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ADIDAS GROUP
Equity Valuation Thesis

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Abstract

The aim of this thesis is to present a valuation for Adidas Group stock at December 31st 2016, company whose mission is “to be the global leader in the sporting goods industry with brands built upon a passion for sports and a sporting lifestyle.”

Adidas Group is a globally known multinational founded in 1949 by Adi Dassler whose headquarters are located Herzogenaurach, Germany. In November 1995 the Germany based company went public and three years afterwards, in 1998, Adidas share was admitted in the DAX30 stock exchange where the 30 largest quoted companies are listed.

Three different valuation approaches were used in order to define a better range where Adidas AG stock could fall. These three approaches were the DCF APV, which holds the upper bound of the range, the Multiples Valuation and the Dividend Discount Model, which holds the lower bound of the range. After performing the three valuation models, I performed a comparison to an equity research note issued by Exane BNP Paribas in January 19th 2017.

In the end, an Investment Note was issued, summarizing all the process and advising a SELL recommendation at a target price of 161,53€.

Abstract (Versão Portuguesa)

O objectivo desta tese é apresentar uma avaliação para a acção do Grupo Adidas a 31 de dezembro de 2016, empresa cuja missão é "ser o líder global na indústria de artigos desportivos com marcas construídas sobre a paixão pelo desporto e um estilo de vida desportivo".

A Adidas Group é uma multinacional mundialmente conhecida que foi fundada em 1949 por Adi Dassler, e cuja sede está localizada em Herzogenaurach, na Alemanha. Em novembro de 1995 tornou-se pública e, três anos depois, em 1998, a Adidas foi admitida na bolsa DAX30, onde estão listadas as 30 maiores empresas cotadas. Foram utilizadas três diferentes abordagens de avaliação para definir o melhor intervalo em que a acção da Adidas AG se poderia encontrar. Estas três abordagens foram o DCF APV, que constitui o limite superior do intervalo, a Multiples Valuation e o Dividend Discount Model, que constitui o limite inferior do intervalo. Após a realização dos três modelos de avaliação, foi feita uma comparação com uma avaliação externa emitida a 19 de janeiro de 2017 por uma empresa especializada do ramo, a Exane BNP Paribas.

No final, foi emitida uma Nota de Investimento resumindo todo o processo e aconselhando uma recomendação de SELL a um preço-alvo de 161,53 €.

INVESTMENT NOTE

Adidas AG (ADSGn.DE)



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2th June 2017

Recommendation: SELL

Target Price: 161,53€

Company Description

Adidas Group is the second largest Multinational Corporation operating in the Global Sportswear Industry. The Group is composed by the major brands of Adidas, Reebok and TaylorMade. Its headquarters are located in Herzogenaurach, Germany. Adidas Group employs over 60 000 people, in over 160 countries.

Overview

The last year has shown that even though there is an increasing competition in the Sportswear Industry, Adidas AG has been able to expand further and increase its global market share, especially in geographies like North America and Asia. This sudden success in terms of revenues has led Adidas' share to its yearly maximum. However, this recent euphoria around the company may be leading to an overreaction in the financial markets.

For that reason, this analysis holds a SELL recommendation, believing that in 6-12 months markets will revalue the company at lower levels than the current 171,90€.

Key Data

Market Cap (€Mn): 35.700

Shares Outstanding: 201.489.310

Current Price (€): 171,90

Valuation Outputs

DCF APV: 161,53€

EV/EBITDA: 117,22€

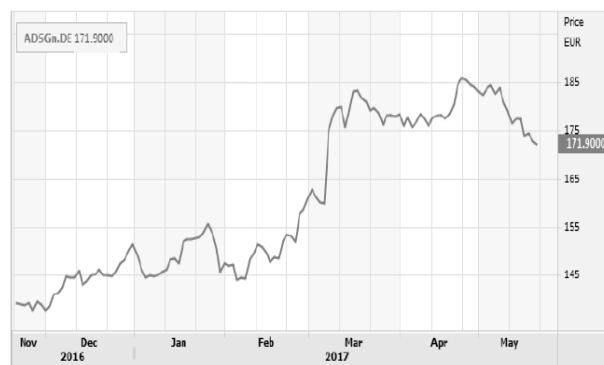
DDM: 90,46€

Upside/Downside Potential:

APV: - 6,03%

EV/EBITDA: - 31,81%

DDM: - 47,38%



adidas[®]
GROUP

1. Introduction

The aim of this dissertation is to apply the theoretical knowledge from Equity valuation and reach a valuation for the equity of Adidas Group at 31st December 2016. Therefore, the final objective is to obtain an equity value that is the closest possible to the intrinsic value and in the end conclude whether Adidas AG is trading above, below or at the fair market value. However, it is important to bear in mind that this valuation will be developed under specific assumptions that are going to be taken according to the information that is publicly available, to the economy, market and industry conditions and by applying quantitative models developed by the best specialists in the field of Quantitative Finance.

Therefore, my thesis will start with a presentation of the relevant literature and the different methodologies that will be applied in Adidas valuation.

Next, in sections 3, 4 and 5 I will perform world market, industry and company overviews in order to better understand the market conditions and future trends as well as having a deeper knowledge of the past and future predictions of the company.

Following these sections I will present the real output of the dissertation, which is the valuation *per se* of the three different approaches, APV, Multiples and Dividend Discount Model.

Finally, before the final conclusion, section 8 will contain a comparison between the valuation developed in this thesis and the one presented in an equity research report issued by Exane BNP Paribas.

2. Literature Review

2.1. Valuation Methods Overview

(Fernandez, 2013) considers that a company's value may not be the same for different buyers, and it could also exist differences in value between buyers and sellers. That is why "Understanding what determines the value of a firm and how to estimate that value seems to be a prerequisite for making sensible decisions." (Damodaran, 2006)

Following this thought, it is easy to understand why Damodaran (2006) defines Valuation as the center of Finance. It is then possible to find three different possible applications in any valuation process.

1. In Portfolio Management valuation is usually influenced by the nature and investment philosophy of the investor and also by the type of investment being made.
2. In Mergers and Acquisitions valuation plays a crucial role, namely, in deciding the fair value that the bidding firm should offer and the fair value that the target firm is willing to accept.
3. In Corporate Finance the purpose of valuation is to understand how is possible to maximize the firm value through changes in financing, investment and corporate strategy. (Damodaran, Investment Valuation, 2002)

"Although valuation is always a function of three fundamental factors – cash, timing, and risk – each type of problem has structural features that set it apart from the others and present distinct analytical challenges." (Luehrman, 1997) Following this thought, (Young, Sullivan, Nokhasteh, & Holt, 1999) presents three different approaches to valuation that laid on different assumptions about how to determine the value of a firm: cash flow, returns based and multiples approaches. While the first approach is based on the sum of the present value of future cash flows to figure out firm value, the second one "focus on the capital stock and the spread between the return and cost of capital" (Young, Sullivan, Nokhasteh, & Holt, 1999). The third and last approach, which is also known as Relative Valuation, "estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable like earnings, cashflows, book

value or sales. (Damodaran, Valuation Approaches and Metrics: A Survey of the Theory, 2006)

2.2. Cash Flow Approach – Discounted Cash Flow (DCF)

The Discounted Cash Flow analysis is considered by most managers that are dedicated to maximize firm value “as the most accurate and flexible method for valuing projects, divisions, and companies.” (Goedhart, Koller, & Wessels, 2005)

DCF valuation implies the calculation of the present value of future cash flows discounted at a rate that reflects the risk of the business as the following formula shows:

$$Present\ Value = \sum_{t=0}^n \frac{E(CF)_t}{(1+k)^t}$$

These cash flows can be defined as Free Cash Flows to the Firm (FCFF) or Free Cash Flows to Equity (FCFE). The first one is defined as “the total incremental cash flow attributable to the business”, or in other words, “all monetary flow to the owners of the business, including debt holders and equity holders”. (Schill, 2013) The formula behind the calculation of the FCFF is the following:

$$FCFF = NOPAT + Depreciation - CAPEX - \Delta NWC,$$

where $NOPAT = EBIT \times (1 - T)$ where T is the marginal corporate income tax rate. In the particular case of Multinational companies, as defined by Damodaran (2002) in his book, to avoid the problem of the existence of different tax rates in different countries, it should be used the tax rate from the country of origin assuming that the income coming from other countries will ultimately have to be sent back to the country in which the company is incorporated.

From the formula of FCFF is possible to get the Free Cash Flow to Equity that is defined as “the cash flow available to the company’s holders of common equity after all operating expenses, interest, and principal payments have been paid and necessary investments in working and fixed capital have been made”. (Pinto, Henry, Robinson, & Stowe, 2010)

$$FCFE = FCFF - [interest\ payments \times (1 - T)] - principal\ payments + new\ debt$$

In the end, depending on whether is used the FCFF or FCFE and which discount rate is used to reflect the cash flow's risk in the DCF formula (WACC for FCFF valuation and K_e for FCFE valuation), it is possible to get the firm's total value or the value of equity, respectively. The DCF WACC approach will be later discussed.

2.2.1. Terminal Value and Growth Rate

In valuations using the DCF method there is a period known as the forecast period in which the analyst estimates the FCFs necessary to stand the abnormal profits and growth. (Schill, 2013) However, as assumed by (Brealey, Myers, & Allen, 2011) in their book "it's not practical to forecast free cash flow year by year until infinity". Maintaining high growth rates for long periods is very difficult for companies, and as a consequence, when a firm reaches its maturity stage, the growth rate will tend to the long term economy growth rate of the country where the firm is located or in limit to the global economic growth, "since no firm can grow forever at a rate higher than the growth rate of the economy in which it operates, the constant growth rate cannot be greater than the overall growth rate of the economy" (Damodaran, Investment Valuation, 2002)

According to Damodaran (2002) this period characterized by a constant growth rate and stable profit levels is denominated by steady state. This stable growth rate is possible to be maintained in perpetuity, allowing the estimation of all cash flows from that moment on as a terminal value. This way, it is now possible to update the formula to calculate the PV of a firm shown in the previous section with this new concept of Terminal Value.

$$Present\ Value = \sum_{t=0}^{t=n} \frac{E(FCFF)_t}{(1+k)^t} + \frac{TV_t}{(1+k)^t}$$

According to Damodaran (2002) the Terminal Value (TV) can be obtained through three different approaches, which are the Liquidation Value, the Multiples and the Stable Growth model. This last approach is usually the most used and thereby it is the one that it will be applied in this valuation.

Therefore, the Stable Growth model can be summarized in the following formula:

$$TV_t = \frac{FCFF_{t+1}}{k - g},$$

Where g is the long term growth rate.

One last important point referring to the importance of the Terminal Value is that it is usually the largest component of value of a company (Schill, 2013) which, actually, can represent on average between 50 and 80% of the total firm value depending on how many years we have in annual forecasts. (Gilbert, 1990)

2.2.2. Discount rate

According to (Gilbert, 1990) “a discount a rate is defined as the rate of return an investor would require to be induced to invest in the cash flow stream being discounted” or in other words, it is the rate that compensates the investor for the risk of the cash flows. It reflects the opportunity cost of investing diversely but with a similar level of risk. This opportunity cost of capital is regularly estimated through the use of the Weighted Average Cost of Capital (WACC) which represents a combined required return by the company’s debt and equity holders. (Koller, Goedhart, & Wessels, 2005). The use of WACC in a valuation approach will be later discussed in the section 2.3.

As its acronym states the WACC is a weighted average of two different extents, a cost, which is represented by Kd that is the cost of debt; and a required return, which is represented by Ke that is the required return to equity. “Then, the WACC is neither a cost nor a required return, but a weighted average of a cost and required return.” (Fernández, 2010)

$$WACC = \frac{D}{D + E} * Kd * (1 - T) + \frac{E}{D + E} * Ke,$$

Where,

Kd is the cost of debt, T the marginal corporate tax rate, Ke is the required return to equity and D and E are the market values of the different form of financing Debt and Equity, respectively.

2.2.3. Required return to Equity – K_e

The cost of equity also known as the required return on equity “is determined by its riskiness, measured differently in different models – the market beta in the CAPM, and the factor betas in the arbitrage and multi-factor models.” (Damodaran, Valuation Approaches and Metrics: A Survey of the Theory, 2006) These models differ essentially in how risk is defined by each of them. While the Capital Asset Price Model (CAPM), which was first presented by Sharpe (1964), “defines a stock’s risk as its sensitivity to the stock market, the Fama-French three-factor model defines risk as a stock’s sensitivity to three portfolios: the stock market, a portfolio based on firm size, and a portfolio based on book-to-market ratios.” (Goedhart, Koller, & Wessels, 2005)

The general idea behind the CAPM model is that an investor has to be compensated by two different pricing sources, the time value of money which is reflected in the risk free rate, and the price of risk that is defined as “the additional expected return per unit of risk borne”. (Sharpe, 1964)

Even though the CAPM model is the most common model used to measure market risk, a wide range of academics have presented throughout the years several limitations of this model, providing evidence essentially that β alone is not enough to explain expected returns and that the average-return anomalies of the CAPM are substantially significant to conclude that the model is not an useful approximation. (Fama & French, 1996)

Therefore, during this valuation I will use the multifactor model proposed by Fama and French (1996) which considers that “the sensitivity of a firm’s expected stock return depends on three factors: the excess return on a broad based market portfolio, $R_m - r_f$, the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks (small minus large), SMB; the difference between the return on a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks (high minus low), HML.” (Gorton, 2015)

$$E(R_i) = r_f + \beta_i * [E(R_m) - r_f] + S_i * E(SMB) + H_i * E(HML)$$

2.2.3.1. Risk free rate

“In corporate finance and valuation, we start off with the presumption that the risk-free rate is given and easy to obtain and focus the bulk of our attention on estimating the risk parameters of individuals firms and risk premiums.” (Damodaran, What is the riskfree rate? A Search for the Basic Building Block, 2008)

As seen in the previous section, the risk free rate is one of the fundamental inputs to define the required return to equity. However, instead of what most of the people might assume, the concept of risk free can be tricky and difficult to define and apply. Following this thought, Damodaran (2008) presents two obligatory requirements in order for an investment to be able to be considered risk free. The first one is the inexistence of default risk, which is only attainable in government securities since governments have the ability to control the currency in circulation as they are responsible for printing the country’s currency. The second condition states that in order for an investment to have an actual return equal to its expected return, it cannot exist reinvestment risk. In practice this means that one of the best proxies for risk-free investments is the government zero coupon bonds for the period over which the cash flows are forecasted (Damodaran, What is the riskfree rate? A Search for the Basic Building Block, 2008)

Goedhart et. al (2006) in addition to defending this same idea that each cash flow would preferably be discounted using a government bond with a similar maturity, they state that in order to avoid inflation’s issues the risk free used to come up with the cost of capital should be measured in the same currency as the cash flows. Simultaneously, (Fernandez, 2013) presents three of the most common errors in the valuation of a company related to a wrong risk-free rate. They are the use of historical average of the risk free rate, the use of a short term government rate and the wrong calculation of the real risk-free rate.

In summary, in the valuation of Adidas Group I will use the 10 year German Government bond as the risk free rate, since Adidas Group is an European company and the German bonds are the European government bonds with the lowest default risk possible.

2.2.3.2. Market Risk Premium

The Market Risk Premium (MRP) is defined as “the premium demanded by investors for investing in the market portfolio, which includes all risky assets in the market, instead of investing in a riskless asset.” (Damodaran, Investment Valuation, 2002)

Damodaran (2002) presents three different approaches to estimate the risk premium, whereas Zenner, Hill, Clark, & Mago (2008) consider that exists six different methods: Dividend Discount Model, Constant Sharpe ratio method, Bond-market implied risk premium, Dividend Yield method, Survey evidence and the Historical average realized returns, which is the method that will be applied in this valuation, since it is considered by most of the users the best estimate of the risk premium. (Damodaran, Investment Valuation, 2002) This method consists in comparing the realized returns earned on stocks to the returns earned on a default free asset (ex: German Government bonds) over some historical period of time. (Damodaran, Investment Valuation, 2002) Within this method, there are two different averaging methods that are usually used, the arithmetic mean and the geometric mean. I will apply the geometric mean because Zenner et al. (2008) state that it better reflects the asset returns that investors will face over long periods of time. Another argument for the use of the geometric mean presented by Damodaran (2002) is that empirical studies have proved that the arithmetic average return is likely to over state the premium since the returns on stocks are negatively correlated.

Damodaran (2002) and Fernández (2004) present some evidence that the historical risk premiums are clearly dependent on the the time interval we are considering. This way, it is important to define the time interval that will be used to avoid the current market expectations as presented by the two authors. Therefore, the time period used in this valuation it will be 25 years, from 1992 to 2016 in order to avoid the influence of the high rates from more distant perdiodes of time and also to mitigate the influence of the very low rates from the more recent years.

2.2.3.3. Beta

According to Damodaran (2002) the beta of an asset, “which is defined as the covariance of the asset divided by the variance of the market portfolio, measures the risk added on an investment to the market portfolio.” In other words, Koller et al.,

(2005) defines beta as an estimate to the exposure of a company to the market risk. However, depending on the method used to estimate the required return to equity the beta of an investment may have different interpretations.

2.2.4. Cost of Debt

Koller et al., (2005) considers that in any valuation of a company with investment grade debt the yield to maturity (YTM) of the firm's long term bonds may be used as a good proxy to the company's cost of debt. However, it should be ensured that the debt is liquid, option free and for a long term span to avoid outdated YTM's and overstated bond prices. (Koller, Goedhart, & Wessels, 2005)

2.3. DCF – Weighted Average Cost of Capital (WACC)

As stated above through the use of FCFF approach, it is possible to get the firm's total value, both debt and equity. However, in order for this approach to work assertively, the FCFF must be discounted at the weighted average cost of capital (WACC). Associated to the WACC are the tax benefits of having debt (more concretely, in the use of the after-tax cost of debt in the cost of capital) and the expected additional risk that derive from this issuance of debt (in the form of higher costs of equity and debt at higher debt ratios). (Damodaran, Investment Valuation, 2002)

Even though the WACC method was probably the standard valuation method used since the 1970s, today it is practically obsolete. (Luehrman, 1997) The practical advantage of WACC by keeping the calculations used in discounting to a minimum effectively comes with a price since “it is suitable only for the simplest and most static of capital structures” which implies adjustments “to be made not only project by project but also period by period within each project”. (Luehrman, 1997) Another drawback of the WACC approach is that WACC is not that good in handling the financial side effects as it was supposed, ending up by addressing “tax effects only – and not very convincingly, except for simple capital structures.” (Luehrman, Using APV: A Better Tool for Valuing Operations, 1997)

$$Present\ Value = \sum_{t=0}^{t=n} \frac{E(FCFF)_t}{(1+WACC)^t} + \frac{TV_t}{(1+WACC)^t}$$

As a consequence of all these weaknesses of this approach, Luehrman (1997) defines that “the best alternative for valuing a business operation is to apply the DCF relationship to each of a business’s various kinds of cash flow and then add up the present values”. This method which is known as the Adjusted Present Value (APV) was first presented by Stewart Myers in *Interactions of Corporate Financing and Investment Decisions – Implications for Capital Budgeting* (1974) and will be better defined in the next section.

