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Equity Valuation

Under Armour

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Abstract

The present dissertation aims to value Under Armour, an American sportswear company. Since Valuation is not an exact science, during the literature review will be presented several valuation methods. Most of the authors mention DCF Valuation as one of the best but it seems impossible for them to reach a consensus about which one is in fact the best.

In order to get Under Armour's target price, a DCF valuation will be made and accompanied by a Relative Valuation that, when it is properly used, it can perform the perfect complement.

In the end, a comparison between the dissertation's result and JP Morgan report will be made. In January 2016, JP Morgan was predicting a target price of \$90 per share.

Abstrato

A presente dissertação tem como objetivo avaliar a Under Armour, uma empresa americana de têxtil desportivo. Uma vez que uma avaliação não é uma ciência exata, durante a revisão de literatura serão apresentados alguns métodos de avaliação. Para muitos autores uma avaliação feita através do DCF é considerada como uma das melhores, mas parece impossível para os mesmos chegar a um consenso sobre que é realmente o melhor método.

Para chegar ao preço final da Under Armour, uma avaliação usando o DCF irá ser feita e acompanhada por uma avaliação por múltiplos que quando usada adequadamente, pode desempenhar o papel de perfeito complemento para a primeira.

No final irá ser realizado uma comparação entre o resultado obtido na dissertação e o relatório feito pela JP Morgan. Em Janeiro de 2016 a JP Morgan estava a prever um preço final de \$90 por ação.

Acknowledgments

From the beginning, this dissertation was a huge challenge. New concepts were acquired, a lot of research was made but in the end, I'm really happy with the output. It was not an easy path to walk but it was definitely one of the most important in my life. This is my last work in Católica-Lisbon SBE and probably the last one as an academic student. I'm sure that I did my best, but without some people that helped me during this stage, this work would not be possible.

Primarily I would like to thank my advisor, Professor Henrique Bonfim. He was definitely the biggest help that I had during dissertation. For every single doubt and question I had he was absolutely helpful and always pushed me up to work more and better. Additionally, I would like to mention my friends that helped me any time and my family, specially my mother for all the support.

Executive Summary

Under Armour is a sportswear and technological company based in Baltimore, U.S.A. It was founded in 1996 by Kevin Plank, a former American football player. The idea was basic, create a t-shirt that would allow to keep the athletes' body fresh and dry. Keeping the athletes performance improvement in mind, Under Armour has changed from a simple apparel company into a technological sportswear one. Plank keeps changing the way athletes dress, but now using as complement the Connected Fitness Platform.

The sportswear industry has been increasing in the last years. People are getting more concerned about their condition and they are trying to keep a healthier lifestyle. This allowed companies like Under Armour or Nike to improve and expand their business. Being considered as discriminatory items, the biggest risk for these companies is that economic environment change drastically and people stop buying their products.

Having a strong presence in its home market, North America, Under Armour wants to increase its international presence. Its Strategic plan has the objective to boost this internationalization process and reach \$7,5 billion in revenues by 2018. The company also expect to start getting some return with its Connected Fitness platform, after the huge investment made in the last year. In its portfolio of athletes, Under Armour has famous names like Michael Phelps, Andy Murray or Stephen Curry, having the last one a huge impact in the premium sneakers sales.

Company:

Under Armour

Industry:

Apparel & Accessories

Price at 23/08/2016

\$43,59

Target Price:

\$94,58

Recommendation

BUY

J.P Morgan Target Price

\$90

Shares Outstanding

223 Million



Table of Contents

Literature Review	1
Valuation	1
Discounted Cash Flow Methods	2
Equity Valuation	3
Dividend Discount Model	4
Firm Valuation (FCFF)	5
APV	6
Excess Return Models	8
EVA	8
Relative Valuation	8
Peer Group	9
Multiples	10
Earnings Multiples	10
Book Value or Replacement Value Multiples	11
Enterprise Value Multiples	11
Sector-Specific Multiples	11
Options	12
Cost of Capital	13
Cost of Equity	13
Cost of Debt	13
Beta	14
Risk Free and Risk Premium	15
WACC	16
Terminal Value	16
Company Overview	18
History	18
Product Segments	19
Apparel	19
Footwear and Accessories	19
License and Connected Fitness	19
Business Metrics	20
Strategy	22
Industry Overview	24
Industry Evolution and Market Players	24

