constant restructuring efforts. The global automotive industry is influenced by many factors.

This is an industry where scale matters, consolidations permit the share of R&D efforts, increase productive efficiency and enter potential high growth unexplored markets. The main purpose is ensuring future operations and sustainability.

In the long-run, the success of top OEMs will be defined by their capability to track a sustainable, profitable growth path. Consolidation among the industry players should take a key part of that effort.

The whole transaction of BMW Group and Tesla Motors was developed in order to attach and create the maximum value as possible out of the industry. By doing so, the most relevant industry's drivers such as emerging customer trends, deep restructuring changes and the latest technology advancements were studied in detail.

At an initial phase, literature on valuation and key M&A-related issues was assessed in order to develop the skills needed to provide a deep financial analysis in this deal. Additional industry studies were developed in order to understand the behavior of the interesting industry of the automobile production.

Both companies were deeply studied and valued through different methods. The result of those different valuation methodologies were coherent results which allowed this study to move one step further and start developing a possible deal and designing its particularities.

The value of synergy was designed on top of the merged base-case equity value. Being added the assumptions towards transformational and combinational synergy as well as the impact of integration costs.

Generally, the DCF-driven valuation resulted in a € 2.65 billion net synergy for BMW and Tesla, with a split of 85.6% to BMW and 14.4% to Tesla in a basis of realization allocation.

## 9. Appendix

### Appendix 1: Company Information and SWOT Analysis

**Brief Company Information:** Tesla Motors**Name:** Tesla Motors Inc.**Origin:** California, United States**Industry:** Automotive, Electric Vehicles**Ticker:** ( :TSLA US Equity)**Web Site:** <http://www.teslamotors.com/>**Competitors:** Mercedes-Benz, Lexus, BMW, Porsche, Audi, Infinity.

Tesla Motors is a global enterprise that designs, produces and markets electric powered vehicles and components. At its beginning, it was the only vehicle manufacturer selling zero-emission sports cars in serial production.

Tesla's Strategy of selling sleek, eco-friendly designs at high margins differs greatly from its industry peers Chrysler, Ford, GM and Lexus, which have been struggling to evolve their aging lines to meet the increased demand for electric vehicles (Sun, 2011).

#### Tesla Model S

Tesla Model S is the second vehicle developed under Tesla's logo. With its production started in mid-2012, Tesla Model S is positioned to compete in the luxury sedan market, having as competitors Audi A6, BMW 5-series and Mercedes E-Class as an example. Priced around \$57.000, the Model S will incorporate battery technology and will be available with batteries ranging from 260 km to 480 km. The final price may increase if the customer chooses the larger battery range options. An important feature of Model S is that it is able to do a quick battery swap and it has recharging capabilities using 100V, 200V and 480V power sources.



Figure 6 Tesla Model S

SWOT Analysis – Tesla Motors	
<p><b>Strengths</b></p> <p>Tesla's major advantages/strengths in the Electric Vehicles' industry comprise:</p> <ul style="list-style-type: none"> <li>- leading-edge proprietary technologies (vehicle design, powertrain tech., battery technology)</li> <li>Superior products in terms of exceptional vehicle performance (as example: higher range capabilities)</li> <li>forward-thinking corporate leadership;</li> <li>"First-Mover" advantage</li> <li>Solid brand foundation</li> <li>Unique Business model and distribution/sales network</li> <li>Solid capital base and access to capital markets</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>Relatively high cost structure due to lack of significant economies of scale</li> <li>Immature industry focus - start-up phase of electric vehicle market</li> <li>Limited brand name recognition within the mass-market consumer segment</li> <li>potential supply problems if demand keeps increasing significantly</li> <li>potential production output problems if consumer demand in the luxury sedan market increases significantly</li> <li>consumer concerns over electric vehicle market infrastructure</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Momentaneous advances in vehicle battery technology</li> <li>Significant barriers to entry in the Electric vehicle's market which serves to limit the number of new entrants</li> <li>Rising consumer awareness of cost and environmental benefits of Electric Vehicle's ownership</li> <li>Substantial increases in the price of fuel</li> <li>Increasing governmental focus on infrastructures necessary to support widespread EV's adoption</li> <li>Mounting anxieties about environmental pollution and global warming</li> <li>Certain market sectors are "niche" and largely untouched</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>Significant Increase in the number of direct EV's competitors</li> <li>Growing number of substitutes for EV's (hybrids)</li> <li>Entry of large automobile companies into the EV market with greater economies of scale capabilities</li> <li>Possible major breakthrough by competitors in vehicle battery technologies that could diminish Tesla's advantage</li> </ul>

**Brief Company Information: BMW AG****Name:** Bayerische Motoren Werke AG**Origin:** Munich, Germany**Industry:** Automotive and Motorcycle**Ticker:** ( BMW GR Equity)**Web Site:** www.bmwgroup.com**Competitors:** Mercedes-Benz, Chrysler Group, Ford Motor Co., Porsche, Audi, Toyota Motor Corp.**SWOT Analysis – BMW Group**