2.4. DCF – Adjusted Present Value

The APV is therefore focused on two principal categories of cash flows: the first one is composed by the revenues, cash operating costs, and capital expenditures (the real cash flows) that are linked to the business operations; and the second one is composed by other effects (side effects) like the interest tax shields, subsidized financing and financial distress costs that are linked with its financing program. (Luehrman, *Using APV: A Better Tool for Valuing Operations*, 1997)

In the APV approach the value of the firm is estimated through the following formula:

$$APV = \text{Value of Unlevered Firm} + \text{Value of Tax Benefits} \\ - \text{Expected Costs of Financial Distress,}$$

Thus, the first step in APV is to calculate the Value of Unlevered Firm which is “accomplished by valuing the firm as if it had no debt, i.e., by discounting the expected free cash flow to the firm at the unlevered cost of equity” (Damodaran, *Investment Valuation*, 2002).

The second and third steps of this approach already account for the financing side effects and are deeply described in the following sections.

2.4.1. Expected Tax Benefit from Borrowing – Present Value of Tax Shields (PVTs)

“Debt financing has one important advantage under the corporate income tax system in the U.S. and many other countries. The interest that the company pays is a tax-deductible expense... Therefore, tax shields can be valuable assets” (Brealey, Myers, & Allen, 2011)

Even though Copeland et al. (2000) shows that “the finance literature does not provide a clear answer about which discount rate for the tax benefit of interest is theoretically correct”, several authors have proposed their own theories, from which I chose the most relevant for this valuation. Those will be presented next.

The first theory that proposed a way to calculate tax shields was presented by Modigliani and Miller (1963), which defended that the discount rate used to discount the tax shields should be the risk free rate. However, this theory is not very plausible since it defends a world without costs of leverage.

Myers (1974) and Luehrman (1997) also presented an approach to calculate the tax shields, which defended that the cost of debt could be used as the discount rate since the “tax shields are about as uncertain as principal and interest payments” (Luehrman, Using APV: A Better Tool for Valuing Operations, 1997)

Miles and Ezzel (1980) proposed that the rate to discount the tax savings should be the cost of debt in the first year and the unlevered cost of equity during the following years. However, this approach only works for firms that want to keep a constant debt to equity ratio and therefore have an optimal debt to equity target.

In opposition to Myers (1974) and Luehrman (1997), Harris and Pringle (1985) defended that the tax shields should be discounted at the unlevered cost of equity. From this assumption it is possible to interpret that “the interest tax shields have the same systematic risk as the firm’s underlying cash flows”. (Harris & Pringle, 1985)

Lastly, Fernández (2004) showed that a consistent way to estimate the value of tax shields is “the difference between the present values of two different cash flows with their own risks: flows to the unlevered firm and the flows to the levered firm”.

Among all these approaches to discover the appropriate way to discount tax shields, during this valuation I will use Myers and Luehrman method.

2.4.2. Expected Costs of Financial Distress and Bankruptcy Costs

Although there are some benefits of having debt, there are also costs associated with this use of debt which needs to be well balanced. “The optimal amount of debt varies by firm and each firm should issue debt as long as the benefits outweigh the costs, but no more than that” (Graham, 2001)

Therefore, the third step is to estimate the costs of financial distress which “occurs when promises to creditors are broken or honored with difficulty” and that “depend on the probability of distress and the magnitude of costs encountered if distress occurs.” (Brealey, Myers, & Allen, 2011) “In theory, at least, this requires the estimation of the probability of default with the additional debt and the direct and indirect cost of bankruptcy”. (Damodaran, Valuation Approaches and Metrics: A Survey of the Theory, 2006)

The direct costs are easily observable and essentially composed by the legal and administrative costs like litigation fees and according to Gruber and Warner (1977) it represents between 3 and 5% of the total firm value at the time of distress. However, the indirect costs are a bigger problem because they are not usually observable and it can have a higher impact and harsher consequences than the direct costs. According to Andrade and Kaplan (1998) these costs represent between 10% and 20% of firm value and some examples of it are the damage of the firm’s reputation, the loss of key employees and customers and the loss of value from foregone investment opportunities. (Almeida & Philippon, 2008)

Damodaran (2006) presents the following formula to estimate the present value of Bankruptcy costs:

$$PV \text{ of Expected Bankruptcy Costs} = (\text{Probability of Bankruptcy})(PV \text{ of Bankruptcy Costs}),$$

Where there are two different ways to estimate the probability of bankruptcy. The first one is associated with the firm’s bond rating that is then compared to empirical estimates of default probabilities for each rating and the second one that uses a statistical approach to estimate the probability of default, based upon the firm’s observable characteristics, at each level of debt. (Damodaran, Valuation Approaches and Metrics: A Survey of the Theory, 2006)

In summary, neither WACC nor APV are perfect DCF methods to value a firm and since both methods are equivalent, the choice of which of the methods should be used is dependent on whether the firm maintains a constant ratio of debt to equity in market value terms or not. If yes, then the WACC technique is more appropriate. If not, it is preferable to use the APV technique. (Inselbag & Kaufold, 1997)

2.5. DCF – Dividend Discount Model (DDM)

The Dividend Discount Model, which is the simplest model for valuing equity, states that “the value of a stock is the present value of expected dividends on it.” (Damodaran, Investment Valuation, 2002)

$$\text{Value per share of stock} = \sum_{t=1}^{t=\infty} \frac{E(DPS_t)}{(1 + K_e)^t},$$

Where DPS_t represents the expected dividend per share in period t and K_e is the required return on equity of the company being analyzed.

This model is based on the present value rule which states that the value of any asset is the present value of expected future cash flows discounted at a rate appropriate to the riskiness of the cash flows. That being said, in order to predict the dividends, it is mandatory to establish some assumptions about the earnings' future growth rates and the payout ratios. (Damodaran, Investment Valuation, 2002)

Since it is not practicable to have dividends' forecasts for a long horizon, this forecasting is usually simplified. The simplest model and probably the most used is the Gordon Model (or Constant Growth Model) which assigns dividends to a stylized growth pattern. (Pinto, Henry, Robinson, & Stowe, 2010).

$$\text{Value per share of stock} = \frac{DPS_1}{K_e - g},$$

Where DPS_1 is the Expected Dividend one year from now (next period), K_e is the required return to equity and g is the growth rate in dividends forever.

Although the Gordon model is simple to apply in equity valuation, we need to bear in mind that its use is limited to firms that are growing at a stable rate and since the growth rate in the firm's dividends is expected to last forever, the firm's other measures of performance (like the earnings) should also be expected to grow at the same rate. (Damodaran, Investment Valuation, 2002) Since this model is so sensitive to the inputs for both the expected dividend growth rate and the required rate of return, (Pinto, Henry, Robinson, & Stowe, 2010) it should be performed a sensitivity analysis to mitigate the risks or as an alternative it could be applied one of the multistage dividend discount models. However, due to lack of strong theoretical support in these multistage models, in this valuation I will perform a sensitivity analysis on the inputs to ensure that the application of the Gordon model is the more accurate possible.

2.6. DCF – Excess Return Models

When focusing on excess returns, these models bring home the point that it is not the earning *per se* that creates value, but earnings in excess of a required return. As a consequence, the cash flows are divided according to the cash flow return nature: normal and excess. Therefore, the value of a firm can be written as the sum of capital invested in the firm today and the present value of dollar excess returns from both existing and future projects. (Damodaran, Investment Valuation, 2002)

2.6.1. Excess Return Models - Economic Value Added (EVA)

Among the different versions of excess return models, I will focus on the Economic Value Added (EVA) that is probably the most used of these excess return models. The EVA is simply defined as the method that “measures the dollar surplus value created by a firm on its existing investment.” (Damodaran, Investment Valuation, 2002)

$$\begin{aligned} EVA &= (\text{Return on Capital Invested} - \text{Cost of Capital}) \times \text{Capital Invested} \\ &= \text{NOPAT} - \text{Cost of Capital} \times \text{Capital Invested}, \end{aligned}$$

Where the estimation for NOPAT is equal to the one applied in any DCF approach, the cost of capital “should be estimated based upon the market values of debt and equity in the firm, rather than book values” as in the WACC method, and the Capital Invested in assets which should be the book value of these assets since “market value includes capital invested not just in assets in place but in expected future growth” (Damodaran, Investment Valuation, 2002)

In the end, in order to get the firm value, Damodaran (2002) suggests the following computation:

$$\text{Value of Firm} = \text{Capital Invested}_{aip} + \sum_{t=1}^{t=\infty} \frac{EVA_{t,aip}}{(1 + K_e)^t} + \sum_{t=1}^{t=\infty} \frac{EVA_{t,future\ projects}}{(1 + K_e)^t}$$

However, EVA is not going to be applied in Adidas Group Valuation, since it is a measure that is easy to manipulate to have positive performances because for example “A firm can invest in projects to increase its economic value added but still end up with a lower value, if these investments increase its operating risk and cost of capital.” (Damodaran, Investment Valuation, 2002)

2.7. Multiples/Relative Approach

“In discounted cash flow valuation, the objective is to find the value of assets, given their cash flow, growth and risk characteristics. In relative valuation, the objective is to value assets, based upon how similar assets are currently priced in the market.” (Damodaran, Investment Valuation, 2002)

In any relative valuation there are two decisions that must be taken. The first one consists on the selection of assets available in the market which are similar to the asset that we are valuing (Peer Group selection) and the second decision consists on deciding which type of multiple/s it will be used. According to Suozzo et al. (2001) these multiples are usually divided in two groups: equity multiples and enterprise multiples. Whereas the Enterprise multiples refer to the value of all claims on a business – relative to a statistic that relates to the entire enterprise, such as sales or EBIT, equity multiples, express the value of shareholders’ claims on the assets and cash flow of the business such as earnings. (Suozzo, Cooper, Sutherland, & Deng, 2001)

According to Foushee et al. (2012) investors and bankers usually compare companies relative to its peers using enterprise multiples like EV/EBITA or EV/EBITDA since they are more sophisticated. Suozzo (2001) et al. support this idea that enterprise multiples are preferable over equity multiples because they are less affected by capital structure, they are more comprehensive, enable the user to exclude non-core assets and allow the user to focus on statistics where accounting policy differences can be

minimized. Koller et al. (2005) also defend the use of enterprise multiples by stating that they are more reliable because they are not easily manipulated.

At the same time, among these two types of multiples there are three other types of multiples related to the time frame: Current, trailing and forward multiples. Koller et al. (2005) suggest then to use forward-looking multiples which are based on forecasted accounting figures instead of historical profits from the last financial year (Current multiples) or from the last four quarters (Trailing Multiples) since they promote greater accuracy in pricing. As a consequence, in this valuation I will use the forward-looking EV/EBITDA multiple.

Selecting the appropriate peer group is the other major decision that must be taken in order to have an accurate relative valuation. Many analysts usually use industry averages multiples to get a company valuation. However, this industry average usually overlooks companies that even though are in the same industry, have very different growth rates, returns on invested capital, and capital structures. (Koller, Goedhart, & Wessels, 2005) The solution presented by Damodaran (2002) is then to control for differences in terms of “risk, growth and cash flow generating potential”. In this particular case I will use a cluster analysis in order to define Adidas’ peer group.

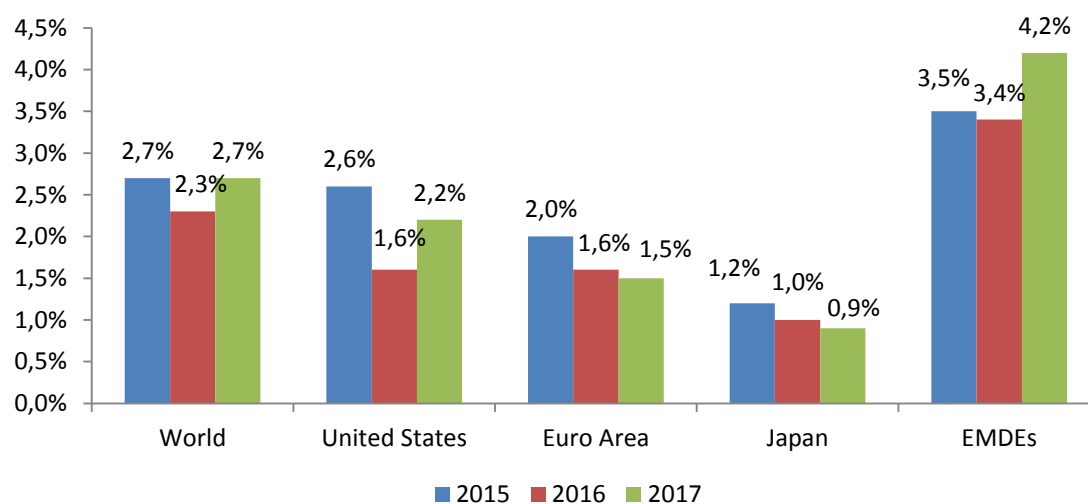
2.8. Conclusion

All this research presented in the literature review regarding the valuation methods that are more suitable for firms has made it clear which of these methods better match Adidas Group characteristics. Therefore, among the two most used DCF approaches, the APV is the one that will be used. Even though some dubious assumptions may be done regarding the costs of financial distress (that the WACC method for example ignores), Adidas does not have a target debt to equity ratio which makes the APV a better fit. Moreover, the Dividend Discount Model via Gordon method will be used to help defining a lower bound for the valuation. In the end, a relative valuation it will also be implemented. To define the Adidas’ peer group a cluster analysis will be used and the EV/EBITDA multiple it will be the one considered since it is the one that better match the company’s characteristics.

3. World Market Overview

2016 was a year of slow progress compared to what was expected, reaching out a global growth of 2,3%, the lowest economic expansion since the global financial crisis of 2008. The reasons presented by the World Bank in the Global Economic Prospects report are the “Stalling global trade, weak investment, and heightened policy uncertainty” which depressed the world economic activity. However, in 2017 it is estimated that the Global growth will rise to 2,7%, mainly as a reflection of the recovery in the emerging markets and developing economies.

Graph 1 - Real GDP Growth Rate



Source: World Bank data

In the advanced economies, which according to the World bank are composed by the United States, Euro Area and Japan, beside the reasons provided above, the low inflation continues to be stressed out as a core reason to the decreasing growth and, in the particular case of the UK and US, the uncertainty about policy direction as a consequence of the Brexit and the recent presidential elections are also presented as main reasons for the growth change from 2015 to 2016. The emerging and developing economies (EMDEs) have also seen a declining growth in this period but are expected to improve a lot in 2017, period in which are forecasted to contribute with 1.6 percentage points to global growth, accounting for about 60% of global growth for the first time since 2013. The reasons behind these numbers are the improvement in the domestic demand conditions, a stabilization in commodity prices and smoother macroeconomic policies.

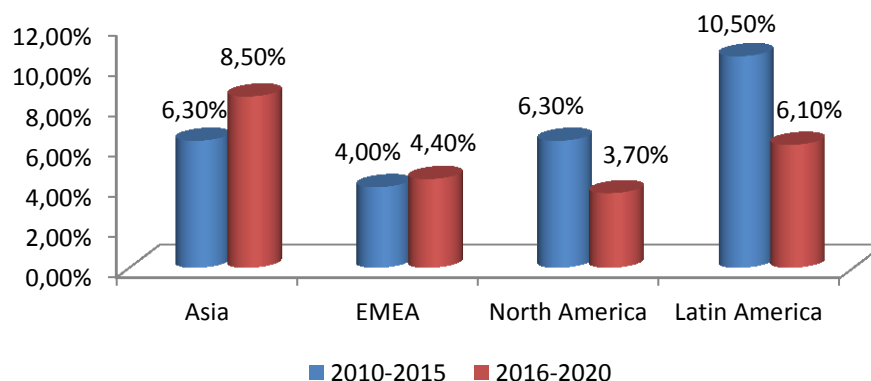
4. Industry Overview

As stated before, Adidas Group is included in the Global Sportswear Industry (also defined as the Global Sporting Goods Industry) where it is currently the second largest player. The sporting goods industry includes not only the manufacturing but also the retailing of sporting goods, such as exercise and fitness equipment, athletic uniforms, specialty sports footwear, apparel, and other accessories and equipment.

The Sportswear Industry is among the industries that have grown more in the recent years, where it has a particularly impressive CAGR of 4% since 2012 and it is forecasted to reach an amount spent of 266\$ bn in 2017 (*Global Retail Sporting Goods Industry Analysis 2012-2017: Industry Trends, Profit and Forecast Analysis by Lucintel*) or 312\$ bn according to the Societe Generale's report: "Global Sportswear Industry: Steadily Growing but Fragmented".

Dividing this consumption by region, North America is still the leader in global consumption with more than one third of the total consumption, which is almost the double of the consumption registered in both Western Europe and Asia. Latin America that has been growing a lot in the past 5 years, has now decelerated its growth and it is in Asia where there is now the greatest potential to grow as presented in Societe Generale's report.