Risk Factors	26
Market Trends	27
Valuation	28
Explicit Period	28
Revenues Estimation	28
Under Armour Estimations	29
Bloomberg Estimations	29
Market Estimations	30
GDP Estimations	30
Forecasts	31
COGS and S&A costs estimation	31
CAPEX	33
Depreciation & Amortization	33
Changes in NWC	35
WACC Calculation	35
Capital Structure	36
Cost of Equity	36
Risk-Free	36
Beta	37
Market Risk-Premium	37
Cost of Debt	37
Tax Rate	37
Growth Rate	38
Net Debt	38
DCF Analysis	39
Sensitivity Analysis	40
DCF Conclusion	41
Relative Valuation	42
Peer Group	42
Multiples Valuation	43
Investment Bank Comparison	45
Conclusion	47
Appendices	49
Appendix A-Company Overview	49
Appendix B-Industry Overview	55
Appendix C-Macroeconomic Overview	56

Appendix D-Valuation 58
Appendix E-APV 62
References 64

Literature Review

Valuation

“Valuation lies at the heart of much of what we do in finance, whether it is the study of market efficiency and questions about corporate governance or the comparison of different investment decision rules in capital budgeting.”

Damodaran (2006)

The valuation process is not easy and many times can be problematic. Damodaran (2006) states that there are some aspects of the valuation that are profoundly analysed, such as risk management, and others like how to best predict the future cash flows and the reconciliation of different types of models that are not having the appropriate attention.

There are many different valuation tools, which, according with Damodaran (2006) can be divided, in four different categories.

- Discounted Cash Flow: the value of the company's assets is linked to the present value of future cash flows and it will be given a special attention to this category during the dissertation.
- Liquidation and accounting valuation: take in consideration the accounting estimations of value or book value to make the assets valuation.
- Relative Valuation, where the price of the company's assets is compared using different variables such as earnings, sales, book value or cash flow with “peer” companies.
- Contingent claim valuation: Uses options in order to estimate the value of the assets.

Fernandez (2015) has a different opinion and instead of dividing the valuation methods in 4 different categories, he believes that it should be done in six distinct groups. These six categories are, in a certain part, similar to the Damodaran (2006) approach. According to Fernandez (2015), the valuation of the company can be done using the Balance Sheet, Income Statement, Mixed (Goodwill), Cash Flow Discounting, Value Creation or Options.

Valuation is a function of cash, timing and risk (Luerhman 1997). Company's resource-allocation decisions are extremely important and valuation is a key tool for this aspect. It is important for managers and analysts to use the method that fits the most the characteristics of the company and the different type of strategic decisions that they are involved (Luerhman 1997).

Discounted Cash Flow Methods

Discounted Cash Flow (DCF) Method is a valuation technique where the value of the company is the result of the expected future cash flows discounted at the rate that represents the flows' risk (Fernandez 2015). According to Goedhart et al. (2005), DCF is the most precise and adaptable valuation method.

In order to proceed with this type of valuation, usually managers follow an approach where two different steps are regarded. Primarily the business cash flow are predicted and then they are adjusted to pick up every value that was formed or demolished by the financing program (Luerhman 1997).

$$V = \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \dots + \frac{CF_n + TV_n}{(1+k)^n}$$

Where:

CF_i = cash flow generated in period i | TV_n = Residual/Terminal Value | k = discounted rate

The general formula for the Discounted Cash Flow methods is represented above. The Terminal Value "is the Net Present Value of all future cash flows that accrue after the time period that is covered by the scenario analysis" (Steiger 2008). Given that, the Terminal Value covers a long period of time, it is forecasted assuming a constant growth (g) rate of future cash flows after the considered period (Fernandez 2015).

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

The DCF's results depend on its assumptions. Different assumptions will incur in different results. Assumptions have to be treated very carefully and it should have strong fundamentals and basis to be consistent. Generally they are based on historical statistics and also might take

in consideration firm's strategic plan, the industry and many others risk factors (Steiger 2008).

There are many distinct DCF methods, but those that will be clarified in this paper are Free Cash Flow to Equity, Dividend Discount Model, Free Cash Flow to Firm and Adjusted Present Value.

Equity Valuation

Understanding that there is a difference between Firm Value and Equity value is just the beginning. Equity value can be calculated extracting from the value of the company the market value of the outstanding debt (Damodaran 2006). Basically, the Equity Valuation values the company for its shareholders whereas the firm value refers to the whole enterprise, which means, equity but also debt is considered (Young et al. 1999).