<b>Strengths</b>	<b>Weaknesses</b>
<p>Brand Reputation: BMW brand was marked as the third most valuable brand in 2012 by Forbes, being listed as well as the most reputable business in the world</p> <p>Quality Products: BMW is valued on its engineering capabilities and skilled workforce. BMW recalls their cars less often and at lower numbers than most of its competitors</p> <p>Highly skilled workforce: Quality cars require premium materials and skilled labours. BMW sets up its plants at countries where there is only skilled vehicle assemblers such as Germany and U.S.</p> <p>Strong brand presence in China: Over the last few years, BMW has seen strong sales growth in China, the largest automotive market in the world.</p>	<p>High Cost structure: Producing quality cars and hiring skilled workforce results in high costs for the business. Higher cost structure than the biggest competitors such as Toyota, GM and Volkswagen</p> <p>Weak brand portfolio: BMW Group manufactures and sells only three brands: BMW, Mini and Rolls-Royce. Even though these brands present a good level of sales they are unable to serve larger market needs.</p> <p>High Prices: by selling luxury cars, produced with the best quality materials, BMW may have cars considered too pricey when compared to competitors</p> <p>Not enough acquisitions and strategic partnerships: Almost 90% of BMW is organic and only 10% is from acquisitions. Without acquisitions, the company finds it hard to grow even with exclusive engineering capabilities.</p>
<b>Opportunities</b>	<b>Threats</b>
<p>Increasing fuel prices: Increasing fuel prices open up large markets for BMW hybrid and hydrogen cars as consumers shift towards cheaper fuel types</p> <p>Positive attitude towards "green" vehicles: Consumers are more aware of the negative effects caused by cars fueled by petrol and diesel. Consumers are more likely to buy new hybrid and hydrogen fueled cars</p> <p>Expand brand portfolio: In order to grow at a higher rate, BMW should expand its brand portfolio to meet more needs to satisfy consumer market.</p> <p>New emission standards: A new wave of stricter regulations on vehicle emission standards would positively affect BMW position in automotive industry</p>	<p>Intense competition: BMW faces increasing competition from its direct competitors, and now tends to compete on price rather than differentiation.</p> <p>Rising raw material prices: Rising prices for raw materials will increase the costs for auto manufacturers and result in lower profits</p> <p>Decreasing fuel prices: Due to increasing extraction of shale gas, future fuel prices should drop and make electric, hybrid and hydrogen cars less attractive.</p> <p>Growing Euro exchange rate: BMW earns part of its profits outside the euro zone. Exchange rate fluctuations threaten BMW profits if the euro will start appreciating against other currencies.</p>

## Appendix 2: Company Valuation

## Tesla Motors

## Statement of Operations

	Statement of Operations											
	Year Ended December 31					Forecast						
	2010	2011	2012	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
(in thousands)												
North America	\$ 41,866	\$ 109,233	\$ 355,325	\$ 1,561,496	\$ 2,431,891	\$ 3,250,463	\$ 3,924,294	\$ 4,659,327	\$ 5,485,440	\$ 6,308,256	\$ 7,065,247	\$ 7,771,772
Europe	\$ 70,542	\$ 84,397	\$ 50,318	\$ 81,810	\$ 115,969	\$ 142,229	\$ 170,035	\$ 199,876	\$ 232,955	\$ 269,179	\$ 308,345	\$ 337,791
Asia	\$ 4,336	\$ 10,612	\$ 7,613	\$ 10,003	\$ 14,347	\$ 17,993	\$ 21,893	\$ 26,857	\$ 33,215	\$ 39,194	\$ 45,465	\$ 49,557
Revenue	\$ 116,744	\$ 204,242	\$ 413,256	\$ 1,653,309	\$ 2,562,208	\$ 3,410,685	\$ 4,116,222	\$ 4,886,059	\$ 5,751,610	\$ 6,616,629	\$ 7,419,056	\$ 8,159,120
Operating Expense:												
Cost of goods sold	\$ 86,013	\$ 142,647	\$ 363,189	\$ 1,107,717	\$ 1,716,679	\$ 2,285,159	\$ 2,757,869	\$ 3,273,660	\$ 3,853,579	\$ 4,433,142	\$ 4,970,768	\$ 5,466,610
Margin		70%	92.72%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Correlation w/lt sales		98.38%						100.00%				
Research & Development	\$ 92,996	\$ 208,981	\$ 273,978	\$ 247,986	\$ 384,331	\$ 375,175	\$ 325,387	\$ 386,243	\$ 454,665	\$ 523,045	\$ 586,476	\$ 644,978
Margin		80%	102%	15%	15%	11%	8%	8%	8%	8%	8%	8%
Correlation w/lt sales		92.35%										
Selling, general and administrative	\$ 63,417	\$ 74,683	\$ 100,227	\$ 247,986	\$ 299,759	\$ 311,219	\$ 292,947	\$ 271,216	\$ 319,262	\$ 367,277	\$ 411,819	\$ 452,898
Margin		54%	37%	15%	12%	9%	7%	6%	6%	6%	6%	6%
Employee Stock Option Expense	\$ 21,456	\$ 29,419	\$ 50,145	\$ 51,649	\$ 53,199	\$ 54,795	\$ 56,439	\$ 58,132	\$ 59,876	\$ 61,672	\$ 63,522	\$ 65,428
Margin		38.1%	70.5%									
<b>EBITDA</b>	<b>\$(115,059)</b>	<b>\$(205,150)</b>	<b>\$(315,313)</b>	<b>\$49,599</b>	<b>\$254,669</b>	<b>\$642,263</b>	<b>\$1,081,384</b>	<b>\$1,471,240</b>	<b>\$1,859,115</b>	<b>\$2,282,958</b>	<b>\$2,720,560</b>	<b>\$3,168,548</b>
Inventory Write-downs	\$ 10,623	\$ 16,919	\$ 28,825	\$ 23,217	\$ 30,256	\$ 38,498	\$ 48,766	\$ 61,593	\$ 77,985	\$ 98,013	\$ 126,025	\$ 160,770
Depreciation and amortization	\$ (146,838)	\$ (251,488)	\$ (394,283)	\$ 26,382	\$ 131,183	\$ 400,634	\$ 691,253	\$ 893,348	\$ 1,046,120	\$ 1,194,153	\$ 1,323,969	\$ 1,433,863
Margin		9%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
<b>Loss From Operations</b>	<b>\$(125,862)</b>	<b>\$(222,069)</b>	<b>\$(344,138)</b>	<b>\$26,382</b>	<b>\$224,433</b>	<b>\$603,765</b>	<b>\$1,032,619</b>	<b>\$1,409,648</b>	<b>\$1,781,130</b>	<b>\$2,183,946</b>	<b>\$2,594,556</b>	<b>\$3,007,777</b>
Interest income	\$ 258	\$ 255	\$ 288	\$ 284	\$ 300	\$ 306	\$ 312	\$ 318	\$ 324	\$ 331	\$ 337	\$ 344
Interest expense (net)	\$ (992)	\$ (43)	\$ (254)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)	\$ (7,026)
Other expense, net	\$ (6,583)	\$ (2,646)	\$ (1,828)	\$ (6,732)	\$ (6,727)	\$ (6,721)	\$ (6,714)	\$ (6,708)	\$ (6,702)	\$ (6,695)	\$ (6,689)	\$ (6,682)
<b>Non-operating income, net</b>	<b>\$(7,317)</b>	<b>\$(2,434)</b>	<b>\$(1,794)</b>	<b>\$(6,732)</b>	<b>\$(6,727)</b>	<b>\$(6,721)</b>	<b>\$(6,714)</b>	<b>\$(6,708)</b>	<b>\$(6,702)</b>	<b>\$(6,695)</b>	<b>\$(6,689)</b>	<b>\$(6,682)</b>
Profit / Loss Before income tax	\$ (154,155)	\$ (253,922)	\$ (386,077)	\$ (19,650)	\$ 124,456	\$ 383,914	\$ 684,538	\$ 886,639	\$ 1,039,418	\$ 1,187,468	\$ 1,317,280	\$ 1,427,181
Provision for income taxes	\$ 173	\$ 489	\$ 136	\$ 401,495	\$ 401,495	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Corporate Income Tax		-11,222%	-19,258%	-3,434%	16.237%	16.237%	16.237%	16.237%	16.237%	16.237%	16.237%	16.237%
<b>Net income (loss)</b>	<b>\$(154,328)</b>	<b>\$(254,411)</b>	<b>\$(386,213)</b>	<b>\$19,514</b>	<b>\$187,315</b>	<b>\$281,683</b>	<b>\$688,608</b>	<b>\$1,043,653</b>	<b>\$1,369,299</b>	<b>\$1,723,074</b>	<b>\$2,082,340</b>	<b>\$2,439,922</b>