Graph 2 - Average Annual Industry Growth by Region



Source: Societe Generale report : "Global Sportswear Industry: Steadily Growing but Fragmented"

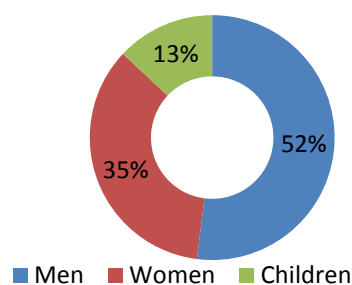
In the particular year of 2016, NPD and Deutsche Bank presented market researches where state that the industry growth was supported by "the ongoing athleisure trend as

well as higher sports participation and increasing health awareness around the world. In addition to that, the industry benefited from major sporting events, such as the 2016 Olympic Games hosted by Brazil as well as the UEFA EURO 2016, held in France. Moreover, social trends including social fitness remained strong catalysts, significantly impacting the overall sports industry.” (Adidas Annual Report, 2016)

For the period of 2015-2020, according to Reportlinker research (Global Retail Sporting Goods Industry 2015-2020 - Trend Profit and Forecast Analysis), it is expected that this industry will continue to grow with a CAGR of 3.4%. The main drivers presented to this past and also future growth in these two reports are similar. These are the growth in disposable income that will lead to higher levels of private consumption, the fact that governments are focused on promoting different sports activities and encouraging the people’s participation, a rising number of health-conscious people and in the particular case of regions like Asia and Latin America the increase in the standards of living, which will increase the attractiveness of Adidas’ brand and therefore will drive a further industry growth.

The e-commerce channel will also have an important role in this growth, since retailers can take advantage of a wide variety of commercial opportunities across mobile technologies and social media. (Adidas Annual Report, 2016) In addition to e-commerce it is the celebrity endorsement where sport’s people, athletes and celebrities are linked to a brand which can work as a powerful marketing tool that provide the ability to enter a market or segment and gain dominance, essentially to the younger generations through the social media and TV channels. However, it is not only the children segment that has been growing but also the female segment which already accounts for 35% of the consumption and it is expected to continue growing.

Graph 3 - Industry Consumption by Gender



Source: Societe Generale report

5. Company Overview

Adidas Group is the second largest Multinational Corporation operating in the Global Sportswear Industry which is composed by the major brands of Adidas, Reebok and Taylor Made and has the headquarters located in Herzogenaurach, Germany. Adidas was created in 1949 by Adi Dassler after a dispute with his brother in their own company (Gebrüder Dassler Schuhfa). His brother Rudolf ended up creating Puma.

In November 1995 the Germany based company went public by raising 1.8 billion marks in an issue that was 10 times oversubscribed. Three years afterwards, in 1998, Adidas share was admitted in the DAX30 stock exchange where the 30 largest quoted companies are listed. Nowadays Adidas AG is quoted in 12 different stock indices and has more than 60 000 employees distributed among more than 160 countries. Every year Adidas Group produces more than 840 million units which represented a value of 19€ billion in revenues in 2016. Even though the Group “is quite a complex organization”, Adidas tries to “keep things simple, lean and fast”.

In fact, Adidas was built under the mission of being the best sports company in the world. Every day “Adidas strives to be the global leader in the sporting goods industry with brands built upon a passion for sports and a sporting lifestyle.” In order to accomplish their everyday goal, many initiatives are followed like finding different sources of innovation, ensure the authenticity of Adidas’ brands through the creation of “products, experiences and services tailored to the individual needs and desires of a broad spectrum of consumers”, creating a flexible supply chain or focusing on sustainability. In summary, Adidas is “committed to increasing returns to shareholders with above-industry-average share price performance and dividends.”

In 2015 Adidas presented a new acceleration plan called “Creating the New” that took Adidas’ growth expectations to another level. Actually, the fact that the first year of this strategy was so successful by exceeding the original plan made Adidas’ CEO saying that “we have developed additional initiatives which will accelerate the execution of ‘Creating the New’ and enable us to significantly increase our targets for 2020.”

Inserted in this new strategy is the improvement of the representation of Adidas in the world’s largest sporting goods market, the US, that represents “only” 21% of Adidas’ net sales comparing to the 30% in Western Europe.

Finally, Adidas presently has three different product categories accounting as revenue sources – footwear, apparel and hardware. The biggest source of revenues is the footwear category which accounts for more than 50% of the group’s revenues. In the recent years it is a category that has registered a strong performance, in particular, the casual athletic category which continued to enjoy strong momentum throughout the year, fuelled by retro running and tennis silhouettes. (Adidas Annual Report, 2016) In the other categories, the apparel represents almost 40% of the group’s revenues but even though it has increased from the previous year, it has lost some importance in terms of share of the group’s revenues. Finally, the hardware, which includes equipments like bags, balls, golf clubs, hockey sticks or fitness equipment, is the smallest category in terms of revenues accounting around 9% of the group’s revenues.

Table 1 - Adidas Group Revenue by Brand

Revenue by Brand (€ Mn)	2012	2013	2014	2015	2016
Adidas brand	11.344	11.059	11.774	13.939	16.334
Reebok brand	1.667	1.599	1.578	1.751	1.770
TaylorMade-adidas Golf	1.344	1.285	913	902	892
Rockport (2014 and 2013 net sales for Rockport are reflected within continued operations)	285	289	283		
CCM-Hockey	243	260	269	323	294
Total Revenue	14.883	14.203	14.534	16.915	19.290

Source: Adidas Annual Report 2016

Table 2 - Adidas Group Revenue by Product Category

Revenue by Product category (€ Mn)	2012	2013	2014	2015	2016
Footwear	6.922	6.587	6.658	8.360	10.135
Apparel	6.290	5.811	6.279	6.970	7.475
Hardware	1.671	1.805	1.597	1.585	1.680
Total Revenue	14.883	14.203	14.534	16.915	19.290

Source: Adidas Annual Report 2016

6. Company Valuation - Inputs

After performing both a company and industry analysis and before getting to the final valuation output, it is the moment in which I will make a deep analysis of Adidas' financial statements. In this deep analysis I will present not only the historical financial statements but also all the future forecasted items and, as a consequence of its major importance in any equity valuation, all the assumptions taken in order to forecast these items.

6.1. Net Revenues

The first item that will be presented and discussed is the Net Revenues. The reason behind it is the great impact that revenues have in any company valuation, since it is an item that duly affects most of the other operational items due to the fact that most of these rubrics are calculated as a percentage of these future estimated revenues.

In the particular case of Adidas Group, the company presents in the 2016 Annual report an outlook for 2017 in which they expect the group sales to increase at a rate between 11% and 13%. It is also presented a strategic business plan until 2020 in which they expect currency neutral sales growth between 10% and 12%.

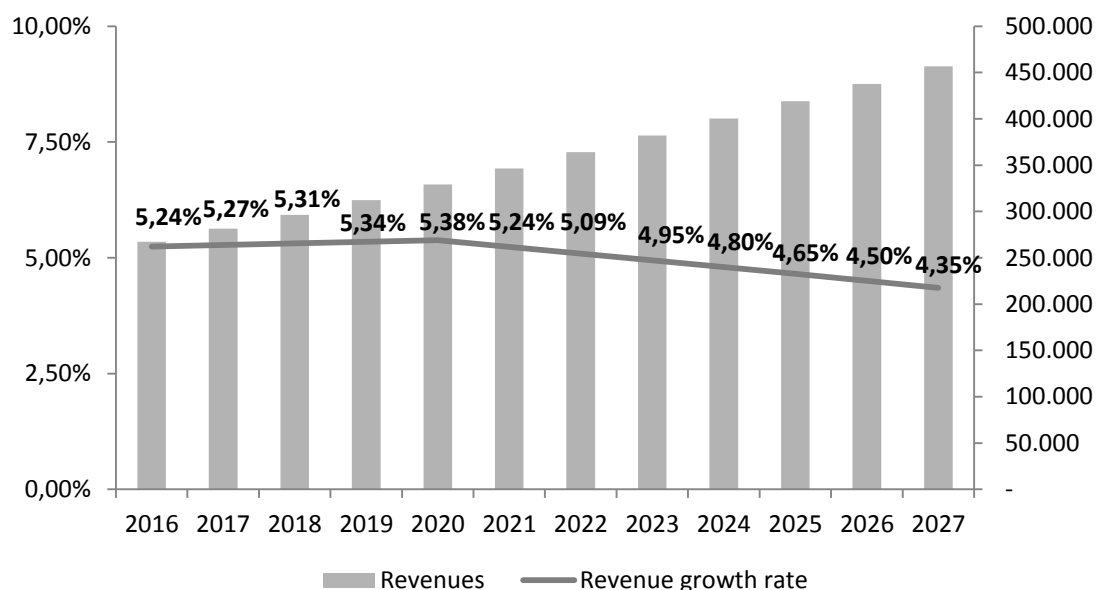
However, in my valuation I will only follow the 2017 outlook since Adidas has shown in the past that their long term forecasts are not usually very accurate. For this reason, I will assume a revenue growth rate of 11,84% in 2017, 10,08% in 2018, 8,31% in 2019 and 6,55% in 2020. From 2021 onwards, I will assume that Adidas' revenue growth rate will be equal to the industry revenue growth rate . Therefore, the revenue growth rates until 2021 were calculated through the following method:

$$Rev. growth rate_{2017} = Rev. growth rate_{2016} - \frac{(Rev. growth rate_{2016} - Industry Rev. growth rate_{2020})}{4}$$

It is also important to mention how this industry revenue growth rate was obtained. I used a study published by Societe General (“Global Sportswear Industry: Steadily Growing but Fragmented”) in which they presented the Sportswear industry revenues for the year 2015 by region and also the CAGR by region for the industry for the period 2015-2020.

By applying the CAGR of each year to the industry revenues of the past year, I was able to get the industry revenues and therefore the industry revenue growth rate. For the years after 2020 I assumed that the CAGR for the different regions is going to decrease at a constant rate that resulted in the end to a general long term growth rate of 4,35%.

Graph 4 - Sportswear Industry Revenues and Revenue Growth Rates (2016 – 2027)



Source: Societe Generale report and own analysis

Table 3 - Adidas AG Revenue by Region

Revenue by region (€ Mn)	2012	2013	2014	2015	2016
Western Europe	4.076	3.777	4.112	4.539	5.291
North America	3.410	3.203	2.972	2.753	3.412
Greater China	1.562	1.655	1.811	2.469	3.010
MEAA	1.947	1.867	1.932	2.388	2.685
Latin America	1.481	1.568	1.622	1.783	1.731
Japan				776	1.007
Russia/CIS				740	679
Other	2.407	2.133	2.085	1.467	1.475
Total Revenue	14.883	14.203	14.534	16.915	19.290

Source: Company Annual Report

Table 4 - Adidas AG Revenue Forecast by Region

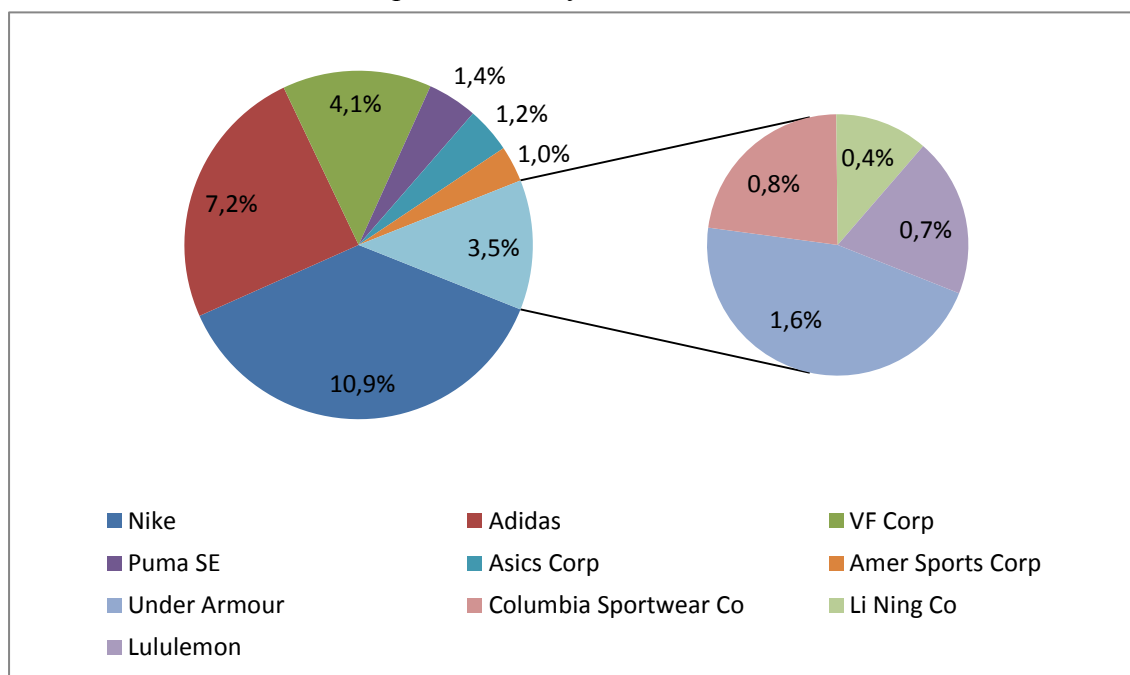
Forecasted Revenues (€ Mn)	2017	2018	2019	2020	2021
North America	3.816	4.201	4.550	4.848	5.020
Latin America	1.936	2.131	2.308	2.459	2.605
Western Europe	6.677	7.350	7.961	8.482	8.841
MEA	3.003	3.306	3.580	3.815	3.976
Asia and other regions	6.142	6.761	7.323	7.803	8.449
Global Net Revenues	21.575	23.749	25.723	27.408	28.891

Forecasted Revenues (€ Mn)	2022	2023	2024	2025	2026	2027
North America	5.191	5.359	5.526	5.689	5.848	6.003
Latin America	2.755	2.909	3.066	3.226	3.389	3.554
Western Europe	9.199	9.555	9.909	10.258	10.602	10.938
MEA	4.137	4.298	4.457	4.614	4.768	4.920
Asia and other regions	9.129	9.844	10.592	11.373	12.186	13.030
Global Net Revenues	30.411	31.964	33.548	35.159	36.793	38.445

Source: Own Analysis

Other consideration made by Adidas in the strategic business plan was that they expect to have “dramatic market share gains” in North America and Latin America and to expand Adidas’ activities further in Greater China and Western Europe to gain market leadership.

Graph 5 - Industry Market Share in 2016



Source: Companies' reports and Societe Generale Report

Table 5 - Adidas AG Estimated Market Share (2015 – 2020)

Estimated Regional Market Share %	2015	2016	2017 F	2018 F	2019 F	2020F
North America	2,99%	3,58%	3,86%	4,10%	4,28%	4,40%
Latin America	7,94%	7,27%	7,66%	7,95%	8,12%	8,15%
Western Europe	8,67%	9,68%	11,70%	12,33%	12,80%	13,06%
MEA	10,81%	11,14%	9,52%	10,04%	10,42%	10,63%
Asia and other regions	8,07%	7,99%	8,93%	9,06%	9,05%	8,89%
Global market Share	6,66%	7,21%	7,66%	8,01%	8,24%	8,33%

Source: Own Analysis

Through this method of estimating future revenues, Adidas will be able to expand their position in terms of market share in the exciting and very profitable North American and Asian Markets by almost 50% and 10%, respectively. Simultaneously, it will not stop its growth in the market that has the greatest portion of Adidas' revenue, the Western Europe (15% growth until 2020).

6.2. Gross Margin

The strategic business plan developed by Adidas in 2015 denominated "Creating the New" was essentially focused on creating a higher brand desire which should result in or be the result of market share gains, gross margin expansion and operating leverage. In this point, I will focus on the plans for the gross margin expansion which plays a crucial role for companies in such a competitive environment as it is sportswear retail.

This new plan predicts that Adidas in 2017 will be able to have a gross margin of 49,1%, which represents an improvement of 0,5 pp in relation to 2016. In fact, this result is expected because Adidas has adopted some measures like the optimization of the product mix, the improvement of the quality of distribution, the minimization of clearance activities while at the same time increasing the full-price share of sales and the realization of supply chain efficiency activities.

Additionally, since Adidas only has the prediction for the 2017 gross margin, I will assume that the gross margin is going to be the same until the end of the explicit period.

Table 6 - Historical and Forecasted Adidas AG Cost of Sales and Gross Margin

	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Cost of Sales	7.780	7.202	7.610	8.748	9.912	10.982	12.088	13.093
Gross Margin	47,7%	49,3%	47,6%	48,3%	48,6%	49,1%	49,1%	49,1%

	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Cost of Sales	13.951	14.706	15.479	16.270	17.076	17.896	18.727	19.568
Gross Margin	49,1%	49,1%	49,1%	49,1%	49,1%	49,1%	49,1%	49,1%

Source: Company Report and Own Analysis

6.3. Operating Expenses

The Operating Expenses are those expenses that companies usually incur in, in their normal business operations. In the section above I described one main portion of the operating expenses, the Cost of Sales. In this section I will focus on the remaining Adidas AG operating expenses (excluding depreciations and amortizations that will be discussed later), most of the times referred as SG&A costs.

These costs are composed by all the marketing related costs (expenditures for marketing investments and marketing overheads), logistics costs, expenditures for point-of-sale investments, R&D and all the costs related with the sales force and central administration.

In order to forecast Adidas future operating expenses I assumed a constant percentage of the historical Net Revenues. In fact, as it is possible to see in the tables below, the operating expenses as a percentage of Net Sales for the years after 2016 are equal to 42,5%, which corresponds to the historical average of other operating expenses as a percentage of Net sales for the period between 2012 and 2016.

Table 7 - Historical and Forecasted Adidas AG Operating Expenses

€ Mn	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Other operating expenses	6.150	6.013	6.203	7.289	8.263	9.160	10.082	10.921
% of Net Sales	41,3%	42,3%	42,7%	43,1%	42,8%	42,5%	42,5%	42,5%
Expenditure for marketing investments	1.502	1.451	1.548	1.886	1.981	2.260	2.488	2.695
Expenditure for point-of-sale investments	304	336	375	462	540	540	595	644
Marketing overhead	445	420	427	554	684	678	746	808
Sales force	1.885	1.815	1.915	2.040	2.237	2.687	2.958	3.204
Logistics	750	753	763	859	967	1.108	1.220	1.321
Research & Development	128	124	126	139	164	184	203	220
Central administration	1.136	1.114	1.050	1.350	1.690	1.702	1.873	2.029

€ Mn	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Other operating expenses	11.636	12.266	12.911	13.571	14.243	14.927	15.620	16.322
% of Net Sales	42,5%	42,5%	42,5%	42,5%	42,5%	42,5%	42,5%	42,5%
Expenditure for marketing investments	2.871	3.027	3.186	3.348	3.514	3.683	3.854	4.027
Expenditure for point-of-sale investments	686	723	761	800	840	880	921	963
Marketing overhead	861	908	955	1.004	1.054	1.104	1.156	1.208
Sales force	3.414	3.599	3.788	3.981	4.179	4.379	4.583	4.788
Logistics	1.408	1.484	1.562	1.642	1.723	1.806	1.890	1.975
Research & Development	234	247	260	273	287	300	314	328
Central administration	2.162	2.279	2.399	2.522	2.646	2.774	2.902	3.033

Source: Company Report and Own Analysis

Among all these costs it is important to mention the weight that marketing costs have in Adidas expenses, since they play a very important role of publicity among the public which allows the company to improve their revenues in such a competitive industry.