According to Damodaran (2006), valuing a traded enterprise using the Free Cash Flow to Equity (FCFE) model is essentially the same as treat this firm as a private one. Using the FCFE is indirectly supposing that the money will be given to shareholders.

“The money that goes from the cash of the company to the pockets of the shareholders”

Fernandez (2015)

$$FCFE = Net\ Income + Depreciation - CAPEX - \Delta\ non\ cash\ NWC \\ - (New\ Debt\ Issued - Debt\ repayments)$$

Once the FCFE is estimated, the Net Present Value of these future cash flows has to be computed. As a result, the equity value will be a function of expected future FCFE and a discounted rate that in this case will be the cost of equity. The cost of equity can be described as the rate of return required by equity investors in the firm (Damodaran 2002).

$$Equity\ Value = \sum_{t=1}^{t=n} \frac{FCFE_t}{(1 + K_e)^t}$$

The formula above can take a different format if a constant growth rate is assumed from the beginning. In this case, in order to reach the Value of the Equity, the FCFE has to be discounted at the difference of the required rate of return (K_e) and the constant growth rate (g) (Damodaran 2006).

$$\text{Equity Value} = \frac{\text{Expected FCFE}_1}{K_e - g}$$

According to Fernandez (2015), there are two different techniques to compute the cost of Equity:

- The Capital Asset Pricing Model (CAPM)

$$K_e = R_f + \beta(R_m - R_f)$$

Since it will be the one used in this dissertation, a detailed explanation about this technique is written in the Cost of Capital Section.

- Gordon and Shapiro's constant growth valuation model

$$K_e = (\text{Div}_1/P_0) + g$$

In this case, to calculate the cost of equity, the dividends in year one (Div_1) must be divided by the current share price (P_0) and then, the constant and sustainable growth rate of the dividends (g) is added.

Dividend Discount Model

The Dividend Discount Model is the oldest discounted cash flow used to value a company (Damodaran 2006). It is one of the simplest methods to calculate the Equity's value of a company. The share value is basically the expected present value of the dividends that will be paid (Damodaran 2002).

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

Where:

$E(DPS_t)$ = Expected dividends per share in period t | k_e = Cost of Equity

The expected dividends per share will be discounted at the cost of equity that, as it was showed before, can be computed using CAPM or the Gordon and Shapiro's approach. In order to predict the dividends, it is necessary to make specific assumptions about pay-out ratios and growth rate

(Damodaran 2006).

The Gordon growth model is a version of this general model. In this model is made the assumption that the company is in “steady state”, which means that the company is in equilibrium and a constant growth rate can be settled.

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

$$DPS_1 = DPS_0 \times (1 + g)$$

In this specific case, the equation gains the form of a perpetuity and the expected dividend per share in year one (DPS_1) will be discounted at a cost of equity adjusted for the perpetual growth rate.

Assuming a constant growth rate is better when a stable and mature company is being analysed, otherwise, in cases such as companies with cyclical or more inconsistent earnings it is harder to find a consensus for the terminal growth rate. In these cases a more sophisticated and advanced model has to be used to provide a better and more precise valuation of the share value (Farrell 1985). Despite of the fact of Under Armour is not a mature company at this time, at the end of the explicit period it will be and that is why it will be used a constant growth rate in this dissertation.

Firm Valuation (FCFF)

In the last two sections of this chapter, it was presented how to calculate the equity value. The Enterprise Value of the firm can be calculated adding to the Equity value, the company's Debt and deducting the Excess Cash.

The Free Cash Flow to the Firm (FCFF) measures the firm's performance after all expenses and reinvestments. According to Damodaran (2002) there are two different ways to compute the FCFF. The first is driven from the FCFE

$$\begin{aligned} FCFF = FCFE + \text{Interest Expense}(1 - \text{tax rate}) + \text{Principal Repayments} \\ - \text{New Debt Issues} + \text{Preferred Dividends} \end{aligned}$$

and the second uses the EBIT as starting point

$$FCFF = EBIT(1 - \text{tax rate}) + \text{Depreciation} - \text{CAPEX} - \Delta NWC$$

Being a DCF method, the FCFF has to be discounted. For this case, the appropriate discounted rate that must be used is the Weighted Cost of Capital (WACC).