## Balance Sheet – Tesla Motors – Simplified Version for Current Assets and Liabilities

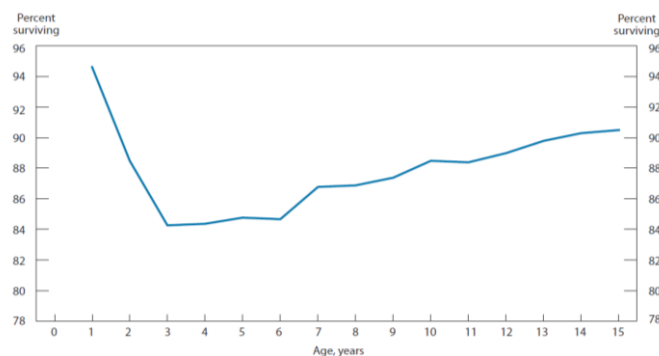
assumption: 365 days	Simplified Version of the Balance Sheet											
	December 31,						Forecast					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Assets</b>												
Current Assets												
Cash and Cash Equivalents & restricted	\$ 173.155	\$ 278.742	\$ 220.984	\$ 177.790	\$ 298.338	\$ 501.373	\$ 739.272	\$ 872.457	\$ 1.148.622	\$ 1.328.174	\$ 1.619.039	\$ 1.804.076
Days Sales Outstanding (DSO)	541	498	195	179	164	151	138	127	117	107	98	90
Target DSO	218											
Accounts / Trade Receivables	\$ 6.710	\$ 9.539	\$ 26.842	\$ 121.699	\$ 213.738	\$ 322.436	\$ 440.998	\$ 593.243	\$ 791.405	\$ 1.031.767	\$ 1.311.080	\$ 1.634.028
Days Sales Outstanding (DSO)	21	17	34	27	30	35	39	44	50	57	65	73
Target DSO	0											
Inventories	\$ 45.182	\$ 50.082	\$ 268.504	\$ 624.176	\$ 749.326	\$ 772.684	\$ 722.376	\$ 664.243	\$ 605.705	\$ 539.775	\$ 468.844	\$ 399.417
DSO	192	138	259	206	169	133	107	86	69	56	45	36
Target DSO	138											
Other Receivables	\$ 10.839	\$ 34.475	\$ 8.438	\$ 44.835	\$ 92.281	\$ 163.146	\$ 261.500	\$ 412.259	\$ 644.525	\$ 984.748	\$ 1.466.477	\$ 2.141.944
Days Sales Outstanding (DSO)	34	62	7	10	13	17	23	31	41	54	72	96
Target DSO	0											
<b>Total Current Assets</b>	<b>\$ 235.886</b>	<b>\$ 372.838</b>	<b>\$ 524.782</b>	<b>\$ 968.499</b>	<b>\$ 1.353.683</b>	<b>\$ 1.759.640</b>	<b>\$ 2.164.147</b>	<b>\$ 2.542.202</b>	<b>\$ 3.190.257</b>	<b>\$ 3.884.464</b>	<b>\$ 4.855.440</b>	<b>\$ 5.979.465</b>
<b>Liabilities</b>												
Current Liabilities												
Accrued Liabilities	\$ 20.945	\$ 32.109	\$ 39.798	\$ 82.665	\$ 128.110	\$ 170.534	\$ 205.811	\$ 244.303	\$ 287.581	\$ 330.831	\$ 370.953	\$ 407.956
as a % of net consolidated revenues	18%	16%	10%									
Target %	7%											
Accounts/ Trade Payables	\$ 28.951	\$ 56.141	\$ 303.382	\$ 372.845	\$ 556.612	\$ 713.745	\$ 829.761	\$ 948.827	\$ 1.075.924	\$ 1.192.319	\$ 1.287.857	\$ 1.364.351
% of goods sold	34%	39%	79%									
Target	34%											
Financing Liabilities	\$ 279	\$ 8.983	\$ 55.206	\$ 284.863	\$ 244.381	\$ 205.502	\$ 168.884	\$ 168.884	\$ 168.884	\$ 168.884	\$ 168.884	\$ 168.884
Days Payable Outstanding (DPO)	1	23	53	56	61	65	70	75	81	87	93	100
Target DPO	100											
Other Liabilities	\$ 35.390	\$ 94.106	\$ 140.722	\$ 165.331	\$ 256.221	\$ 341.069	\$ 411.622	\$ 488.606	\$ 575.161	\$ 661.663	\$ 741.906	\$ 815.912
As (% of revenues	30%	48%	34%									
Target	19.07%											
<b>Total Current Liabilities</b>	<b>\$ 85.265</b>	<b>\$ 191.339</b>	<b>\$ 539.108</b>	<b>\$ 905.705</b>	<b>\$ 1.185.324</b>	<b>\$ 1.430.850</b>	<b>\$ 1.616.096</b>	<b>\$ 1.850.620</b>	<b>\$ 2.107.549</b>	<b>\$ 2.353.697</b>	<b>\$ 2.569.599</b>	<b>\$ 2.757.102</b>