Some examples of these costs are the sponsorships in the biggest European Football teams like Real Madrid, Manchester United or SL Benfica, major athletes like Lionel Messi, Novak Djokovic or Simona Halep and also major Sports Events like the Olympic Games or UEFA European Championship.

6.4. Depreciation and Amortization

In the case of the forecasting of Depreciations and Amortizations I assumed a different approach in relation to the one used in the other operating expenses. In this particular case, future D&A were calculated through the 5 year historical average, which was maintained constant from 2017 onwards, of D&A as percentage of Gross PPE.

Table 8 - Historical and Forecasted Adidas AG Depreciation and Amortization

€ Mn	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Depreciation/Amortization	266	288	332	357	391	443	487	528
Depreciation	214	234	258	279	303	350	385	417
Impairment losses depreciations related	3	2	16	18	8	12	13	14
Amortization	49	52	58	60	70	78	86	94
Impairment losses amortizations related	0	0	0	0	10	2	2	3

€ Mn	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Depreciation/Amortization	562	593	624	656	688	721	755	789
Depreciation	444	468	493	518	544	570	596	623
Impairment losses depreciations related	15	16	17	18	19	20	21	22
Amortization	100	105	111	116	122	128	134	140
Impairment losses amortizations related	3	3	3	3	4	4	4	4

Source: Company Report and Own Analysis

6.5. Tax Rate

In order to forecast the effective tax rate that Adidas AG is going to pay from 2016 onwards, I used the historical average of the past 5 years (since it has been relatively stable), which resulted in a tax rate of 33%.

6.6. Capitalizing R&D and Operating Leases

Following Damodaran paper (Damodaran, Research and Development Expenses: Implications for Profitability Measurement and Valuation, 1999) and since Research

and Development is becoming more and more important for companies which want to expand further their operations, as it is the case of Adidas AG, I decided to compute an off-balance sheet method of capitalization of R&D expenses as a way to express these expenses that occur every year in the determination of capital expenditures and a duly amortization of it according to its life period (2 years for retail companies).

By applying this method, I will obtain values of an Adjusted Net Operating Profit after Taxes, adjusted depreciations and amortizations and CAPEX which takes into account all these R&D expenses.

Table 9 - Capitalizing R&D

Year	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
R&D expense	128	124	126	139	164	184	203	220
Amortization of prior R&D		64	126	125	133	152	174	194
Value of outstanding prior R&D		64	62	63	70	82	92	101
Value of R&D Asset	128	188	188	202	234	266	295	321
Adjusted Operating profit		1.241	883	1.073	1.523	1.818	1.994	2.155
Adjusted Operating profit after taxes		862	596	708	1.074	1.218	1.336	1.444
Capital expenditures		(503)	(616)	(620)	(752)	(761)	(816)	(846)
Depreciations and Amortizations		352	458	482	524	594	661	721

Year	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
R&D expense	234	247	260	273	287	300	314	328
Amortization of prior R&D	211	227	241	253	266	280	294	307
Value of outstanding prior R&D	110	117	123	130	137	143	150	157
Value of R&D Asset	344	364	383	403	423	444	465	486
Adjusted Operating profit	2.291	2.411	2.536	2.665	2.796	2.930	3.065	3.202
Adjusted Operating profit after taxes	1.535	1.615	1.699	1.786	1.874	1.964	2.054	2.146
Capital expenditures	(860)	(878)	(920)	(962)	(1.006)	(1.049)	(1.093)	(1.136)
Depreciations and Amortizations	774	820	864	909	955	1.001	1.048	1.096

Source: Damodaran Website and Own Analysis

Simultaneously, since Adidas is among the Sportswear Retail industry and as any retail related company usually tends to have a significant amount of operating leases as a source of financing to its warehouses, offices and points of sale, I also decided to compute a capitalization of the operating leases through an off-balance sheet method, which resulted in new values of Adjusted Net Operating Profit after Taxes and adjusted depreciations and amortizations.

Table 10 - Capitalizing Operating Leases

Year	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Leases Outstanding	1.798	1.669	1.712	2.199	2.500	2.657	2.924	3.168
R&D Adjusted Operating Income		1.241	883	1.073	1.523	1.818	1.994	2.155
Operating Lease Expense		(672)	(643)	(680)	(729)	(798)	(879)	(952)
Depreciation on Leased Asset		(79)	(82)	(105)	(119)	(127)	(139)	(151)
Adjusted Operating profit		490	158	288	674	893	976	1.052
Adjusted NOPAT		340	107	190	476	599	654	705
Adjusted D&A		431	540	587	643	721	801	872

Year	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Leases Outstanding	3.375	3.558	3.745	3.936	4.131	4.330	4.531	4.734
R&D Adjusted Operating Income	2.291	2.411	2.536	2.665	2.796	2.930	3.065	3.202
Operating Lease Expense	(1.014)	(1.069)	(1.125)	(1.182)	(1.241)	(1.301)	(1.361)	(1.422)
Depreciation on Leased Asset	(161)	(169)	(178)	(187)	(197)	(206)	(216)	(225)
Adjusted Operating profit	1.116	1.172	1.232	1.295	1.358	1.423	1.489	1.555
Adjusted NOPAT	748	786	826	868	910	954	998	1.042
Adjusted D&A	934	989	1.043	1.096	1.151	1.207	1.264	1.321

Source: Company Annual Report and Own Analysis

6.7. Capital Expenditures

Regarding the capital expenditures in Property, Plant and Equipment Adidas did not disclose any future forecasts which led me to estimate these future capital expenditures through a method based on a percentage of net revenues. I assumed that capital expenditures in PPE (before R&D adjustment) are going to grow at 9,87% of revenues from 2017 onwards, which is the historical average of the last 3 fiscal years' ratios (and not the last 5 years) since Adidas registered a significant increase in CAPEX values in 2014. For the final estimation of capital expenditures, which is showed in the table below, I then added the adjusted R&D expenses as described in the previous section.

Table 11 - Forecasted Adidas AG Capital Expenditures

€ Mn	2017 F	2018 F	2019 F	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Capital Expenditures	887	955	997	1.021	1.047	1.098	1.150	1.202	1.255	1.308	1.362

Source: Own Analysis

6.8. Net Working Capital

Regarding Net Working Capital, my approach was slightly different from the one presented by Adidas in its Annual Report, since they only considered the rubrics of accounts receivables, inventories and accounts payable as Working Capital.

However, in this equity valuation I decided to include other operational items like deferred tax assets and liabilities (even though they are non-current, it has an operational effect), other current assets and liabilities and current accrued liabilities.

In order to obtain the future estimates of these rubrics I used the same DSO (Days Sales Outstanding), DIH (Days Inventory Held) and DPO (Days Payable Outstanding) ratios that Adidas used in 2016 and not an historical average like in the majority of other items because in its annual report Adidas predicts to have the 2017 values “around prior year level”. For all the other items that I assumed to be part of Net Working Capital calculations that are not considered by Adidas as WC, I assumed the exact same approach.

In summary, as detailed in Appendix H, DSO ratio was used for Accounts Receivables, Other Current Assets and Deferred Tax Assets estimation, DIH ratio was used for the estimation of the item Inventories, and DPO ratio was used for Accounts Payable, Current Accrued Liabilities, Other Current Liabilities and Deferred Tax Liabilities estimation.

6.9. Financial Assets/Liabilities and Interest Income

Currently, Adidas has several financial investments of short and long maturities which mainly consist of different derivatives that are used to protect the company regarding the currency differences which results from the fact that Adidas operates in a wide range of geographies. For that reason, and since these rubrics are strictly related to the level of Adidas' Net Revenues, the method chose to forecast the financial assets and liabilities from 2017 onwards was to assume that these items are going to be equal, on average and as a percentage of revenues, relatively to the period between 2012 and 2016. The only exception is the item long term financial assets which besides the long term derivatives includes the participation that Adidas has in FC Bayern which I assumed to be constant and equal to its actual fair value (80 € million).

The item financial income in the income statement I assumed to be composed not only by interest gains coming from the financial assets but also the interest expenses that come specifically from the financial liabilities (in this case with a minus signal, representing less financial income) excluding the short and long term borrowings.

The method used to forecast this financial income from 2017 onwards was to assume that this item is going to be equal, on average and as a percentage of the sum of all financial assets minus all financial liabilities (excluding borrowings), relatively to the period between 2012 and 2016.

6.10. Borrowings and Financial Expenses

In 2016 Adidas' long term debt was composed by two Eurobonds issued in 2014 of 600€ million with maturity in 2021 and 400€ million with maturity in 2026. As short term debt, Adidas had a convertible bond with nominal value of 260€ million with maximum maturity until 2019 and several commercial paper of short maturity that Adidas constantly issued throughout the fiscal year.

For the future, my first point was to verify if the convertible bond was on the money or not, which in the end I verified that it was and therefore I assumed that all the bondholders chose to exercise their option.

For the rest of the short term debt I assumed that this commercial paper was used as support to sales expenses, and as a consequence the method chose to forecast the short term borrowings from 2017 onwards was to assume that these items are going to be equal, on average and as a percentage of revenues, relatively to the period between 2012 and 2016.

Finally, for the long term debt I assumed that Adidas is going to issue new Eurobonds of the same amount and same maturity in the maturity of the actual Eurobonds.

As stated in the previous section, in this valuation and since it was not discriminated in the Annual report which type of costs entered in the financial expenses, I decided to assume that from 2017 onwards the rubric Financial Expenses are composed exclusively by the interest expenses in the short and long term borrowings and also in the outstanding operating leases.

For the Eurobonds, the interest rate used was the respective coupon rates, for the short term debt I assumed that the interest rate is the cost of debt (1,40%) and for operating leases the interest rate used was 2,6%, which was the weighted average interest rate for 2016 presented by Adidas in the annual report that I assumed to stay constant for the rest of the period analyzed.

Table 12 - Adidas AG Historical and Forecasted Debt and Interest Expenses

Book Value of Debt(€ Mn)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Operating Leases Outstanding	1.798	1.669	1.712	2.199	2.500	2.657	2.924	3.168
Long Term Borrowings	1.207	653	1.584	1.463	982	982	982	982
Short Term Borrowings	280	681	288	366	636	256	282	305
Total Debt Outstanding	3.285	3.003	3.584	4.028	4.118	3.895	4.188	4.455
Interest on Debt	(105)	(94)	(67)	(67)	(74)	(81)	(84)	(89)

Book Value of Debt(€ Mn)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Operating Leases Outstanding	3.375	3.558	3.745	3.936	4.131	4.330	4.531	4.734
Long Term Borrowings	982	982	982	982	982	982	992	992
Short Term Borrowings	325	343	361	379	398	417	436	456
Total Debt Outstanding	4.682	4.882	5.088	5.297	5.511	5.729	5.959	6.183
Interest on Debt	(94)	(98)	(103)	(107)	(112)	(116)	(121)	(125)

Source: Company Report and Own Analysis

6.11. Long Term Growth Rate

In this valuation, I assumed a long term growth that deviates from the usual approach of using the nominal GDP growth rate. Instead, I opted to choose the industry average revenue growth rate because I consider that it is more precise given the fact that Adidas is present in so many geographies that are growing at completely different paces, which even though it could be mitigated by the use of the Global GDP growth rate, this GDP growth rate takes into account several other industries that are growing at completely different paces and could distort the results.

As a result, the 2027 estimated industry revenue growth rate of 4,35% is the one used as the long term growth rate for the computation of the terminal value.

6.12. Cost of Debt and Levered and Unlevered Required Return to Equity

Since Adidas Debt is liquid, option free and for a long term span, I used the rating associated to this debt in order to obtain the spread as presented by Damodaran, which was then added to the risk free rate to obtain a cost of debt of 1,40%.

Regarding the required return to equity as described in the literature review I applied the 3 Fama French Factors model to obtain the coefficients for the Market Risk Premium, Size Premium and Value Premium and the respective betas. In the end, I obtained a levered and unlevered cost of equity of 6,40% and 5,86%, respectively.

Table 13 - Summary of Adidas Kd, Ke and Ku

Risk-free rate (German Bund 10 year - 13th April 2017)	0,30%
Rating Adidas Long Term Debt	A+
Spread	1,10%
Adidas Cost of Debt (Kd)	1,40%
Adidas levered Ke	6,40%
Adidas unlevered Ke / Ku	5,68%

Source: Thomson Reuters, Company Report and Own Analysis

6.13. Shareholder's Equity

For the estimation of the future Adidas Equity, I assumed that the reserves in 2017 are going to be equal to 2016 plus the portion that is consequence of the exercise of the convertible bonds (the method for this increase of capital reserves was equal to the one described in 2016 when a portion of this convertible debt was exercised – Appendix F). From 2017 onwards the capital reserves are going to be constant because, according to the annual report, these reserves are mainly used to cover possible currency differences.

For the share capital the rational is very similar, where in 2017 the share capital increases 3€ million due to the fact that I assumed that all the bondholders decided to exercise their option.

Finally, the retained earnings are estimated with base on the net income of the previous year, the dividends paid and the amount of treasury shares that are repurchased.

Table 14 - Historical and Forecasted Adidas' Shareholders Equity

Shareholders Equity (€ Mn)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Share capital	209	209	204	200	201	204	204	204
Reserves	641	321	581	592	749	813	813	813
Retained Earnings (Accumulated Deficit)	4.454	4.959	4.839	4.874	5.521	5.971	6.575	7.261
Shareholders' equity	5.304	5.489	5.624	5.666	6.471	6.989	7.592	8.279

Shareholders Equity (€ Mn)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Share capital	204	204	204	204	204	204	204	204
Reserves	813	813	813	813	813	813	813	813
Retained Earnings (Accumulated Deficit)	8.007	8.822	9.681	10.598	11.575	12.613	13.711	14.872
Shareholders' equity	9.025	9.840	10.698	11.616	12.593	13.630	14.729	15.889

Source: Company Report and Own Analysis

6.14. Free Cash Flow to the Firm

The calculation of the FCFF was through the method presented in the literature review and it is summarized in the table below:

Table 15 - Adidas AG Historical and Forecasted FCFF

(€ Mn)	2013	2014	2015	2016	2017 F	2018 F	2019 F
EBIT	490	158	288	674	893	976	1.052
Taxes on EBIT	(150)	(51)	(98)	(199)	(295)	(322)	(347)
NOPAT	340	107	190	476	599	654	705
Depreciation and Amortization	431	540	587	643	721	801	872
Non-cash charges	(129)	62	11	229	114	117	106
Investment in Working Capital	199	47	(15)	54	246	220	200
Capital Expenditures	(582)	(698)	(725)	(871)	(887)	(955)	(997)
R&D	(128)	(124)	(126)	(139)	(164)	(184)	(203)
Free Cash Flow to the Firm	131	(66)	(78)	391	628	652	683

Depreciations and Amortization / Capex	74,08%	77,35%	80,96%	73,77%	81,20%	83,83%	87,48%
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(€ Mn)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
EBIT	1.116	1.172	1.232	1.295	1.358	1.423	1.489	1.555
Taxes on EBIT	(368)	(387)	(407)	(427)	(448)	(469)	(491)	(513)
NOPAT	748	786	826	868	910	954	998	1.042
Depreciation and Amortization	934	989	1.043	1.096	1.151	1.207	1.264	1.321
Non-cash charges	90	80	82	83	85	86	88	89
Investment in Working Capital	170	150	154	157	160	163	165	167
Capital Expenditures	(1.021)	(1.047)	(1.098)	(1.150)	(1.202)	(1.255)	(1.308)	(1.362)
R&D	(220)	(234)	(247)	(260)	(273)	(287)	(300)	(314)
Free Cash Flow to the Firm	702	723	759	795	831	868	906	943

Depreciations and Amortization / Capex	91,51%	94,45%	94,94%	95,35%	95,76%	96,18%	96,61%	97,04%
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Source: Own Analysis

The last row of the table presents the ratio Depreciations and Amortizations / Capex which was used to define from which year onwards Adidas was considered to be in stable state.

Therefore, I opted to consider that Adidas would be in steady state when the ratio was higher than 97%, fact that was verified in 2027.

7. Company Valuation – Results

7.1. APV Valuation

As stated in the literature review the APV was the main method chosen to perform the valuation of Adidas AG. The reason behind it was the fact that Adidas did not present a constant or a target debt to equity ratio in the past, and after contacting Adidas' investor relations, I was told that the company does not have any target capital structure for the future. For that reason, and also for the reasons presented in the literature review that make APV a more precise method than WACC, I decided to apply it to Adidas.

7.1.1. Unlevered Value of Firm

The unlevered value of Firm was obtained by discounting the Free Cash to the Firm at the unlevered cost of capital (5,48%). The values obtained for both the explicit period and the terminal value are summarized in the table below:

Table 16 - APV – Unlevered Value of Firm

(€ Mn)	
Initial FCFF	984
Long-Term Growth Rate	4,35%
Terminal Value at Terminal year	65.243
Present Value of Discounted FCF	6.381
Present Value of Terminal Value	34.873
Unlevered Value of Firm	41.253

Source: Own Analysis

7.1.2. Interest Tax Shields

Following the calculation of the Unlevered Value of Firm, the next step was calculating the present value of interest tax shields. As stated in the literature review, the approach chosen to discount the tax shields was the one presented by Myers (1974) and Luehrman (1997), which discounts the tax shields at the cost of debt.

Therefore, the value obtained for the present value of tax shields is summarized in the following table:

Table 17 - APV – Value of Interest Tax Shields

(€ Mn)	
Cost of Debt	1,40%
PV of Discounted Tax shields	363
Terminal Value of Tax Shields	324
Total Present Value of Tax Shields	687

Source: Own Analysis

7.1.3. Expected Costs of Financial Distress and Bankruptcy Costs

The last step to obtain the total enterprise value of Adidas AG, is the calculation of financial distress costs. In order to obtain these costs, first Adidas' probability of default has to be obtained, which comes from the table provided by Bloomberg (Appendix J) that assigns a probability of default for each rating. Since Adidas has a rating of A+, the probability of default associated with it is 1,68%.