The WACC provides the cost that the company might incur to finance its activities assuming a specific capital structure. The costs and benefits of firm's capital structure and similarly the tax shield effect are considered when the WACC is calculated. The WACC will discuss in more detail later in this dissertation.

$$\text{Firm Value} = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1 + WACC)^t}$$

The formula above yields the Firm Value, discounting the FCFF, starting on the next year, at the WACC rate. The equation can also be transformed into a perpetuity if a constant growth rate that is lower than the interest rate is assumed. In that case, the FCFF has to be divided by the WACC rate minus the constant growth rate.

$$\text{Firm Value} = \frac{FCFF_1}{WACC - g}$$

APV

“Today's better alternative for valuing a business operation is to apply the basic DCF relationship to each of a business's various kinds of cash flow and then add up the present values. This approach is most often called Adjusted Present Value.”

Luerhman (1997)

Stewart Myers (1974) states that this valuation method looks, not only to “real” cash flows (revenues, CAPEX and cash operating costs) but also to “side effects” associated with financing.

APV application starts by estimating the value of the firm without debt. Once the debt is added, the benefits and costs of borrowing money have to be also measured. Increasing the leverage will bring consequences since the capital structure is changing. Levered companies benefit from a tax shield since interest expenses are tax deductible, but on other hand, the bankruptcy risk increases. (Damodaran 2006)

$$\begin{aligned} \text{Firm Value} &= \text{Value of the Business with 100\% equity financing} + \text{PV Tax Shield} \\ &\quad - \text{Expected Bankruptcy Costs} \end{aligned}$$

The formula above provides the different steps needed to compute the firm value using the APV method. The Value of the Business with 100% equity financing may be computed discounting the expected FCFF to the company's unlevered cost of equity. Secondly, the Present Value of Tax Shield appears as a function of the product of three different variables: Tax Rate, Interest Rate and Debt.

$$PV \text{ Tax Shield} = \sum_{t=1}^{t=n} \frac{\text{Tax Rate}_t * \text{Interest Rate}_t * \text{Debt}_t}{(1 + r)^t}$$

The estimation of these three variables might cause some difficulties. Primarily, since it is hard to predict if it will change or not, the Tax Rate used to compute the benefit should be reasonable. The reason why the Debt value also brings some problems is the possibility of variation over time. The last variable, the interest rate, is the one who created more debate between authors, especially between Fernandez (2004) and Cooper and Nyborg (2006). The first states that the value of the levered company, with the interest tax saving, minus the value of the firm without leverage will be equal to the Value of Tax Shield. Cooper and Nyborg totally disagree with Fernandez and argue that the Value of Tax Shield is the result of the present value of interest tax savings, using the cost of debt to discount it.

$$\begin{aligned} &\text{Present Value of Expected Bankruptcy cost} \\ &= \text{Probability of Bankruptcy} * \text{PV of Bankruptcy Cost} \end{aligned}$$

The Present Value of Expected Bankruptcy cost is the final part of the APV formula. In order to calculate it, the probability of default has to be multiplied by the PV of Bankruptcy cost. Damodaran (2002) explained that there are two distinct ways to estimate the default's probability. The first basically is based on the bonds rating. According to the level of debt, a rating is provided and the probability is estimated. The second uses a statistical approach, based on company's features at a certain level of debt. The Bankruptcy Cost itself can be divided in direct and indirect. Evidence shows that direct costs (fees paid, accountants, etc.) just represent 5% of the firm's value (Warner, J.N. 1977). The biggest problem is the indirect costs associated with it. The impact of these costs on the firm's value is much higher than the direct and its

consequences can be catastrophic. “The perception of distress can do serious damage to a firm’s operations, as employees, customers, suppliers and lenders react.”(Damodaran 2006).

Excess Return Models

EVA

Economic Value Added or just EVA is used to estimate the profit of an investment or a portfolio of investments. Since EVA is an Excess Return Model means that the earnings and growth will only be significant when excess returns are produced.

$$EVA = \text{After tax operating Income} - (\text{Cost of Capital})(\text{Capital Invested})$$

Excess Return Models are based in the NPV approach. Damodaran (2006) argues that the

“Connection between economic value added and NPV allows us to link the value of a firm to the economic value added by that firm.”