## Base Case Cash Flow – Tesla Motors

	Forecast								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Revenue	\$ 1.653.309	\$ 2.562.208	\$ 3.410.685	\$ 4.116.222	\$ 4.886.059	\$ 5.751.610	\$ 6.616.629	\$ 7.419.056	\$ 8.159.120
EBITDA	\$ 49.599	\$ 254.689	\$ 642.263	\$ 1.081.384	\$ 1.471.240	\$ 1.859.115	\$ 2.282.958	\$ 2.720.580	\$ 3.168.548
	3%	10%	19%	26%	30%	32%	35%	37%	39%
Depreciation and Amortisation	\$ 101.140	\$ 128.436	\$ 161.811	\$ 203.275	\$ 254.786	\$ 319.069	\$ 399.243	\$ 498.972	\$ 488.285
EBIT	\$ 26.382	\$ 224.433	\$ 603.765	\$ 1.032.619	\$ 1.409.648	\$ 1.781.130	\$ 2.183.946	\$ 2.594.556	\$ 3.007.777
Taxes	\$ -	\$ -	\$ (98.031)	\$ (167.662)	\$ (228.879)	\$ (289.195)	\$ (354.598)	\$ (421.267)	\$ (488.360)
NOPAT	\$ 26.382	\$ 224.433	\$ 505.734	\$ 864.957	\$ 1.180.769	\$ 1.491.935	\$ 1.829.347	\$ 2.173.288	\$ 2.519.417
Depreciation and Amortisation	\$ 101.140	\$ 128.436	\$ 161.811	\$ 203.275	\$ 254.786	\$ 319.069	\$ 399.243	\$ 498.972	\$ 488.285
Capex	\$ 165.943	\$ 208.896	\$ 262.452	\$ 329.374	\$ 412.989	\$ 517.429	\$ 647.729	\$ 809.975	\$ 910.512
Annual W.C. Variations	\$ 257.268	\$ 305.118	\$ 241.801	\$ 203.226	\$ 244.871	\$ 371.890	\$ 514.655	\$ 690.111	\$ 928.988
Stock-Based Comp	\$ 51.649	\$ 53.199	\$ 54.795	\$ 56.439	\$ 58.132	\$ 59.876	\$ 61.672	\$ 63.522	\$ 65.428
<b>Unlevered Free Cash Flow</b>	<b>\$ (321.962)</b>	<b>\$ (206.126)</b>	<b>\$ 290.835</b>	<b>\$ 437.561</b>	<b>\$ 642.633</b>	<b>\$ 740.477</b>	<b>\$ 827.648</b>	<b>\$ 862.749</b>	<b>\$ 906.115</b>
Terminal Value									

## Survival Rate of Silicon Valley Technology Companies

Chart A-2. Annual survival rate of Silicon Valley high-tech firms, by age of firm, 1991–2009