An assumption that had to be made, in order to obtain these costs, is the indirect and direct costs as a percentage of firm value. In the literature review intervals for both were presented (3% to 5% of direct CFD as % of firm value and 10% to 20% of indirect CFD as % of firm value), and I decided to choose 4% and 12% as direct and indirect costs of financial distress, respectively.

The last step was to apply the risk adjusted probability method, by dividing the probability of default by the sum of the risk free rate and the probability of default multiplied by the direct and indirect costs of financial distress, and obtaining the total value of CFD which is summarized in table 16.

Table 18 - APV – Total Costs of Financial Distress

	Risk Adjusted CFD
Probability of Default	1,68%
Direct Cost of Financial Distress as % of firm value	4%
Indirect Cost of Financial Distress as % of firm value	12%
Direct+ Indirect Cost of Financial Distress as % of firm value	16%
Total Cost of Financial Distress as % of firm value	13,61%
Total CFD (€ Mn)	5.708

Source: Own Analysis

7.1.4. Enterprise, Equity and Share Value

After the presentation of all the inputs needed to apply the APV method, it was time to obtain Adidas' Enterprise Value. In fact, this can be obtained by summing the Unlevered Value of Firm and the Present Value of Tax Shields and subtracting the Total Costs of Financial Distress. Therefore, the value obtained for Adidas' Enterprise Value was 36.232€ million.

Moreover, in order to obtain the Equity Value Net Debt should be subtracted, which was equal to 2.682€ million. Net debt is equal to the subtraction of total debt at market values and the amount of cash and cash equivalents verified in 2016.

The last step to obtain the Equity value is to make some other adjustments due to the existence of minority interests, investments in associates, other current financial assets and liabilities, pensions and similar obligations and assets and liabilities held for sale. (Appendix J)

In the end, Adidas' equity value obtained in this valuation was equal to 33.300€ million and is detailed in table 17. In order to obtain Adidas' stock price, the equity value was divided by the total number of shares.

In conclusion, the basic and diluted share price of Adidas AG obtained in this equity valuation was equal to 166,34€ and 161,53€, respectively. By comparing these results with the market price, it can be concluded that by 22nd of May 2017 Adidas AG share is overvalued in 6,03%.

Table 19 - APV – Enterprise, Equity and Share Values

€ Mn (except per share values)	
Unlevered Value of Firm	41.253
Total Present Value of Tax Shields	687
Total CFD	(5.708)
Enterprise Value	36.232
Debt Valuation	(4.192)
Excess Cash and Cash equivalents	1.510
Other Adjustments	(250)
Equity Valuation	33.300
Basic Stock Valuation	166,34
Diluted Stock Valuation	161,53

Source: Own Analysis

7.1.5. Sensitivity Analysis

Since a DCF valuation is very susceptible to great variations in the final results due to changes in some of the core variables, I decided to perform a sensitivity analysis in the variables that I considered that could have the greatest impact on Adidas share price.

Therefore, I performed a sensitivity analysis on 7 variables (Ku, long-term growth rate, risk-free rate, cost of debt, gross profit margin, global market share and default prospects), from which only the ones that have a significant impact on the final results are summarized below.

Table 20 - Sensitivity Analysis to Ku, long-term growth rate, risk-free rate, gross profit margin and default prospects

APV	-0,30%	-0,20%	-0,10%	Base Case	0,10%	0,20%	0,30%
Sensitivity to Ku	5,56%	5,66%	5,76%	5,86%	5,96%	6,06%	6,16%
Diluted Stock Valuation	204,15	187,78	173,72	161,53	150,85	141,41	133,02
Comparison to Base Case Value	26,38%	16,25%	7,55%	0,00%	-6,62%	-12,46%	-17,65%

APV	-0,15%	-0,10%	-0,05%	Base Case	0,05%	0,10%	0,15%
Sensitivity to Long-term growth rate	4,20%	4,25%	4,30%	4,35%	4,40%	4,45%	4,50%
Diluted Stock Valuation	148,11	152,31	156,77	161,53	166,61	172,06	177,90
Comparison to Base Case Value	-8,31%	-5,71%	-2,95%	0,00%	3,14%	6,51%	10,13%

APV	-0,15%	-0,10%	-0,05%	Base Case	0,05%	0,10%	0,15%
Sensitivity to Risk-Free Rate	0,145%	0,195%	0,245%	0,295%	0,345%	0,395%	0,445%
Diluted Stock Valuation	178,01	172,17	166,68	161,53	156,67	152,08	147,73
Comparison to Base Case Value	10,20%	6,58%	3,19%	0,00%	-3,01%	-5,86%	-8,54%

APV	-0,75%	-0,50%	-0,25%	Base Case - 2017 predicted level	0,25%	0,50%	0,75%
Sensitivity to Gross Profit Margin	48,35%	48,60%	48,85%	49,10%	49,35%	49,60%	49,85%
Diluted Stock Valuation	126,01	137,78	149,56	161,53	173,12	184,90	196,68
Comparison to Base Case Value	-21,99%	-14,70%	-7,41%	0,00%	7,17%	14,47%	21,76%

APV	-0,75%	-0,50%	-0,25%	Base Case	0,25%	0,50%	0,75%
Sensitivity to Global Mkt Share	6,91%	7,16%	7,41%	7,66%	7,91%	8,16%	8,41%
Diluted Stock Valuation	145,63	150,93	156,23	161,53	166,83	172,13	177,43
Comparison to Base Case Value	-9,85%	-6,57%	-3,28%	0,00%	3,28%	6,56%	9,84%

Source: Own Analysis

7.2. Dividend Discount Model Valuation

Regarding Dividends, Adidas' policy defined in the annual report is not very strict since they only state that they want to maintain the dividend payout ratio between 30% and 50% until 2020.

Therefore, my assumption for the future amount of dividends to be distributed to shareholders was to maintain the dividend payout ratio constant and equal to the one verified in 2016. I did not apply any historical average because in the period between 2013 and 2015 the dividend payout ratio was very volatile reaching for example a value of 64,11% in 2014 which was outside the range defined by Adidas and that would bias the historical average. For that reason, the dividend payout ratio assumed was of 31,57% from 2016 onwards.

However, It is important to mention that for the calculation of this dividend payout ratio I included not only the cash dividends distributed to shareholders but also the repurchase of treasury shares that most of the times work as an indirect way of paying dividends.

Table 21 - Forecasted Adidas AG Dividends

	2016	2017 F	2018 F	2019 F	2020 F	2021 F
Dividend Payout Ratio	31,57%	31,57%	31,57%	31,57%	31,57%	31,57%
Dividend paid to shareholders	320	361	398	436	464	496
Dividend paid to non-controlling interests	2	4	4	4	4	4
Repurchase of treasury shares	218	273	273	273	273	273
Total Dividend	540	638	675	714	742	774

	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Dividend Payout Ratio	31,57%	31,57%	31,57%	31,57%	31,57%	31,57%
Dividend paid to shareholders	517	544	572	599	628	656
Dividend paid to non-controlling interests	4	4	4	4	4	4
Repurchase of treasury shares	273	273	273	273	273	273
Total Dividend	794	821	849	877	905	934

Source: Own Analysis

Following the definition of Adidas' future dividends, the dividend discount model valuation was performed by discounting the future dividends at the required return to equity. The results of this valuation method are summarized in the table below:

Table 22 - Adidas AG Dividend Discount Model Valuation

€ Mn (except per share values)	
ke - levered	6,40%
Discounted Value of Dividends	540
Present Value of Discounted Dividends	6.530
Long Term Growth Rate	4,35%
Terminal Value of Dividends	12.119
Equity Value	18.649
Basic Stock Valuation	93,16
Diluted Stock Valuation	90,46

Source: Own Analysis

According to the dividend discount model, Adidas AG stock is valued at 90,46€ which is far lower than the valuation obtained in the APV method. In fact, the DDM usually presents lower results and it works usually as a lower bound to the valuation of any stock.

7.3. Multiples Valuation

As stated in the literature review, the relative valuation is performed by comparing Adidas multiples with the firms that better match with Adidas's characteristics. Therefore, the first decision is to define which companies form Adidas peer group that, as defined in the literature review, are found through the application of a cluster analysis.

Adidas' Peer Group that is presented in the table below is composed by the 6 firms that were chosen from the sample of 15 firms belonging to the sportswear and footwear apparel industry that are more similar to Adidas. The criterion of choice was to find the companies which had the smallest difference to Adidas in term of "risk, growth and cash flow generating potential" as defined by Damodaran.

Table 23 - Adidas AG Peer Group

Peer Group	EV/EBITDA	EV/EBIT	EV/SALES	P/SALES	P/E
Columbia	10,62	13,11	1,42	1,66	20,44
Amer Sports	11,65	15,07	1,18	0,95	17,88
Nike Inc	17,21	19,74	2,75	2,83	23,09
Puma SE	27,74	40,78	1,43	1,54	62,09
Asics	11,26	15,45	0,99	1,04	24,58
Foot Locker	7,89	9,12	1,19	1,31	16,01
Peer Group Average Multiple	14,40	18,88	1,49	1,55	27,35

Source: Thomson Reuters, Company Report and Own Analysis

Following the definition of Adidas' Peer Group, the multiples valuation was performed by applying the Peer Group Average Multiple to Adidas' financials. The results of this valuation method are the following:

Table 24 - Adidas AG Multiples Valuation

€ Mn (except per share amounts)	EV/EBITDA	EV/EBIT	EV/SALES	P/SALES
Adidas Enterprise Value	27.097	28.148	28.762	--
Adidas Debt Value	4.192	4.192	4.192	--
Cash and Cash Equivalents	1.510	1.510	1.510	
Other Adjustments	250	250	250	
Equity Value	24.164	25.216	25.829	29.977
Basic Stock Valuation	120,71	125,96	129,02	149,74
Diluted Stock Valuation	117,22	122,32	125,29	145,42

Source: Company Report and Own Analysis

Even though several multiples are presented in table 22, as defined in the literature review I will follow the EV/EBITDA which is the multiple that theoretically presents the most accurate results and for that reason it is considered the most consensual among researchers.

As a result, through relative valuation Adidas AG diluted stock is valued at 117,22 € which is far lower than the current market price, as it was verified in the other two valuation methods.

8. Comparison Investment Bank Report

After performing three different methods to value Adidas AG, it is time to compare it with a valuation performed by a certified Investment Bank. Therefore, I opted to compare with an equity research report published by Exane BNP Paribas on January 19th 2017. In this report, Exane placed a target price to Adidas stock at 165€, which at that time represented an upside of 8,8%.

First of all, it is important to explain the method Exane used to obtain this valuation. The target price was obtained by applying an 18x EV/EBIT multiple and discounting back to obtain the new 165€ target price. The explanation behind this multiple is related to the fact that “Momentum is back”. In Exane reseachers’ opinion margin concerns have subsided, which together with the fact that new management is opening up to new business opportunities, are all signs of a possible rise in Adidas’ stock price. Furthermore, Exane believed, at that time, that there could be plenty more to play for, like a scope for EBIT margins to rise to up to 9%, which in the end showed to be similar to the ones assumed in my model.

Even though the fact that in my main model I obtained a final stock price very close to the proposed target price (161,53€ vs 165€), the comparison should be made by considering the share price obtained in my relative valuation and not the one obtained in the APV valuation.

In that case, the share price that resulted from the application of EV/EBIT multiples of the chosen peer group to the Adidas’ Financials resulted in a stock price that is 26% smaller. Although the multiple used in my model was very close to the one used by Exane (18,8x vs 18,0x), there was a significant difference mainly due to the discounting factor, which was not made clear in the research note, which led to a very different enterprise value. The other relevant factor, EBIT, was actually pretty close to the one calculated in my model, which supports the idea that the differences are arising specially from the dubious discounting factor.

As a conclusion, despite the fact that my multiples valuation considerations are the opposite to the ones proposed by Exane, it should be noted that this report was published in January 2017 but the target predictions were met only two months later on March 8th.

9. Conclusion

Equity valuation is still nowadays subject to constructive critics and discussions among researchers and investment banks since it is not yet consensual which method is the best, if there is only one, to value a company. For that reason, as stated first in the literature review I decided to perform and present three different approaches.

The DCF – APV valuation, which in my opinion is the one that presents the more precise results and therefore I consider being the main method in this Adidas AG valuation, and two complementary methods. The multiples valuation which is very commonly used in the investment banking industry, due to its simplicity and the Dividend discount model, which will work as the lower bound in the definition of Adidas' stock price.

Then, after the application of these three methods, it was possible to arrive to an interval of target prices for Adidas' stock. The upper bound of the interval is coming from the APV method, which values Adidas at 161,53€ and the lower bound comes from the DDM model, which values Adidas at 90,46€. In the middle it is the output of the multiples valuation, which according to EV/EBITDA ratio defines a value for Adidas share price of 117,22€. In fact, these three methods present a similarity which is the fact that at this moment Adidas stock price is overvalued.

Nevertheless, it is important to mention that all these approaches were based on several assumptions that had to be taken according to the publicly available information, the study of the history of the company, its future predictions, the industry behavior and also the macro and micro environment which in the end can duly affect any equity valuation as it was possible to verify in the sensitivity analysis presented.

10. Appendices

Appendix A- Company Descriptive Statistics and Additional Information

Figure 1 - Adidas Group Executive Board



Kasper Rorsted,
CEO



Roland Auschel,
Global Sales



Glenn Bennett,
Global Operations



Eric Liedtke,
Global Brands



Harm Ohlmeyer,
CFO

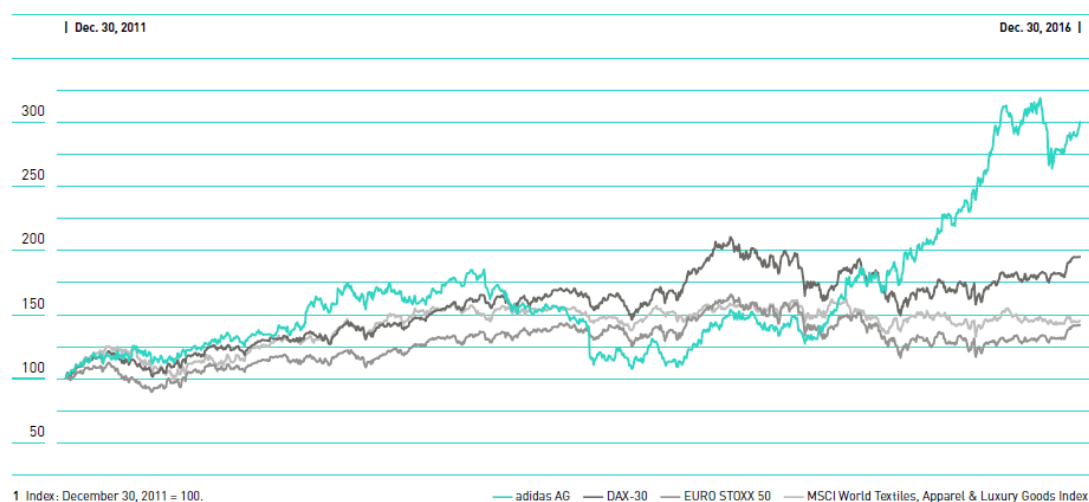


Karen Parkin,
Global Human Resources



Gil Steyaert,
Executive Board Member

Figure 2 - Five-Year Share Price Development



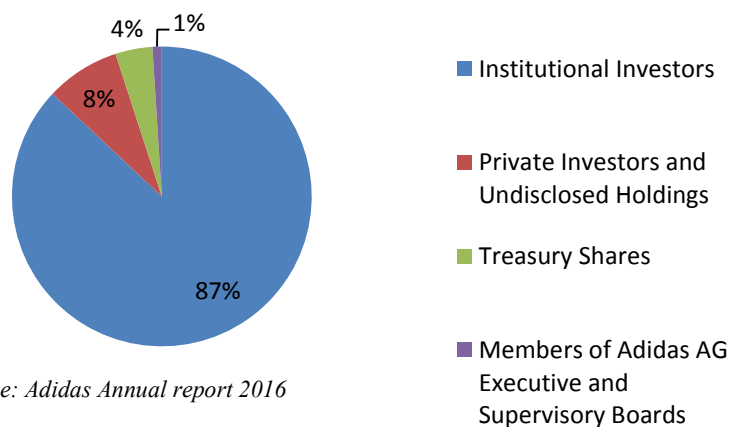
Source: Adidas Annual report 2016

Table 25 - The Adidas AG Share Description

		2016	2015	Important Indexes
Number of Shares outstanding	shares	201.489.310	200.197.417	DAX-30
Basic earning per share	€	5,08	3,32	EURO STOXX 50
Diluted earnings per share	€	4,99	3,32	MSCI World Textiles, Apparel & Luxury Goods
Cash generated from operating activities per share	€	6,73	5,41	Deutsche Borse Prime Consumer
Year-end price	€	150,15	89,91	Dow Jones Sustainability Indices (World and Europe)
Year high	€	159,50	93,41	ECPI Ethical Equity Indices (Euro and EMU)
Year low	€	83,45	54,61	ECPI ESG Equity (Euro and World)
Market capitalisation	€ in millions	30.254	18.000	Ethibel Sustainability Indices (Global and Europe)
Dividend per share	€	2,00	1,60	Euronext Vigeo (Eurozone 120, Europe 120)
Dividend payout	€ in millions	403	320	FTSE4Good Index Series
Dividend payout ratio	%	39,60	47,90	MSCI Global Sustainability Indexes
Dividend yield	%	1,30	1,80	MSCI SRI Indexes
Shareholders' equity per share	€	32,12	28,30	STOXX Global ESG Leaders
Price-earnings ratio at year-end	%	30,10	27,10	
Average trading volume per trading day	shares	892.646	1.199.167	