In order to get the firm value, three distinctive components have to be considered: the capital that was invested, the NPV of the Economic Value added by this assets where the money was invested and the present value of the EVA that is expected to be generated by future investments. The sum of these three elements will permit the calculation of the firm value.

$$Firm\ Value = Capital\ Invested_{AiP} + \sum \frac{EVA_{tAiP}}{(1 + k_c)^t} + \sum \frac{EVA_{tFP}}{(1 + k_c)^t}$$

If the assumptions are reliable regarding the growth rate and the reinvestment measures, Damodaran (2006) affirms that the firm value using an Excess Return Model may be equal to the one using a DCF approach.

Relative Valuation

Relative Valuation uses multiples to process the firm value. Multiples are essential but not the only part of Relative Valuation. Finding similar firms, known as peer group, is the second part

of this “equation”.

The ultimate goal of Relative Valuation is valuing a firm’s assets, using similar companies that are quoted on the market. These similar companies are associated to peer group firms that, despite being identical, have variables (such as growth rate or risk) that can be different. (Damodaran 2002)

Goedhart et al. (2005) states that “properly executed multiples can make financial forecasts more accurate”. Relative Valuation can be a very important complement to other valuation methods like DCF.

Multiples are a quite simple and efficient way to value a company. Just a Relative Valuation might not be enough to reach a precise value, but it’s contribute is particularly important. Since it measures the relative value and not the intrinsic one, the multiples valuation will give a better representation of the market trends. (Damodaran 2002)

Many times multiples are not applied correctly. Goedhart et al. (2005) provide three principles that will make the Relative Valuation more exact:

- Use similar ROIC to choose the peers,
- Use forward and enterprise multiples,
- The enterprise-value multiples for non-operating multiples should be adjusted.

Peer Group

As it was mentioned before, the Peer Group is the set of enterprises with similar characteristics to the company that will be valued. In this particular aspect, cash flow, growth potential and risk are important components that have to be taken in consideration. (Damodaran 2006)

There are specific criteria to choose the comparable companies. Analysts tend to start with the company’s industry. Both, Goedhart et al. (2005) and Damodaran (2006) consider the concept of industry is loosely defined. Analysing the company’s industry will result in large and diversified peer group. To overcome this problem, the business should be precisely defined to start restricting the number of peer companies. Goedhart et al. (2005) suggest to use the annual reports, but the SIC codes published by US government or the Global Industry Classification Standard (GICS) processed by Morgan Stanley are a good alternatives.

After using this first filter to limit the number of the companies in the peer group, more measures should be used to have a better and more precise group. Once again, growth rate and risk are important fundamentals that must be reflected in the process. The ROIC is also a crucial factor and it needs special attention. If companies' strategy will result or not in a higher ROIC and growth rates, this will have an impact in the multiples.

Defining the peers is not an easy and consensual decision. It is important to choose those that will better represent the company's industry and financial performance to represent a better and more accurate valuation result.

In this work it will be possible to see how the peers were chosen and the multiples applied.

Multiples

When a Relative Valuation is being used, the concept of standardization is essential. Companies have different sizes and its assets have different values. The values should appear as a proportion of a common variable. According to Damodaran (2006), generated earnings, book values and replacement values are the most common variables used to standardize.

Goedhart et al. (2005) claim that forward multiples should be used. They will provide better projections of the value of the company. If this is not possible, the author suggests to use the most updated data to compute the multiples.

According to Damodaran (2002) multiples can be described in four different categories that will be presented in this dissertation.

Earnings Multiples

This type of multiple covers the earnings generated by the asset.

$$\frac{\textit{Price}}{\textit{Earnings}}$$

The formula above shows the current share price, over the earnings generated. These earnings could be the current ones, but if the Forward P/E is assumed, the expected earnings per share should be used. When the current stock price is divided trailing earnings per share of the past 12 months, it is called Trailing P/E.

Book Value or Replacement Value Multiples

The Book Value is basically the value that asset assumes on the balance sheet. Investors like to evaluate the price/book ratio in order to see if the price they have paid for stock is higher or lower comparing with the one presented on the balance. There are many factors that can influence this ratio. The success or failure of the investments made by the company has a huge impact in this measure.

There is an alternative to this approach. The Tobin's Q ratio uses the replacement cost of assets.

$$Q \text{ ratio} = \frac{\text{Total Market Value of Firm}}{\text{Total Asset Value}}$$

If the Q ratio is between 0 and 1 means that the replacement costs are higher than market value of the company. On the other way, if it is bigger than 1 means that the stock is overvalued.