SOURCE: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

## Top R&D spending companies- Worldwide

Rank	Company	R&D Spending			Headquarters Location	Industry	
		2011, \$US Billions	Change from 2010	As a % of Sales			
1	6	Toyota	\$9.9	16.5%	4.2%	Japan	Auto
2	3	Novartis	\$9.6	5.5%	16.4%	Europe	Healthcare
3	1	Roche Holding	\$9.4	-2.1%	19.6%	Europe	Healthcare
4	2	Pfizer	\$9.1	-3.2%	13.5%	North America	Healthcare
5	4	Microsoft	\$9.0	3.4%	12.9%	North America	Software and Internet
6	7	Samsung	\$9.0	13.9%	6.0%	Asia	Computing and Electronics
7	5	Merck	\$8.5	-1.2%	17.6%	North America	Healthcare
8	11	Intel	\$8.4	27.3%	15.5%	North America	Computing and Electronics
9	9	General Motors	\$8.1	15.7%	5.4%	North America	Auto
10	8	Nokia	\$7.8	0%	14.5%	Europe	Computing and Electronics

## BMW Group

### Statement of Operations

Group Consolidated Income Statement								
in € million	Forecast							CGAR
	2011	2012	?2013	?2014	?2015	?2016	?2017	
Revenues	68.821	76.848	81.669	85.553	90.541	95.815	101.392	<b>4,4%</b>
Growth (%)		12%	6%	5%	6%	6%	6%	
Cost of sales	-54.423	-61.154	-65.094	-67.822	-71.855	-76.120	-80.632	<b>4,4%</b>
COGS	-50.769	-57.438	-60.932	-63.462	-67.241	-71.237	-75.464	<b>4,4%</b>
Growth (%)				4%	6%	6%	6%	
<b>Gross profit</b>	<b>18.052</b>	<b>19.410</b>	<b>20.736</b>	<b>22.091</b>	<b>23.300</b>	<b>24.578</b>	<b>25.928</b>	<b>4,6%</b>
Gross Profit Margin	26%	25%	25%	26%	26%	26%	26%	
Sales and Administrative Costs	-6.177	-7.007	-7.350	-7.700	-8.149	-8.623	-9.125	<b>9,0%</b>
Research & Development	-3.507	-3.916	-4.162	-4.360	-4.614	-4.883	-5.167	<b>5,1%</b>
Other operating income	782	829	1.170	1.226	1.297	1.373	1.453	<b>1,4%</b>
Other operating expenses	-1.132	-1.016	-962	-1.008	-1.067	-1.129	-1.195	<b>1,2%</b>
<b>Profit/loss before financial result</b>	<b>8.018</b>	<b>8.300</b>	<b>9.432</b>	<b>10.249</b>	<b>10.768</b>	<b>11.316</b>	<b>11.894</b>	<b>4,7%</b>
<b>EBITDA</b>	<b>8.018</b>	<b>8.300</b>	<b>9.432</b>	<b>10.249</b>	<b>10.768</b>	<b>11.316</b>	<b>11.894</b>	<b>4,7%</b>
Growth (%)		3,5%	13,6%	8,7%	5,1%	5,1%	5,1%	
EBITDA margin	12%	11%	12%	12%	12%	12%	12%	
<b>D&amp;A</b>	<b>-3.654</b>	<b>-3.716</b>	<b>-3.675</b>	<b>-3.850</b>	<b>-4.074</b>	<b>-4.312</b>	<b>-4.563</b>	<b>4,4%</b>
D&A as (%) of revenues			4,5%	4,5%	4,5%	4,5%	4,5%	
Total Operating Expense	-60.453	-72.077	-76.606	-79.882	-84.617	-89.626	-94.924	<b>4,4%</b>
<b>EBIT</b>	<b>8.368</b>	<b>4.771</b>	<b>5.062</b>	<b>5.671</b>	<b>5.923</b>	<b>6.189</b>	<b>6.468</b>	<b>5,0%</b>
Growth (%)				12,0%	4,4%	4,5%	4,5%	
EBIT margin			6%	7%	7%	8%	8%	
Result from Equity Accounted Investments	162	271						
Interest and Similar Income	763	753						
Interest and Similar Expenses	-943	-913						
Other financial Result	-617	-592						
<b>Financial Result</b>	<b>-635</b>	<b>-481</b>	<b>-583</b>	<b>400</b>	<b>423</b>	<b>450</b>	<b>480</b>	<b>-196,2%</b>
Profit/loss before tax	7.383	7.819	8.850	10.649	11.191	11.766	12.374	<b>6,9%</b>
Income taxes	-2.476	-2.697	-3.010	-3.622	-3.806	-4.002	-4.209	
Tax Rate (%)	33,5%	34,5%	34,0%	34,0%	34,0%	34,0%	34,0%	
<b>Net profit/loss</b>	<b>4.907</b>	<b>5.122</b>	<b>5.840</b>	<b>7.027</b>	<b>7.384</b>	<b>7.764</b>	<b>8.165</b>	