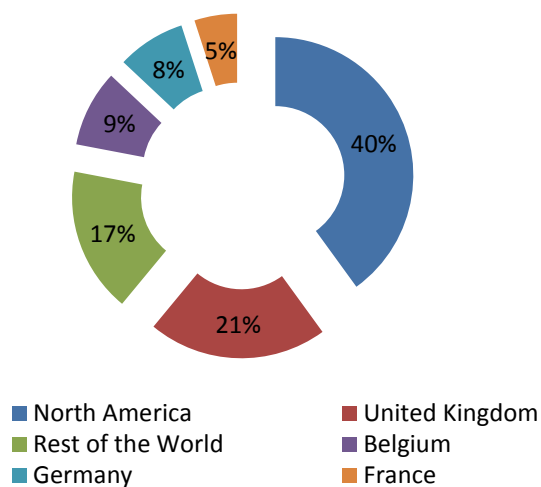
Source: Adidas Annual report 2016

Graph 6 - Adidas AG Shareholder Structure



Source: Adidas Annual report 2016

Graph 7 - Adidas AG Shareholder Structure by Region



Source: Adidas Annual report 2016

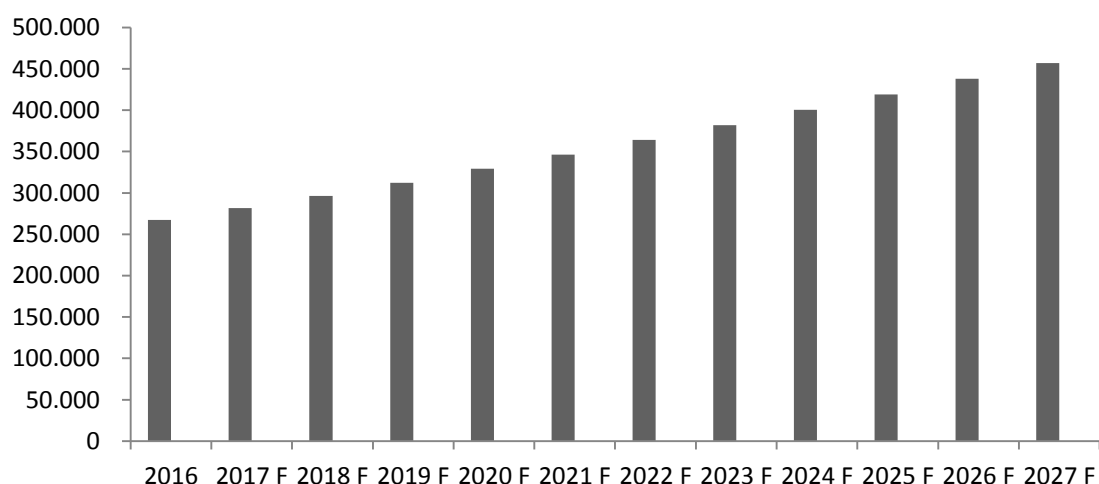
Appendix B – Sportswear Industry Revenue Statistics

Table 26 - Main Sportswear Companies' Revenues (2012-2016)

Company	Revenues (€ Mn)				
	2012	2013	2014	2015	2016
Nike	18.159	19.060	20.925	27.581	29.249
Adidas	14.883	14.203	14.534	16.915	19.291
VF Corp	8.468	8.599	8.944	10.845	10.858
Puma SE	3.271	2.985	2.972	3.387	3.627
Asics Corp	2.948	2.157	2.523	3.190	3.320
Amer Sports Corp	2.064	2.137	2.229	2.534	2.622
Under Armour	1.428	1.756	2.322	3.572	4.359
Columbia Sportswear Co	1.300	1.269	1.581	2.097	2.147
Li Ning Co	824	713	739	1.017	1.090
Lululemon	779	1.032	1.198	1.620	1.862

Source: Thomson Reuters Terminal

Graph 8 - Forecasted Global Industry Revenues



Source: Societe Generale Report and Own Analysis

Table 27 - Forecasted Industry Revenues by Region

Regional Mkt Size (€ Mn)	2016	2017 F	2018 F	2019 F	2020F	2021 F
North America	95.335	98.862	102.520	106.313	110.247	114.161
Latin America	23.812	25.264	26.805	28.440	30.175	31.963
Western Europe	54.670	57.076	59.587	62.209	64.946	67.690
MEA	30.205	31.534	32.921	34.370	35.882	37.398
Asia and other regions	63.369	68.755	74.600	80.941	87.821	95.088
Total	267.390	281.491	296.433	312.273	329.071	346.300

Regional Mkt Size (€ Mn)	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
North America	118.042	121.879	125.657	129.364	132.986	136.510
Latin America	33.801	35.685	37.612	39.578	41.576	43.603
Western Europe	70.431	73.160	75.867	78.542	81.173	83.750
MEA	38.913	40.421	41.916	43.394	44.848	46.272
Asia and other regions	102.742	110.782	119.201	127.992	137.144	146.641
Total	363.930	381.927	400.254	418.869	437.726	456.776

Source: Societe Generale report and Own Analysis

Table 28 - Forecasted Industry Growth Rate by Region

Forecasted Region Growth %	2016	2017	2018	2019	2020	2021
North America	3,7%	3,7%	3,7%	3,7%	3,7%	3,55%
Latin America	6,1%	6,1%	6,1%	6,1%	6,1%	5,93%
EMEA	4,4%	4,4%	4,4%	4,4%	4,4%	4,23%
Asia and other regions	8,5%	8,5%	8,5%	8,5%	8,5%	8,28%

Forecasted Region Growth %	2022	2023	2024	2025	2026	2027
North America	3,40%	3,25%	3,10%	2,95%	2,80%	2,65%
Latin America	5,75%	5,58%	5,40%	5,23%	5,05%	4,88%
EMEA	4,05%	3,88%	3,70%	3,53%	3,35%	3,18%
Asia and other regions	8,05%	7,83%	7,60%	7,38%	7,15%	6,93%

Source: Societe Generale report and Own Analysis

Appendix C – Income Statement Forecast Inputs

Table 29 - Inputs for Income Statement Forecast

	2012	2013	2014	2015	2016	2017	2018	2019
Depreciation / Gross PPE	11,76%	11,91%	11,76%	11,08%	10,72%	11,45%	11,45%	11,45%
COGS / Net revenues	52,27%	50,71%	52,36%	51,72%	51,38%	50,90%	50,90%	50,90%
Marketing / Net Revenues	13,08%	13,17%	13,59%	14,43%	13,81%	13,62%	13,62%	13,62%
Marketing Investments/ Net Revenues	10,09%	10,22%	10,65%	11,15%	10,27%	10,48%	10,48%	10,48%
Marketing Overhead / Net Revenues	2,99%	2,96%	2,94%	3,28%	3,55%	3,14%	3,14%	3,14%
R&D Expenses / Net Revenues	0,86%	0,87%	0,87%	0,82%	0,85%	0,85%	0,85%	0,85%
S&G&A Expenses/ Net Revenues	27,38%	28,29%	28,23%	27,85%	28,17%	27,98%	27,98%	27,98%
Point-of-sale investments / Net Revenues	2,04%	2,37%	2,58%	2,73%	2,80%	2,50%	2,50%	2,50%
Sales force / Net revenues	12,67%	12,78%	13,18%	12,06%	11,60%	12,46%	12,46%	12,46%
Logistics / Net revenues	5,04%	5,30%	5,25%	5,08%	5,01%	5,14%	5,14%	5,14%
Central administration / Net revenues	7,63%	7,84%	7,22%	7,98%	8,76%	7,89%	7,89%	7,89%
Other Operating Income / Net Revenues	0,85%	1,00%	0,95%	0,57%	1,38%	0,95%	0,95%	0,95%
Royalty and comission income	0,71%	0,73%	0,70%	0,70%	0,57%	0,68%	0,68%	0,68%
Financial Income/(Financial Assets - Fianancial Liabilities)	16,00%	13,13%	4,06%	10,34%	3,52%	9,41%	9,41%	9,41%
Effective tax rate	38,43%	30,55%	32,46%	34,01%	29,48%	32,98%	32,98%	32,98%

	2020	2021	2022	2023	2024	2025	2026	2027
Depreciation / Gross PPE	11,45%	11,45%	11,45%	11,45%	11,45%	11,45%	11,45%	11,45%
COGS / Net revenues	50,90%	50,90%	50,90%	50,90%	50,90%	50,90%	50,90%	50,90%
Marketing / Net Revenues	13,62%	13,62%	13,62%	13,62%	13,62%	13,62%	13,62%	13,62%
Marketing Investments/ Net Revenues	10,48%	10,48%	10,48%	10,48%	10,48%	10,48%	10,48%	10,48%
Marketing Overhead / Net Revenues	3,14%	3,14%	3,14%	3,14%	3,14%	3,14%	3,14%	3,14%
R&D Expenses / Net Revenues	0,85%	0,85%	0,85%	0,85%	0,85%	0,85%	0,85%	0,85%
S&G&A Expenses/ Net Revenues	27,98%	27,98%	27,98%	27,98%	27,98%	27,98%	27,98%	27,98%
Point-of-sale investments / Net Revenues	2,50%	2,50%	2,50%	2,50%	2,50%	2,50%	2,50%	2,50%
Sales force / Net revenues	12,46%	12,46%	12,46%	12,46%	12,46%	12,46%	12,46%	12,46%
Logistics / Net revenues	5,14%	5,14%	5,14%	5,14%	5,14%	5,14%	5,14%	5,14%
Central administration / Net revenues	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%
Other Operating Income / Net Revenues	0,95%	0,95%	0,95%	0,95%	0,95%	0,95%	0,95%	0,95%
Royalty and comission income	0,68%	0,68%	0,68%	0,68%	0,68%	0,68%	0,68%	0,68%
Financial Income/(Financial Assets - Fianancial Liabilities)	9,41%	9,41%	9,41%	9,41%	9,41%	9,41%	9,41%	9,41%
Effective tax rate	32,98%	32,98%	32,98%	32,98%	32,98%	32,98%	32,98%	32,98%

Source: Own Analysis

Appendix D – Income Statement Estimation

Table 30 - Adidas AG Historical and Forecasted Income Statement

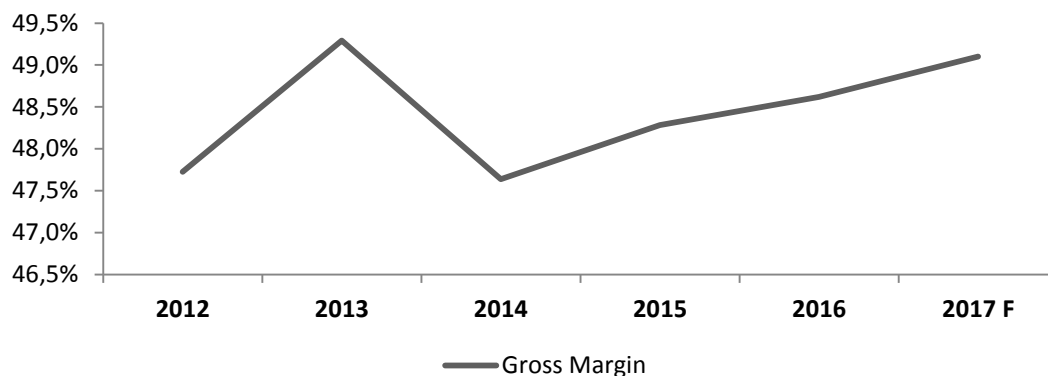
Adidas AG Income Statement (€ Mn)	2012	2013	2014	2015	2016
Net sales	14.883	14.203	14.534	16.915	19.291
Cost of Sales	7.780	7.202	7.610	8.748	9.912
Gross Profit	7.103	7.001	6.924	8.167	9.379
<i>(% of net sales)</i>	47,7%	49,3%	47,6%	48,3%	48,6%
Royalty and comission income	105	103	102	119	109
Other operating income	127	142	138	96	266
Other operating expenses	6.150	6.013	6.203	7.289	8.263
Expenditure for marketing investments	1.502	1.451	1.548	1.886	1.981
Expenditure for point-of-sale investments	304	336	375	462	540
Marketing overhead	445	420	427	554	684
Sales force	1.885	1.815	1.915	2.040	2.237
Logistics	750	753	763	859	967
Research & Development	128	124	126	139	164
Central administration	1.136	1.114	1.050	1.350	1.690
Depreciation/Amortization	266	288	332	357	391
Depreciation	214	234	258	279	303
Impairment losses depreciations related	3	2	16	18	8
Amortization	49	52	58	60	70
Impairment losses amortizations related	0	0	0	0	10
Goodwil impairment losses	265	52	78	34	0
Operating Profit (EBIT)	920	1.181	883	1.059	1.491
<i>(% of net sales)</i>	6,2%	8,3%	6,1%	6,3%	7,7%
Financial income	36	26	19	46	28
Financial expenses	105	94	67	67	74
Income before taxes	851	1.113	835	1.038	1.445
Income taxes	327	340	271	353	426
<i>(% of income before taxes)</i>	38,4%	30,5%	32,5%	34,0%	29,5%
Net income from continuig operations	524	773	564	685	1.019
<i>(% of net sales)</i>	3,5%	5,4%	3,9%	4,0%	5,3%
Gains/(losses) from descontinued operations, net of tax	0	17	(68)	(46)	1
Net income	524	790	496	639	1.020
<i>(% of net sales)</i>	3,52%	5,56%	3,41%	3,78%	5,29%
Net income attributable to shareholders	526	787	490	634	1.017
<i>(% of net sales)</i>	3,53%	5,54%	3,37%	3,75%	5,27%
Net income attributable to non-controlling interests	(2)	3	6	6	2

Adidas AG Income Statement (€ Mn)	2017 F	2018 F	2019 F	2020 F	2021 F	2022 F
Net sales	21.575	23.749	25.723	27.408	28.891	30.411
Cost of Sales	10.982	12.088	13.093	13.951	14.706	15.479
Gross Profit	10.593	11.661	12.630	13.457	14.186	14.932
<i>(% of net sales)</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>
Royalty and comission income	147	162	175	186	197	207
Other operating income	205	226	244	260	274	289
Other operating expenses	9.160	10.082	10.921	11.636	12.266	12.911
Expenditure for marketing investments	2.260	2.488	2.695	2.871	3.027	3.186
Expenditure for point-of-sale investments	540	595	644	686	723	761
Marketing overhead	678	746	808	861	908	955
Sales force	2.687	2.958	3.204	3.414	3.599	3.788
Logistics	1.108	1.220	1.321	1.408	1.484	1.562
Research & Development	184	203	220	234	247	260
Central administration	1.702	1.873	2.029	2.162	2.279	2.399
Depreciation/Amortization	443	487	528	562	593	624
Depreciation	350	385	417	444	468	493
Impairment losses depreciations related	12	13	14	15	16	17
Amortization	78	86	94	100	105	111
Impairment losses amortizations related	2	2	3	3	3	3
Goodwil impairment losses	0	0	0	0	0	0
Operating Profit (EBIT)	1.785	1.965	2.129	2.268	2.391	2.516
<i>(% of net sales)</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>
Financial income	21	19	44	42	75	50
Financial expenses	81	84	89	94	98	103
Income before taxes	1.725	1.900	2.083	2.216	2.367	2.463
Income taxes	569	627	687	731	781	812
<i>(% of income before taxes)</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>
Net income from continuig operations	1.156	1.273	1.396	1.485	1.586	1.651
<i>(% of net sales)</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,5%</i>	<i>5,4%</i>
Gains/(losses) from discontinued operations, net of tax	0	0	0	0	0	0
Net income	1.156	1.273	1.396	1.485	1.586	1.651
<i>(% of net sales)</i>	<i>5,36%</i>	<i>5,36%</i>	<i>5,43%</i>	<i>5,42%</i>	<i>5,49%</i>	<i>5,43%</i>
Net income attributable to shareholders	1.152	1.269	1.392	1.481	1.582	1.647
<i>(% of net sales)</i>	<i>5,34%</i>	<i>5,34%</i>	<i>5,41%</i>	<i>5,40%</i>	<i>5,48%</i>	<i>5,41%</i>
Net income attributable to non-controlling interests	4	4	4	4	4	4

Adidas AG Income Statement (€ Mn)	2023 F	2024 F	2025 F	2026 F	2027 F
Net sales	31.964	33.548	35.159	36.793	38.445
Cost of Sales	16.270	17.076	17.896	18.727	19.568
Gross Profit	15.695	16.472	17.263	18.065	18.876
<i>(% of net sales)</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>	<i>49,1%</i>
Royalty and comission income	217	228	239	250	262
Other operating income	304	319	334	349	365
Other operating expenses	13.571	14.243	14.927	15.620	16.322
Expenditure for marketing investments	3.348	3.514	3.683	3.854	4.027
Expenditure for point-of-sale investments	800	840	880	921	963
Marketing overhead	1.004	1.054	1.104	1.156	1.208
Sales force	3.981	4.179	4.379	4.583	4.788
Logistics	1.642	1.723	1.806	1.890	1.975
Research & Development	273	287	300	314	328
Central administration	2.522	2.646	2.774	2.902	3.033
Depreciation/Amortization	656	688	721	755	789
Depreciation	518	544	570	596	623
Impairment losses depreciations related	18	19	20	21	22
Amortization	116	122	128	134	140
Impairment losses amortizations related	3	4	4	4	4
Goodwil impairment losses	0	0	0	0	0
Operating Profit (EBIT)	2.645	2.776	2.909	3.045	3.181
<i>(% of net sales)</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>	<i>8,3%</i>
Financial income	54	58	61	64	67
Financial expenses	107	112	116	121	125
Income before taxes	2.592	2.722	2.854	2.988	3.123
Income taxes	855	898	941	985	1.030
<i>(% of income before taxes)</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>	<i>33,0%</i>
Net income from continuig operations	1.737	1.824	1.913	2.002	2.093
<i>(% of net sales)</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,4%</i>	<i>5,4%</i>
Gains/(losses) from descontinued operations, net of tax	0	0	0	0	0
Net income	1.737	1.824	1.913	2.002	2.093
<i>(% of net sales)</i>	<i>5,43%</i>	<i>5,44%</i>	<i>5,44%</i>	<i>5,44%</i>	<i>5,44%</i>
Net income attributable to shareholders	1.733	1.820	1.908	1.998	2.088
<i>(% of net sales)</i>	<i>5,42%</i>	<i>5,42%</i>	<i>5,43%</i>	<i>5,43%</i>	<i>5,43%</i>
Net income attributable to non-controlling interests	4	4	4	4	4