Enterprise Value Multiples

In this kind of multiples, the Enterprise Value (EV) of the company appears as a function of sales. It is also frequent to use EBIT, EBITDA or Net Profit to compute the ratio.

$$\frac{EV}{Sales} \quad \frac{EV}{EBIT} \quad \frac{EV}{EBITDA} \quad \frac{EV}{Net Profit}$$

Revenue Multiples (Net Income cannot be included here) have a huge advantage comparing with others. To compare firms that operate in different markets, where the accounting systems are different so the taxation will also be different, and these kind of multiples would make simpler and more accurate the comparison between companies.

Sector-Specific Multiples

For different industries, sectors or businesses there will be different characteristics that might influence the valuation variables. Damodaran (2002) uses the Internet companies in the later 90's as an example. In this specific case, despite of the potential growth of this industry, at the time they had negative earnings and insignificant revenues and book value. In this case earnings, revenues or book value multiples will not reflect the real value of the company. For

different sectors, analysts should choose the multiples who fit better market the segment. Once that, Under Armour is a sports manufacturing company, the Enterprise Value Multiples are the most adequate according to its characteristics and business.

Options

When using the Net Present Value to figure out if a project is profitable or not, it is missing an important issue. NPV does not consider the business decisions and uncertainty on the asset's price that can influence the project's performance. Options are used to surpass these problems, where the volatility of the price of the asset has impact. (Copeland & Keenan 1998). Usually, Options pricing theory is used to value companies that the main activity is related with exploitation of commodities.

Damodaran (2002) claims that there are two particular characteristics on the assets that makes the Options valuation model more appropriate. If the asset value derives from another asset's value and if the asset's cash flows are dependent on specific events, Option pricing theory must be applied.

Basically an option gives to its holder a right. The holder has the right to buy (call option) or sell (put option) at a specific price the underlying asset on a certain date (Copeland & Keenan 1998). If the holder can exercise his option before the expiration date, it is called an American option but if it is just possible to do it at the expiration, it is an European option (Damodaran 2002).

Black-Scholes and Binomial are the most common models used to compute the value of the asset using the Options Pricing theory. Luehrman (1997) considers Black-Scholes simple and as one of the most versatile models. This model assumes the price as a continuous process while the Binomial is based in "a simple formulation for the asset price process in which the asset, in any time period, can move to one of two possible process" (Damodaran 2002).

Considering Under Armour characteristics and the particularities if the Option pricing model, the valuation method will not be used in this work.

Cost of Capital

When the DCF models were presented in this dissertation, it was also mentioned that different CFs will have different rates associated. This section goes through the cost of capital and explains its components and the variations among them.

Cost of Equity

Early in this work was identified two different ways to compute the cost of equity, CAPM and Gordon and Shapiro's model. The CAPM will be the focus on this section once it will be the one used.

“The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk.”

(Fama & French 2004)

Using the CAPM, the cost of equity will be the function of three distinct inputs: risk-free, the beta and the risk premium. The risk free rate will provide the riskless asset that the investor is highly confident about the expected return. The beta measures the risk that is added by an investment in the portfolio. The risk-premium represents all the extra risk that investors will face if they decide to invest on the portfolio instead of applying their money at the risk-free rate. (Damodaran 2002)

$$K_e = R_f + \beta(R_m - R_f)$$

Cost of Debt

The cost of debt express how much the company would have to pay to borrow money. Usually it is used the yields to maturity of the bonds or the rate to get default spreads. The average maturity is calculated and the value of the risk-free asset is checked. The cost of debt will be the sum between the risk-free and the spread.

Sometimes the company does not have traded debt, so Damodaran (2002) provides a simple solution for this problem. If the company has borrowed money recently, the interest rate of the loan can be used, otherwise the interest coverage ratio should be computed

$$\text{Interest Coverage Ratio} = \frac{EBIT}{\text{Interest Expenses}}$$

and a rating may be provided. For different ratings, there will be different spreads associated.

$$\text{Cost of Debt} = \text{risk free rate} + \text{company rating spread}$$

The formula above gives the cost of debt as a sum of the risk free rate and the spread. Damodaran provides a table with the different ratings and the correspondent spreads, but other rating suppliers, such as Moody's, might offer a better and more accurate information.

Another good way to compute the Cost of Debt is dividing the interest expenses of the year by the average of the Total Debt. The total amount of debt at the end of the year and at the beginning is used to calculate the average. Using this, we will be able to understand how much was the interest rate paid in the period and as consequence, the cost of debt.