## Statement of Financial Position

Statement of Financial Position							
Assets	Group		Forecast				
	2011	2012	?2013	?2014	?2015	?2016	?2017
in € million							
Intangible assets	5238	5207	5.103	5.001	5.651	6.386	7.216
Property, plant and equipment	11685	13341	12.007	10.806	11.617	12.488	13.425
Leased products	23112	24468	22.021	19.819	21.306	22.903	24.621
Investments accounted for using the equity method	302	514	565	622	684	753	828
Other investments	561	548	603	663	729	802	883
Receivables from sales financing	29331	32309	34.571	36.215	38.327	40.559	42.920
Financial assets	1702	2148	2.269	2.396	2.531	2.674	2.824
Deferred tax	1926	2001	2.001	2.001	2.001	2.001	2.001
Other assets	568	800	845	893	943	996	1.052
Long-term Assets	0	0	5.264	13.446	17.287	21.686	26.675
<b>Non-current assets</b>	<b>74425</b>	<b>81336</b>	<b>85.249</b>	<b>91.863</b>	<b>101.075</b>	<b>111.248</b>	<b>122.444</b>
Inventories	9638	9725	10.350	10.780	11.422	12.101	12.819
Days Inventory Held (DIH)	69	62					
Target	62						
Trade receivables	3286	2543	3.356	3.516	3.721	3.938	4.167
Days Dales Outstanding (DSO)	17	12					
Target	15						
Receivables from sales financing	20014	20605	21.927	22.970	24.310	25.726	27.223
Days Dales Outstanding (DSO)	106	98					
Target	98						
Financial assets	3751	4612	4.475	4.688	4.961	5.250	5.556
Days Dales Outstanding (DSO)	20	22					
Target	20						
Current tax	1194	966	1.262	1.262	1.262	1.262	1.262
Days Dales Outstanding (DSO)	59	45					
Target	52						
Other assets	3345	3648	3.804	3.985	4.217	4.463	4.722
Days Dales Outstanding (DSO)	18	17					
Target	17						
Cash and cash equivalents	7776	8370	8.950	9.376	9.922	10.500	11.112
Days Dales Outstanding (DSO)	41	40					
Target	40						
Assets held for sale	-	45	0	0	0	0	0
Days Dales Outstanding (DSO)							
Target							
<b>Current assets</b>	<b>49004</b>	<b>50514</b>	<b>54.125</b>	<b>56.577</b>	<b>59.815</b>	<b>63.239</b>	<b>66.861</b>
<b>Total assets</b>	<b>123429</b>	<b>131850</b>	<b>139.374</b>	<b>148.439</b>	<b>160.890</b>	<b>174.487</b>	<b>189.305</b>

Equity and liabilities	Group						
			Forecast				
	2011	2012	?2013	?2014	?2015	?2016	?2017
in € million							
Subscribed capital	655	656	656	656	656	656	656
Capital reserves	1955	1973	1973	1973	1973	1973	1973
Revenue reserves	26102	28340	28340	28340	28340	28340	28340
Accumulated other equity	-1674	-674	-674	-674	-674	-674	-674
Equity attributable to shareholders of BMW AG	27038	30295	30295	30295	30295	30295	30295
Retained Earnings			3928	4726	4967	5222	5492
Minority interest	65	107	107	107	107	107	107
<b>Equity</b>	<b>27103</b>	<b>30402</b>	<b>34437</b>	<b>39270</b>	<b>44343</b>	<b>49672</b>	<b>55271</b>
Pension provisions	2183	3965	4.089	4.218	4.350	4.486	4.627
Other provisions	3149	3513	3.577	3.577	3.577	3.577	3.577
Deferred tax	3273	3040	1.309	140	718	1.358	2.067
Financial liabilities	37597	39095	41.264	44.057	47.467	51.514	56.244
Other liabilities	2911	3404	3.466	3.530	3.595	3.660	3.728
<b>Non-current provisions and liabilities</b>	<b>49113</b>	<b>53017</b>	<b>53.706</b>	<b>55.522</b>	<b>59.706</b>	<b>64.596</b>	<b>70.242</b>
Other provisions	3104	3282	3.506	3.651	3.869	4.099	4.342
Days Payable Outstanding (DPO)	22	21					
Target	21						
Current tax	1363	1482	1.673	2.013	2.116	2.224	2.339
Days Payable Outstanding (DPO)	67	69					
Target	69						
Financial liabilities	30380	30412	32.219	33.557	35.555	37.668	39.903
Days Payable Outstanding (DPO)	218	193					
Target	193						
Trade payables	5340	6433	6.617	6.891	7.302	7.736	8.195
Days Payable Outstanding (DPO)	38	41					
Target	40						
Other liabilities	7026	6792	7.178	7.476	7.921	8.392	8.890
Days Payable Outstanding (DPO)	51	43					
Target	43						
Liabilities in conjunction with assets held for sale	?-	30					
Current provisions and liabilities	47213	48431	51.193	53.589	56.762	60.119	63.669
Total equity and liabilities	123429	131850	139.335	148.381	160.811	174.387	189.182