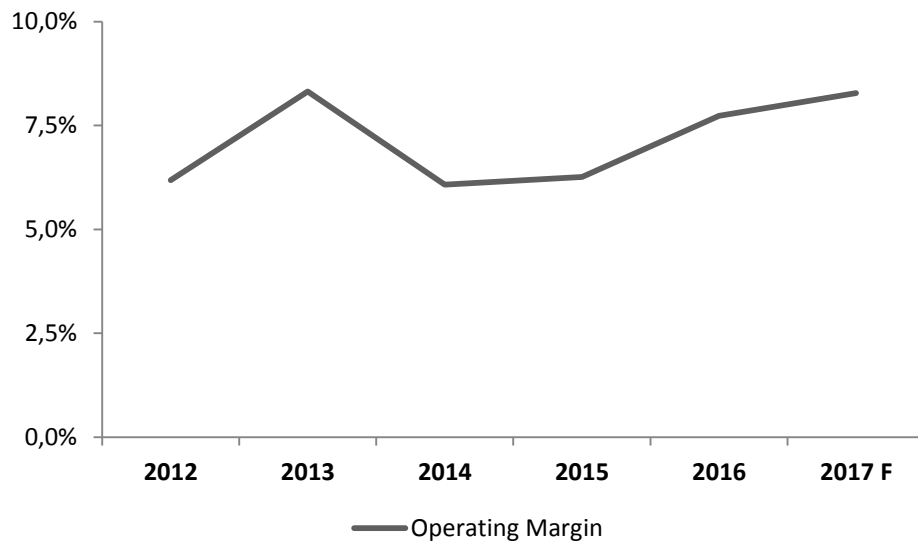
Source: Company Annual Report and Own Analysis

Graph 9 - Historical Adidas AG Gross Margin



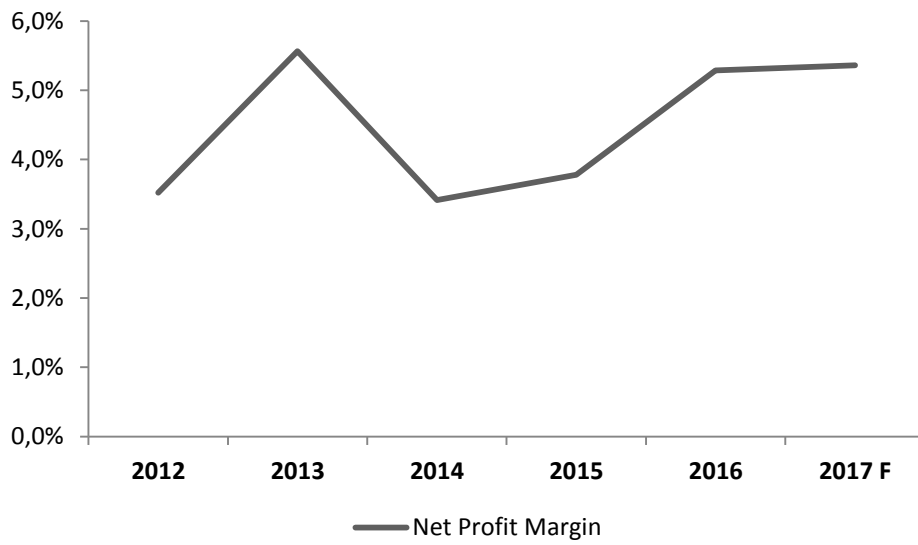
Source: Company Annual Report and Own Analysis

Graph 10 - Historical Adidas AG Operating Margin



Source: Company Annual Report and Own Analysis

Graph 11 - Historical Adidas AG Net Profit Margin



Source: Company Annual Report and Own Analysis

Appendix E – Balance Sheet Forecast Inputs

Table 31 - Inputs for Balance Sheet Forecast

	2012	2013	2014	2015	2016	2017	2018	2019
Income tax receivables / Net Revenues	0,51%	0,61%	0,63%	0,57%	0,51%	0,57%	0,57%	0,57%
Property, plant and equipment - Net / Net Revenues	7,36%	8,72%	10,00%	9,68%	9,93%	9,87%	9,87%	9,87%
Goodwill/Non-Current Assets	26,83%	25,39%	23,06%	23,81%	22,45%	23,11%	23,11%	23,11%
Intangibles, net / Net Revenues	11,09%	11,15%	10,97%	10,74%	9,57%	10,70%	10,70%	10,70%
Trademarks, net / Net Revenues	9,97%	9,99%	9,85%	9,62%	8,71%	9,63%	9,63%	9,63%
Other intangible assets, net / Net Revenues	1,12%	1,15%	1,11%	1,11%	0,87%	1,07%	1,07%	1,07%
Other non-current Assets / Net Revenues	0,58%	0,57%	0,72%	0,73%	0,49%	0,62%	0,62%	0,62%
Other current provisions / Net Revenues	3,78%	3,17%	3,23%	2,70%	2,97%	3,17%	3,17%	3,17%
Income Taxes / Income before taxes	32,31%	21,56%	35,21%	34,59%	27,82%	30,30%	30,30%	30,30%
Pensions and similar obligations / Net revenues	1,69%	1,80%	1,95%	1,61%	1,84%	1,78%	1,78%	1,78%
Other non-current provisions / Net Revenues	0,46%	0,18%	0,27%	0,30%	0,23%	0,29%	0,29%	0,29%
Other non-current Liabilities / Net Revenues	0,23%	0,20%	0,24%	0,24%	0,24%	0,23%	0,23%	0,23%
Non-current accrued liabilities / Net Revenues	0,27%	0,45%	0,56%	0,71%	0,62%	0,52%	0,52%	0,52%
Deferred tax liabilities / Net Revenues	2,47%	2,38%	2,68%	2,18%	2,01%	2,34%	2,34%	2,34%
Other current financial assets / Net Revenues	1,29%	1,29%	2,74%	2,17%	3,78%	2,25%	2,25%	2,25%
Other non-current financial assets / Net Revenues	0,14%	0,21%	0,29%	0,59%	0,50%	0,34%	0,34%	0,34%
Other current financial liabilities / Net Revenues	0,56%	0,80%	0,63%	0,85%	1,04%	0,77%	0,77%	0,77%
Other non-current financial liabilities / Net Revenues	0,11%	0,15%	0,06%	0,11%	0,11%	0,11%	0,11%	0,11%
Long term financial assets / Net Revenues	0,22%	0,28%	0,34%	0,35%	0,59%	0,36%	0,36%	0,36%
Operating Leases Outstanding / Net Revenues	12,08%	11,75%	11,78%	13,00%	12,96%	12,31%	12,31%	12,31%
Short-term debt (Bank borrowings incl. Commercial paper)/ Net Revenues	0,40%	0,89%	1,33%	1,35%	1,96%	1,19%	1,19%	1,19%
Cash and Cash Equivalents / Net Revenues	11,22%	11,17%	11,58%	8,07%	7,83%	5,62%	5,43%	5,86%

	2020	2021	2022	2023	2024	2025	2026	2027
Income tax receivables / Net Revenues	0,57%	0,57%	0,57%	0,57%	0,57%	0,57%	0,57%	0,57%
Property, plant and equipment - Net / Net Revenues	9,87%	9,87%	9,87%	9,87%	9,87%	9,87%	9,87%	9,87%
Goodwill/Non-Current Assets	23,11%	23,11%	23,11%	23,11%	23,11%	23,11%	23,11%	23,11%
Intangibles, net / Net Revenues	10,70%	10,70%	10,70%	10,70%	10,70%	10,70%	10,70%	10,70%
Trademarks, net / Net Revenues	9,63%	9,63%	9,63%	9,63%	9,63%	9,63%	9,63%	9,63%
Other intangible assets, net / Net Revenues	1,07%	1,07%	1,07%	1,07%	1,07%	1,07%	1,07%	1,07%
Other non-current Assets / Net Revenues	0,62%	0,62%	0,62%	0,62%	0,62%	0,62%	0,62%	0,62%
Other current provisions / Net Revenues	3,17%	3,17%	3,17%	3,17%	3,17%	3,17%	3,17%	3,17%
Income Taxes / Income before taxes	30,30%	30,30%	30,30%	30,30%	30,30%	30,30%	30,30%	30,30%
Pensions and similar obligations / Net revenues	1,78%	1,78%	1,78%	1,78%	1,78%	1,78%	1,78%	1,78%
Other non-current provisions / Net Revenues	0,29%	0,29%	0,29%	0,29%	0,29%	0,29%	0,29%	0,29%
Other non-current Liabilities / Net Revenues	0,23%	0,23%	0,23%	0,23%	0,23%	0,23%	0,23%	0,23%
Non-current accrued liabilities / Net Revenues	0,52%	0,52%	0,52%	0,52%	0,52%	0,52%	0,52%	0,52%
Deferred tax liabilities / Net Revenues	2,34%	2,34%	2,34%	2,34%	2,34%	2,34%	2,34%	2,34%
Other current financial assets / Net Revenues	2,25%	2,25%	2,25%	2,25%	2,25%	2,25%	2,25%	2,25%
Other non-current financial assets / Net Revenues	0,34%	0,34%	0,34%	0,34%	0,34%	0,34%	0,34%	0,34%
Other current financial liabilities / Net Revenues	0,77%	0,77%	0,77%	0,77%	0,77%	0,77%	0,77%	0,77%
Other non-current financial liabilities / Net Revenues	0,11%	0,11%	0,11%	0,11%	0,11%	0,11%	0,11%	0,11%
Long term financial assets / Net Revenues	0,36%	0,36%	0,36%	0,36%	0,36%	0,36%	0,36%	0,36%
Operating Leases Outstanding / Net Revenues	12,31%	12,31%	12,31%	12,31%	12,31%	12,31%	12,31%	12,31%
Short-term debt (Bank borrowings incl. Commercial paper)/ Net Revenues	1,19%	1,19%	1,19%	1,19%	1,19%	1,19%	1,19%	1,19%
Cash and Cash Equivalents / Net Revenues	6,73%	8,00%	9,20%	10,45%	11,74%	13,05%	14,42%	15,79%

Source: Own Analysis

Appendix F – Balance Sheet Estimation

Table 32 - Adidas AG Historical and Forecasted Assets

Adidas AG Balance Sheet (€ Mn)	2012	2013	2014	2015	2016	2017	2018	2019
Assets (€ Mn)								
Cash & Equivalents	1.670	1.587	1.683	1.365	1.510	1.212	1.289	1.506
Short Term financial assets	265	41	5	5	5	0	0	0
Accounts Receivable	1.688	1.809	1.946	2.049	2.200	2.460	2.708	2.934
Other current financial assets	192	183	398	367	729	486	535	580
Inventories	2.486	2.634	2.526	3.113	3.763	4.169	4.589	4.971
Income tax receivables	76	86	92	97	98	122	134	146
Other current assets	489	506	425	489	580	649	714	773
Assets classified as held for sale	11	11	272	12	0	0	0	0
Total Current Assets	6.877	6.857	7.347	7.497	8.885	9.098	9.970	10.909
Property, plant and equipment net	1.095	1.238	1.454	1.638	1.915	2.130	2.344	2.539
Goodwill	1.281	1.204	1.169	1.392	1.412	1.412	1.412	1.412
Intangibles	1.651	1.583	1.594	1.816	1.847	2.309	2.542	2.753
Long-term financial assets	112	120	129	140	194	157	165	172
Other non-current financial assets	21	30	42	99	96	74	82	89
Defered tax assets	528	486	577	637	732	819	901	976
Other non-current assets	86	81	105	124	94	133	147	159
Total non-current assets	4.774	4.742	5.070	5.846	6.290	7.034	7.593	8.100
Total Assets	11.651	11.599	12.417	13.343	15.175	16.132	17.563	19.009

Adidas AG Balance Sheet (€ Mn)	2020	2021	2022	2023	2024	2025	2026	2027
Assets (€ Mn)								
Cash & Equivalents	1.845	2.312	2.797	3.341	3.938	4.589	5.306	6.070
Short Term financial assets	0	0	0	0	0	0	0	0
Accounts Receivable	3.126	3.295	3.468	3.645	3.826	4.010	4.196	4.384
Other current financial assets	618	651	685	720	756	792	829	866
Inventories	5.296	5.583	5.877	6.177	6.483	6.794	7.110	7.429
Income tax receivables	155	164	172	181	190	199	208	218
Other current assets	824	869	914	961	1.009	1.057	1.106	1.156
Assets classified as held for sale	0	0	0	0	0	0	0	0
Total Current Assets	11.863	12.873	13.913	15.025	16.201	17.441	18.755	20.123
Property, plant and equipment net	2.706	2.852	3.002	3.155	3.312	3.471	3.632	3.795
Goodwill	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412
Intangibles	2.934	3.092	3.255	3.421	3.591	3.763	3.938	4.115
Long-term financial assets	178	183	188	194	199	205	211	217
Other non-current financial assets	95	100	105	110	116	121	127	133
Deferred tax assets	1.040	1.096	1.154	1.213	1.273	1.334	1.396	1.459
Other non-current assets	169	179	188	198	207	217	227	238
Total non-current assets	8.533	8.914	9.304	9.703	10.110	10.524	10.943	11.368
Total Assets	20.396	21.786	23.217	24.728	26.311	27.965	29.698	31.491

Source: Company report and Own Analysis

Table 33 - Adidas AG Historical and Forecasted Liabilities and Shareholder's Equity

Adidas AG Balance Sheet (€ Mn)	2012	2013	2014	2015	2016	2017	2018	2019
Liabilities (€ Mn)								
Short-term borrowings	280	681	288	366	636	256	282	305
Accounts Payable	1.790	1.825	1.652	2.024	2.496	2.765	3.044	3.297
Other current financial liabilities	83	113	92	143	201	167	184	199
Income Taxes	275	240	294	359	402	523	576	631
Other current provisions	563	450	470	456	573	684	753	815
Current accrued liabilities	1.084	1.147	1.249	1.684	2.023	2.241	2.467	2.672
Other current liabilities	299	276	287	331	434	481	529	573
Liabilities classified as held for sale	0	0	46	0	0	0	0	0
Total Current Liabilities	4.374	4.732	4.378	5.363	6.765	7.117	7.835	8.494
Long-term borrowings	1.207	653	1.584	1.463	982	982	982	982
Other non-current financial liabilities	17	22	9	18	22	24	26	28
Pensions and similar obligations	251	255	284	273	355	384	422	457
Deferred tax liabilities	368	338	390	368	387	429	472	511
Other non-current provisions	69	25	39	50	44	62	68	74
Non-current accrued liabilities	40	64	81	120	120	113	124	134
Other non-current liabilities	34	29	35	40	46	50	55	59
Total non-current liabilities	1.986	1.386	2.422	2.332	1.956	2.042	2.149	2.246
Total Liabilities	6.360	6.118	6.800	7.695	8.721	9.159	9.983	10.739
Shareholders Equity (€ Mn)								
Share capital	209	209	204	200	201	204	204	204
Reserves	641	321	581	592	749	813	813	813
Retained Earnings (Accumulated Deficit)	4.454	4.959	4.839	4.874	5.521	5.972	6.579	7.269
Shareholders' equity	5.304	5.489	5.624	5.666	6.471	6.990	7.596	8.286
Non-controlling interests	(13)	(8)	(7)	(18)	(17)	(17)	(17)	(17)
Total equity	5.291	5.481	5.617	5.648	6.454	6.973	7.579	8.269
Total Liabilities and Equity	11.651	11.599	12.417	13.343	15.175	16.132	17.563	19.009

Adidas AG Balance Sheet (€ Mn)	2020	2021	2022	2023	2024	2025	2026	2027
Liabilities (€ Mn)								
Short-term borrowings	325	343	361	379	398	417	436	456
Accounts Payable	3.513	3.703	3.898	4.097	4.300	4.506	4.716	4.928
Other current financial liabilities	212	224	236	248	260	272	285	298
Income Taxes	671	717	746	785	825	865	905	946
Other current provisions	869	916	964	1.013	1.064	1.115	1.166	1.219
Current accrued liabilities	2.847	3.001	3.159	3.321	3.485	3.652	3.822	3.994
Other current liabilities	611	644	678	712	748	784	820	857
Liabilities classified as held for sale	0	0	0	0	0	0	0	0
Total Current Liabilities	9.049	9.548	10.042	10.555	11.079	11.611	12.151	12.697
Long-term borrowings	982	982	982	982	982	982	992	992
Other non-current financial liabilities	30	32	34	35	37	39	41	42
Pensions and similar obligations	487	514	541	568	596	625	654	684
Deferred tax liabilities	545	574	604	635	667	699	731	764
Other non-current provisions	78	83	87	92	96	101	105	110
Non-current accrued liabilities	143	151	159	167	175	183	192	201
Other non-current liabilities	63	66	70	73	77	81	85	88
Total non-current liabilities	2.329	2.401	2.476	2.552	2.630	2.709	2.800	2.881
Total Liabilities	11.378	11.950	12.518	13.108	13.709	14.321	14.951	15.578
Shareholders Equity (€ Mn)								
Share capital	204	204	204	204	204	204	204	204
Reserves	813	813	813	813	813	813	813	813
Retained Earnings (Accumulated Deficit)	8.018	8.836	9.699	10.620	11.601	12.643	13.747	14.912
Shareholders' equity	9.036	9.854	10.716	11.638	12.619	13.661	14.764	15.929
Non-controlling interests	(17)	(17)	(17)	(17)	(17)	(17)	(17)	(17)
Total equity	9.019	9.837	10.699	11.621	12.602	13.644	14.747	15.912
Total Liabilities and Equity	20.396	21.786	23.217	24.728	26.311	27.965	29.698	31.491

Source: Company report and Own Analysis

Table 34- Exercise of the Convertible Debt Option

Exercise of the Convertible Bond Option			Weight
Debt		(257)	
Equity	Share Capital	3	1%
	Capital Reserve	64	25%
	Retained Earnings	190	74%
Total		0	100%

Table 35 – Adidas AG Eurobonds Market Value

Adidas' Debt Market Value	28-12-2012	30-12-2013	31-12-2014	30-12-2015	30-12-2016
ADSG 2.2500 08-Oct-2026 '26	--	--	99,61%	100,54%	108,23%
ADSG 1.2500 08-Oct-2021 '21	--	--	100,08%	100,40%	103,91%
ADSG 0.2500 14-Jun-2019 CVT P	95,51%	94,40%	98,94%	99,73%	--

Source: Thomson Reuters Terminal

Table 36 - Adidas AG Debt Market Value

Market Value of Debt(€ Mn)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Operating Leases Outstanding	1.798	1.669	1.712	2.199	2.500	2.657	2.924	3.168
Short Term Debt	280	681	288	366	636	256	282	305
Long Term Debt	1.236	665	1.617	1.503	1.056	982	982	982
Total Debt outstanding	3.314	3.015	3.617	4.068	4.192	3.895	4.188	4.455

Market Value of Debt(€ Mn)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Operating Leases Outstanding	3.375	3.558	3.745	3.936	4.131	4.330	4.531	4.734
Short Term Debt	325	343	361	379	398	417	436	456
Long Term Debt	982	982	982	982	982	982	992	992
Total Debt outstanding	4.682	4.882	5.088	5.297	5.511	5.729	5.959	6.183

Source: Thomson Reuters Terminal, Company Report and Own Analysis

Appendix G – Cash Flow Statement Estimation

Table 37 - Adidas AG Forecasted Cash Flow Statement

Adidas's Simplified Cash Flow Statement	2016	2017	2018	2019	2020	2021
Cash Flow-Operating Activities (€ Mn)						
Net Income/Starting Line	1.020	1.156	1.273	1.396	1.485	1.586
Non-Cash Items						
Depreciations, Amortizations and impairment losses	391	443	487	528	562	593
Other Non-Cash Items	229	114	117	106	90	80
Change in net operating assets	(54)	(246)	(220)	(200)	(170)	(150)
Income taxes	42	97	41	44	31	38
Cash from Operating Activities	1.628	1.564	1.698	1.874	1.998	2.146
Cash Flow-Investing Activities (€ Mn)						
Proceeds/(Purchases) of property and equipment	(588)	(577)	(613)	(626)	(626)	(631)
Proceeds/(Purchases) of other assets	(450)	(268)	(358)	(341)	(311)	(292)
Cash from Investing Activities	(1.038)	(844)	(971)	(967)	(937)	(923)
Cash Flow-Financing Activities (€ Mn)						
Issue / Repayment of Debt	(211)	(380)	26	23	20	17
Dividend paid to shareholders	(320)	(361)	(398)	(436)	(464)	(496)
Dividend paid to non-controlling interests	(2)	(4)	(4)	(4)	(4)	(4)
Repurchase of treasury shares	(218)	(273)	(273)	(273)	(273)	(273)
Acquisition of non-controlling interests	0	0	0	0	0	0
Net cash provided by financing activities	(751)	(1.018)	(649)	(690)	(722)	(756)
Cash and Cash Equivalents						
Beggining of period		1.510	1.212	1.289	1.506	1.845
End of period	1.510	1.212	1.289	1.506	1.845	2.312

Adidas's Simplified Cash Flow Statement						
Cash Flow-Operating Activities (€ Mn)	2022	2023	2024	2025	2026	2027
Net Income/Starting Line	1.651	1.737	1.824	1.913	2.002	2.093
Non-Cash Items						
Depreciations, Amortizations and impairment losses	624	656	688	721	755	789
Other Non-Cash Items	82	83	85	86	88	89
Change in net operating assets	(154)	(157)	(160)	(163)	(165)	(167)
Income taxes	21	30	31	31	31	32
Cash from Operating Activities	2.223	2.349	2.468	2.588	2.711	2.834
Cash Flow-Investing Activities (€ Mn)						
Proceeds/(Purchases) of property and equipment	(660)	(689)	(719)	(749)	(778)	(808)
Proceeds/(Purchases) of other assets	(302)	(312)	(322)	(331)	(340)	(349)
Cash from Investing Activities	(962)	(1.002)	(1.041)	(1.080)	(1.118)	(1.156)
Cash Flow-Financing Activities (€ Mn)						
Issue / Repayment of Debt	18	18	19	19	30	20
Dividend paid to shareholders	(517)	(544)	(572)	(599)	(628)	(656)
Dividend paid to non-controlling interests	(4)	(4)	(4)	(4)	(4)	(4)
Repurchase of treasury shares	(273)	(273)	(273)	(273)	(273)	(273)
Acquisition of non-controlling interests	0	0	0	0	0	0
Net cash provided by financing activities	(776)	(803)	(830)	(858)	(875)	(914)
Cash and Cash Equivalents						
Begging of period	2.312	2.797	3.341	3.938	4.589	5.306
End of period	2.797	3.341	3.938	4.589	5.306	6.070

Source: Own Analysis

Appendix H– Net Working Capital

Table 38 - Historical and Forecasted Adidas AG Net Working Capital

Net Working Capital (€ Mn)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F
Accounts Receivable	1.688	1.809	1.946	2.049	2.200	2.460	2.708	2.934
Days Sales Outstanding (DSO1)	41	46	49	44	42	42	42	42
Inventories	2.486	2.634	2.526	3.113	3.763	4.169	4.589	4.971
Days inventory held (DIH)	117	133	121	130	139	139	139	139
Other Current Assets	489	506	425	489	580	649	714	773
Days Sales Outstanding (DSO2)	12	13	11	11	11	11	11	11
Deferred tax Assets	528	486	577	637	732	819	901	976
Days Sales Outstanding (DSO3)	13	12	14	14	14	14	14	14
Accounts Payable	1.790	1.825	1.652	2.024	2.496	2.765	3.044	3.297
Days Payable Outstanding (DPO1)	84	92	79	84	92	92	92	92
Current Accrued Liabilities	1.084	1.147	1.249	1.684	2.023	2.241	2.467	2.672
Days Payable Outstanding (DPO2)	51	58	60	70	74	74	74	74
Other Current Liabilities	299	276	287	331	434	481	529	573
Days Payable Outstanding (DPO3)	14	14	14	14	16	16	16	16
Deferred Tax Liabilities	368	338	390	368	387	429	472	511
Days Sales Outstanding (DPO4)	17	17	19	15	14	14	14	14
Total Working Capital	1.650	1.849	1.896	1.881	1.935	2.181	2.400	2.600
<i>(% of net sales)</i>	<i>11,1%</i>	<i>13,0%</i>	<i>13,0%</i>	<i>11,1%</i>	<i>10,0%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>
Changes in Working Capital		199	47	(15)	54	246	220	200

Net Working Capital (€ Mn)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Accounts Receivable	3.126	3.295	3.468	3.645	3.826	4.010	4.196	4.384
Days Sales Outstanding (DSO1)	42	42	42	42	42	42	42	42
Inventories	5.296	5.583	5.877	6.177	6.483	6.794	7.110	7.429
Days inventory held (DIH)	139	139	139	139	139	139	139	139
Other Current Assets	824	869	914	961	1.009	1.057	1.106	1.156
Days Sales Outstanding (DSO2)	11	11	11	11	11	11	11	11
Deferred tax Assets	1.040	1.096	1.154	1.213	1.273	1.334	1.396	1.459
Days Sales Outstanding (DSO3)	14	14	14	14	14	14	14	14
Accounts Payable	3.513	3.703	3.898	4.097	4.300	4.506	4.716	4.928
Days Payable Outstanding (DPO1)	92	92	92	92	92	92	92	92
Current Accrued Liabilities	2.847	3.001	3.159	3.321	3.485	3.652	3.822	3.994
Days Payable Outstanding (DPO2)	74	74	74	74	74	74	74	74
Other Current Liabilities	611	644	678	712	748	784	820	857
Days Payable Outstanding (DPO3)	16	16	16	16	16	16	16	16
Deferred Tax Liabilities	545	574	604	635	667	699	731	764
Days Sales Outstanding (DPO4)	14	14	14	14	14	14	14	14
Total Working Capital	2.770	2.920	3.074	3.231	3.391	3.554	3.719	3.886
<i>(% of net sales)</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>	<i>10,1%</i>
Changes in Working Capital	170	150	154	157	160	163	165	167

Source: Company Annual Report and Own Analysis

$$DSO1 = \frac{\text{Accounts Receivable}}{\text{Net Revenues}} \times 365$$

$$DSO2 = \frac{\text{Other Current Assets}}{\text{Net Revenues}} \times 365$$

$$DSO3 = \frac{\text{Deferred Tax Assets}}{\text{Net Revenues}} \times 365$$

$$DIH = \frac{\text{Inventories}}{\text{Cost of Sales}} \times 365$$

$$DPO1 = \frac{\text{Accounts Payables}}{\text{Cost of Sales}} \times 365$$

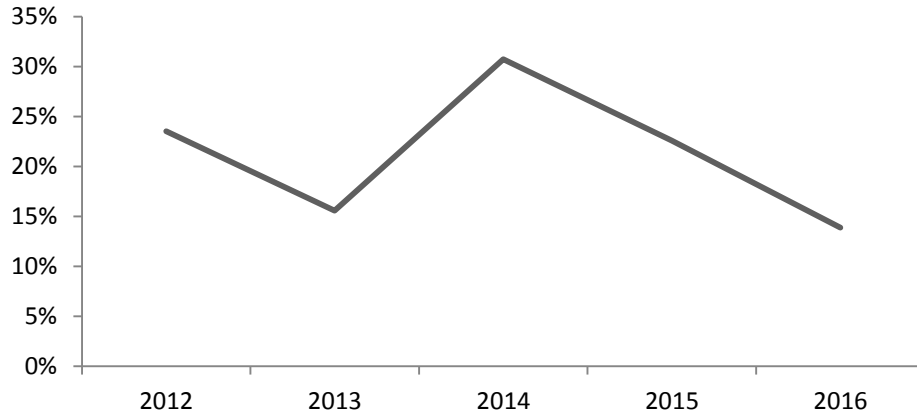
$$DPO2 = \frac{\text{Current Accrued Liabilities}}{\text{Cost of Sales}} \times 365$$

$$DPO3 = \frac{\text{Other Current Liabilities}}{\text{Cost of Sales}} \times 365$$

$$DPO4 = \frac{\text{Deferred Tax Liabilities}}{\text{Cost of Sales}} \times 365$$

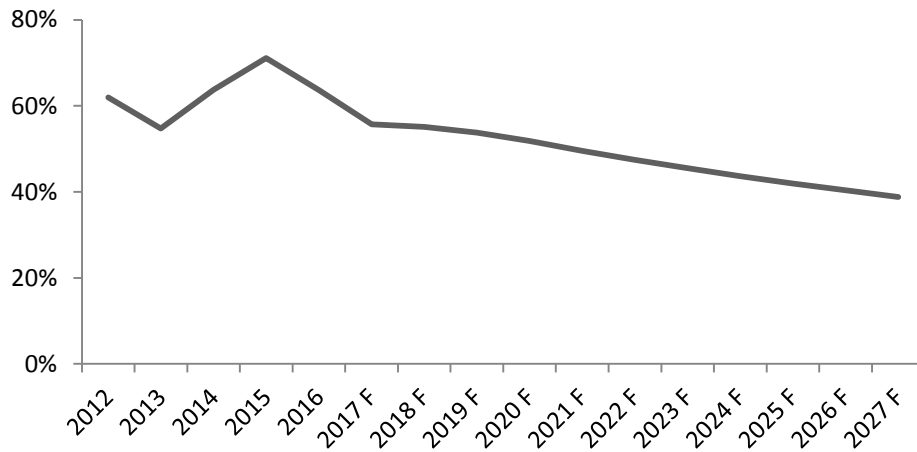
Appendix I – Adidas AG Historical Capital Structure

Graph 12 - Adidas AG Debt to Equity Ratio at Market Values



Source: Thomson Reuters Terminal, Company Report and Own Analysis

Graph 13 - Adidas AG Debt to Equity Ratio at Book Values



Source: Company Report and Own Analysis

Appendix J – Adidas AG APV Valuation

Table 39 - APV Forecasted Cash Flows Valuation

(€ Mn)	2016	2017	2018	2019	2020	2021
ku	5,86%					
FCFF	391	628	652	683	702	723
FCFF - Discounted Value	391	593	582	576	559	544
Present Value of Discounted FCFF	6.381					

(€ Mn)	2022	2023	2024	2025	2026	2027
ku						
FCFF	759	795	831	868	906	943
FCFF - Discounted Value	539	534	527	520	512	504

Source: Own Analysis

Table 40 - APV Tax Shields Valuation

Present Value of Tax Shields	2016	2017	2018	2019	2020	2021
Interests Paid	(74)	(81)	(84)	(89)	(94)	(98)
Effective Tax rate	29,48%	32,98%	32,98%	32,98%	32,98%	32,98%
Tax Shield	22	27	28	29	31	32
Discounted Tax Shield	22	26	27	28	29	30
PV of Discounted Tax shields	363					

Present Value of Tax Shields	2022	2023	2024	2025	2026	2027
Interests Paid	(103)	(107)	(112)	(116)	(121)	(125)
Effective Tax rate	32,98%	32,98%	32,98%	32,98%	32,98%	32,98%
Tax Shield	34	35	37	38	40	41
Discounted Tax Shield	31	32	33	34	35	36

Source: Own Analysis

Table 41 - Probability of Default Associated to Rating

10 Years				
	Moody's		S&P	Fitch
Aaa	0,40%	AAA	0,45%	0,37%
Aa1	0,25%	AA+	0,34%	0,47%
Aa2	0,67%	AA	0,77%	0,68%
Aa3	0,33%	AA-	1,11%	0,91%
A1	0,84%	A+	1,68%	1,36%
A2	1,69%	A	1,80%	1,78%
A3	1,69%	A-	2,44%	1,91%
Baa1	2,31%	BBB+	4,65%	3,82%
Baa2	5,49%	BBB	5,27%	5,61%
Baa3	7,20%	BBB-	8,97%	8,23%
Ba1	12,39%	BB+	11,74%	12,26%
Ba2	14,69%	BB	17,34%	17,08%
Ba3	36,24%	BB-	24,97%	30,27%
B1	47,43%	B+	30,15%	38,18%
B2	44,48%	B	38,29%	41,06%
B3	62,32%	B-	45,05%	53,69%
Caa-C	78,81%	CCC/C	66,46%	65,07%

Source: Bloomberg

Table 42 – Other Adjustments from Enterprise to Equity Value

Other Adjustments € (Mn)	31-12-2016
Minority Interests	(17)
Investments in associates	144
Other current financial assets / liabilities	(127)
Pensions and similar obligations	(250)
Assets / liabilities held for sale	0
Total Financial Assets Value	(250)

Source: Company Report and Own Analysis

Appendix K – Adidas AG Multiples Valuation Inputs

Table 43 - Comparable Companies

Company Data	Industry
Adidas AG	Sportswear
Nike Inc	Sportswear
VF Corp	Apparel and Footwear
Puma SE	Sportswear
Amer Sports	Apparel and Footwear
Asics	Sportswear
Li-ning	Sportswear
Under Armour	Sportswear
Lululemon	Apparel Retailer
Columbia	Apparel
Skechers	Footwear
Hugo Boss	Fashion Retail
LVMH	Luxuary Goods
Zalando	Online Retailer
Foot Locker	Apparel and Footwear

Source: Thomson Reuters Terminal, and Own Analysis

Table 44 - Multiples Cluster Analysis

Company	Distance to the center	Peer Group	Distance
Adidas AG	0,00	Columbia	0,76
Nike Inc	1,44	Amer Sports	0,96
VF Corp	2,80	Nike Inc	1,44
Puma SE	1,74	Puma SE	1,74
Amer Sports	0,96	Asics	1,84
Asics	1,84	Foot Locker	2,18
Li-ning	7,44		
Under Armour	2,92		
Lululemon	7,11		
Columbia	0,76		
Skechers	4,84		
Hugo Boss	3,92		
LVMH	7,74		
Zalando	8,92		
Foot Locker	2,18		

Source: Own Analysis

Table 45 - Peer Group's Detailed Information

Peer Group	Market Value	Enterprise Value	Trailing EBITDA	Trailing EBIT	Trailing Sales	Price/share (29/04/2017)	Earnings/share (Diluted)	Earnings growth
Columbia	3.934	3.368	317	257	2.377	56,62	2,77	7,11%
Amer Sports	2.622	3.240	278	215	2.757	22,17	1,24	5,58%
Nike Inc	91.675	88.886	5.164	4.502	32.376	55,41	2,40	8,20%
Puma SE	5.878	5.465	197	134	3.813	390,53	6,29	7,02%
Asics	3.543	3.368	299	218	3.415	17,70	0,72	5,38%
Foot Locker	10.150	9.231	1.170	1.012	7.766	77,34	4,83	4,53%

Source: Thomson Reuters Terminal and Own Analysis

Appendix L – Sensitivity Analysis Dividend Discount Model

Table 46 - Sensitivity Analysis to Ke, long-term growth rate, risk-free rate and Dividend payout ratio

APV	-0,30%	-0,20%	-0,10%	Base Case	0,10%	0,20%	0,30%
Sensitivity to Ke	6,10%	6,20%	6,30%	6,40%	6,50%	6,60%	6,70%
Diluted Stock Valuation	105,42	99,88	94,92	90,46	86,43	82,76	79,42
Comparison to Base Case Value	16,53%	10,41%	4,93%	0,00%	-4,46%	-8,51%	-12,21%

APV	-0,30%	-0,20%	-0,10%	Base Case	0,10%	0,20%	0,30%
Sensitivity to Long-term growth	4,05%	4,15%	4,25%	4,35%	4,45%	4,55%	4,65%
Diluted Stock Valuation	82,82	85,14	87,68	90,46	93,53	96,94	100,73
Comparison to Base Case Value	-8,45%	-5,89%	-3,08%	0,00%	3,39%	7,16%	11,35%

APV	-0,15%	-0,10%	-0,05%	Base Case	0,05%	0,10%	0,15%
Sensitivity to Risk-Free Rate	0,145%	0,195%	0,245%	0,295%	0,345%	0,395%	0,445%
Diluted Stock Valuation	97,34	94,92	92,64	90,46	88,40	86,43	84,55
Comparison to Base Case Value	7,60%	4,93%	2,40%	0,00%	-2,28%	-4,46%	-6,53%

APV	-7,50%	-5,00%	-2,50%	Base Case	2,50%	5,00%	7,50%
Sensitivity to Dividend Payout Ratio	24,07%	26,57%	29,07%	31,57%	34,07%	36,57%	39,07%
Diluted Stock Valuation	76,11	80,89	85,68	90,46	95,25	100,03	104,82
Comparison to Base Case Value	-15,87%	-10,58%	-5,29%	0,00%	5,29%	10,58%	15,87%

Source: Own Analysis

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