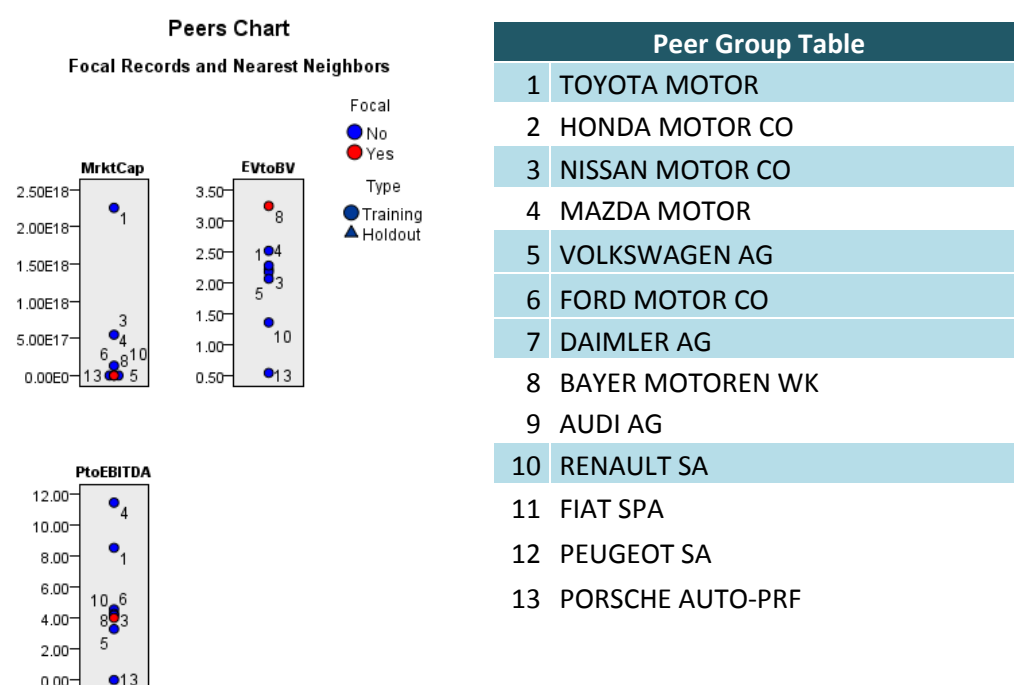
### Default Rate

Bond Rating	Default Rate		
D	100.00%	B+	19.28%
C	80.00%	BB	12.20%
CC	65.00%	BBB	2.30%
CCC	46.61%	A-	1.41%
B-	32.50%	A	0.53%
B	26.36%	A+	0.40%
		AA	0.28%
		AAA	0.01%

## APV- Results

APV - Sum of the Parts		
		2012
Base-Case	\$	58.309
Side Effect: Tax Shield	\$	48.716
Expected Bankruptcy cost	\$	261
Current Firm Value	\$	106.764
Value of Unlevered Firm	\$	57.787
Total Shares Outstanding		655.567

## Cluster Analysis – Output



## Appendix 3 : Combined Entity – Financials

Forward Contracts used as exchange rate:

Forward Contracts USD/EUR									
01-04-2013	01-03-2014	01-05-2015	01-04-2016	01-03-2017	01-03-2018	01-03-2019	01-03-2020	01-04-2021	01-03-2023
0,75729	0,754239	0,750083	0,74667	0,74123	0,73624	0,73159	0,72565	0,720047	0,70898

## Statement of Operations:

Merged Entity without Synergy - Income Statement						
(millions)	Actual Values				Estimates	
	?201?	?201?	?201?	?201?	?201?	?201?
Automobile Markets	63229	70208	72810	76502	80399	84513
<b>BMW Group- Automobile</b>	63229	70208	72810	76502	80399	84513
<b>Tesla's - Automobile</b>	155	313	1252	1933	2558	3073
<b>Total Automobile Revenue</b>	63384	70521	74062	78435	82957	87586
Total Motorcycle Revenue			1563	1640	1720	1804
Total Financial Services Revenue	17510	19550	20650	21811	23038	24334
Other Entities Revenue	5	5	5	5	5	5
Eliminations Revenue	-13359	-14405	-14621	-14841	-15064	-15290
<b>Total Revenue</b>			<b>81658</b>	<b>87050</b>	<b>92657</b>	<b>98439</b>
Gross Profit	18052,22	19410,29	20736,59	22091,17	23300,70	24578,56
<b>Gross Profit</b>			<b>21049</b>	<b>22608</b>	<b>24027</b>	<b>25499</b>
			5062	5671	5924	6189
			20	169	453	771
<b>EBIT</b>			<b>5082</b>	<b>5841</b>	<b>6377</b>	<b>6960</b>
<i>Tax Rate</i>			31,7%	31,7%	31,7%	31,7%
EBIT (1- Tc)			3472,19	3990,27	4356,35	4755,17
			76,59	96,87	121,37	151,78
			3675,10	3849,90	4074,35	4311,69
<b>D&amp;A</b>			<b>3751,69</b>	<b>3946,78</b>	<b>4195,73</b>	<b>4463,47</b>
			849,30	55,49	65,20	67,68
			19,48	23,01	18,14	15,17
<b>Change in Net Working Capital</b>			<b>868,78</b>	<b>78,50</b>	<b>83,34</b>	<b>82,86</b>
			5308,48	5560,97	5885,18	6228,00
			125,67	157,56	196,86	245,93
<b>Capital Expenditures</b>			<b>5434,14</b>	<b>5718,53</b>	<b>6082,04</b>	<b>6473,94</b>
<b>Net Cash from Operating Activities</b>			<b>921</b>	<b>2140</b>	<b>2387</b>	<b>2662</b>

## APV for the Merged Entity Calculation

## Wheighted Unlevered Ke

Tesla Motors	6,69%
BMW AG	4,83%

## Wheights on Equity

Total Equity	47539630
Wheighted Cost of Equity	0,057665 Tesla
	0,942335 BMW

4,94%

## Base Case Value Calculation

	2012	Base-Case Cash Flows and Terminal Value								
		2013	2014	2015	Forecast					2021
		2016	2017	2018	2019	2020	2021	2022	2023	2024
Discount rate	0,953	0,908	0,865	0,825	0,786	0,749	0,714	0,680	0,648	0,616
Discounted FCFF	877,62 €	1.943,34 €	2.065,37 €	2.195,08 €	2.278,24 €	2.345,80 €	2.408,43 €	2.454,72 €	2.467,69 €	85.670,02 €
Discount rate for t=2013 valuation		0,953	0,908	0,865	0,825	0,786	0,749	0,714	0,680	0,648
Discount rate for t=2014 valuation			0,953	0,908	0,865	0,825	0,786	0,749	0,714	0,680
Discount rate for t=2015 valuation				0,953	0,908	0,865	0,825	0,786	0,749	0,714
Discount rate for t=2016 valuation					0,953	0,908	0,865	0,825	0,786	0,749
Discount rate for t=2017 valuation						0,953	0,908	0,865	0,825	0,786
Discount rate for t=2018 valuation							0,953	0,908	0,865	0,825
Discount rate for t=2019 valuation								0,953	0,908	0,865
Discount rate for t=2020 valuation									0,953	0,908
Discount rate for t=2021 valuation										0,953
<b>Valuation Base-Case</b>	77.295,49 €	75.718,71 €	74.495,46 €	76.108,73 €	77.671,94 €	80.795,78 €	80.795,78 €	82.377,10 €	83.990,21 €	81.638,65 €

## Interest Tax Shield Calculation

Tax Shields										
	Forecast									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 Terminal
BMW AG Net debt	61137	64533	68238	73099	78682	85035	88309	91709	95240	98907
Tesla Motors Net Debt		719	769	842	900	988	1083	1175	1283	1390
<b>Net Debt</b>		65253	69007	73941	79581	86024	89392	92894	96523	100296
<b>Net cost of debt</b>		3,63%	3,63%	3,63%	3,63%	3,63%	3,63%	3,63%	3,63%	3,63%
<b>tax Rate (Tc)</b>		31,68%	31,68%	31,68%	31,68%	31,68%	31,68%	31,68%	31,68%	31,68%
<b>ITS</b>		750	793	850	915	989	1027	1067	1109	1153
Discount rate		0,964998111	0,931221354	0,898626848	0,867173211	0,83682051	0,807530211	0,779265129	0,751989377	0,725668328
Discounted Tax Shield		<b>723,62 €</b>	<b>738,47 €</b>	<b>763,57 €</b>	<b>793,05 €</b>	<b>827,24 €</b>	<b>829,55 €</b>	<b>831,78 €</b>	<b>834,11 €</b>	<b>836,39 €</b>
Discount rate for t=2013 valuation			0,964998111		0,898626848	0,867173211	0,83682051	0,807530211	0,779265129	0,751989377
Discount rate for t=2014 valuation				0,964998111	0,931221354	0,898626848	0,867173211	0,83682051	0,807530211	0,779265129
Discount rate for t=2015 valuation					0,964998111	0,931221354	0,898626848	0,867173211	0,83682051	0,807530211
Discount rate for t=2016 valuation						0,964998111	0,931221354	0,898626848	0,867173211	0,83682051
Discount rate for t=2017 valuation							0,964998111	0,931221354	0,898626848	0,867173211
Discount rate for t=2018 valuation								0,964998111	0,931221354	0,898626848
Discount rate for t=2019 valuation									0,964998111	0,931221354
Discount rate for t=2020 valuation										0,964998111
Discount rate for t=2021 valuation										0,964998111
<b>Valuation Base-Case</b>	45.224,67 €	44.269,02 €	45.892,23 €	46.714,72 €	47.616,08 €	48.515,95 €	49.446,14 €	50.407,84 €	1.112,23 €	50.594,98 €

## Expected Bankruptcy Cost Calculation

Bankruptcy										
Model For Estimating Bankruptcy cost			Accordign to Shapiro and Ittman			Allman's Suggestion			Estimating Probability of Default	
Dir= (I72) (dD/dA)sigmaA+(dD/dA)RA-RD			Bankruptcy cost (25%-30%)			16,80%			BMW's bond Historical Rating	
Not Enough Historical			20%						2012	
									S&Ps	
									Prbab	
									Moody's	
									Prbab	
									Ratio	
									Short-term	
									A-1	
									A	
									Long-term	
									A	
									0,83% P-1	
									0,78% A2	
									0,190%	
									1,41%	
									52%	
									<b>Weighted Average π</b>	
									<b>Tesla's π</b>	
									<b>16%</b>	

	Forecast										
	2012	2013	2014	2015	2016	2017	2018	2018	2019	2020	2021
Unlevered firm Value		77.295,49 €	75.718,71 €	74.495,46 €	76.108,73 €	77.671,94 €	80.795,78 €	80.795,78 €	82.377,10 €	83.990,21 €	81.639
Distress Sale Value		-	12.985,64	12.720,74	12.515,24	12.786,27	13.048,89	13.573,69	13.573,69	13.839,35	13.715,29
It	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%	1,88%
Cost of Financial Distress (CFD)	\$	-	\$ 1.208	\$ 1.183	\$ 1.164	\$ 1.190	\$ 1.214	\$ 1.263	\$ 1.263	\$ 1.288	\$ 1.313
											\$ 1.276

## Valuation Assumptions

Key Assumptions Pertaining to the Valuation of Tesla's Acquisition		
	Tesla Motors	BMW AG
<b>General Economic Assumptions</b>		
Yield on government bonds	0,0175	0,014209
Corporate Tax Rate	16,24%	31,68%
Equity Risk Premium	5,50%	5,50%
Forward contracts on Exchange Rates		
Specific Assumptions		
Cost of Debt	0,1375	0,035143
Debt-to capital Ratio	12,68%	69,50%
Beta	104,80%	122,91%
Terminal Growth Rate	0,015042223	0,018327
Correlation Coefficients for Returns on the U.S. and Germany	0,347	

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