Beta

Beta is defined as a measure of volatility. It is used to measure how volatile is the investment when compared with the market. Imagine that the beta assumes values between 0 and 1. In this situation the investment will be less volatile than the market. For example, if $\beta=0,5$ means that if the market moves up by 6%, the investment will only appreciate 3%. Keeping the same reasoning, if $\beta=1$, the investment will move exactly in the same proportion as the market and if $\beta \geq 1$, the investment will be more volatile than the market.

$$\beta_{im} = \frac{Cov_{im}}{\sigma_m^2}$$

The equation represents the market β of the asset i . Beta is a function of the covariance of the return of the asset and the return of the market divided by the variance of the returns of the market. Intuitively, β_{im} can be compared to “the risk each dollar invested in asset i contributes to the market portfolio”. (Fama & French 2004)

Fernandez (2004) argues that the historical beta of the company should not be used since it tends to change dramatically over time. Evidence shows that, on average, the maximum beta using 60 monthly returns was 15,7 times bigger than the minimum.

To overcome the situation presented by Fernandez, Bloomberg uses a formula called “Adjusted

Beta” where the future beta can be computed.

$$\beta_{adjusted} = \frac{2}{3} * \beta_{raw} + \frac{1}{3} * 1$$

The beta levered is computed using the beta unlevered, the firm’s tax rate and also the debt to equity ratio. (Damodaran 2002)

$$\beta_{levered} = \beta_{unlevered} \left(1 + (1 - t) \frac{D}{E} \right)$$

Risk Free and Risk Premium

During this dissertation, the concept of risk free rate and risk premium has been frequently mentioned. Risk-free was defined before as the expected return of a riskless asset that the investor is highly certain about its performance and risk premium the extra risk that investors face when decide to the money in a portfolio and not invest it on the risk-free.

Damodaran (2002) claims that are two characteristics on the investments where its returns can be equal to what was expected. Primarily the asset should not have default risk. Under this condition, the government securities are the only that can be used as risk free, mostly because they are able to control its currency. The second components says that cannot have reinvestment risk which means that long term treasury bonds should be used. Fernandez (2004) shows that the use of the wrong risk-free rate is one of the most common errors in the valuation process. The author states that the average of the historical risk-free should not be used. The current risk-free rate is the one who should be used.

The risk premium will be the result of the expected return of the asset minus the risk-free rate. Since it has already been described how to choose the correct the risk-free rate, now it is time to focus on the expected return of the asset. There are several ways to compute this item. For example, the earnings model where the EPS from the last 12 months is divided by the current market price per share or using the dividend model where the dividend yield plus the growth in dividends is used to compute the excess returns.

WACC

During a Valuation, several information has to be considered. Revenues, Costs, etc. should be forecast in order to predict future cash-flows, but at the end, everything has to be adjusted to the date of the respective Valuation.

The Weighted Average Cost of Capital or just WACC is used to reach the Present Value of the future cash-flows. Its formula combine different inputs such as cost of debt, cost of equity and capital structure.

$$WACC = K_e * \left(\frac{E}{D+E} \right) + K_d * \left(\frac{D}{D+E} \right) * (1 - T)$$

The WACC is a measure of risk. The formula above shows how the different sources are considered. As you can see, the Taxes are also considered in the equation. This will simply provide the tax advantage of borrowing money.

Despite of being a powerful a relatively simple valuation tool, the WACC presents some weaknesses. Luerhman (1997) believes that it works better for companies with a constant capital structure. When a company is not in this condition, when its debt ratios are changing over time and they present difficult tax positions, the author states that “they will be poorly served by the WACC”.

Terminal Value

The Terminal Value represents the perpetuity part of the valuation. After the forecast of the values over the explicit period, it is time to calculate the sum of FCFF that will happen after that. According to Damodaran (2002) one of the key questions in a valuation is when this transaction of the explicit period, where we usually have high growth rates, to the terminal value happen.

A constant growth rate has to be assumed, that is why in order to proceed to Terminal Value calculation, the company must be in steady state. When the company is getting mature in the market, it will be harder and harder to keep growing at similar rates as when it was in a different stage in its life cycle. This growth rate, as consequence, will be lower and very similar to the economy growth rate (GDP rate) where the firm operates.

Damodaran (2002) presents 3 different ways to compute the Terminal Value:

- Liquidation Value

In this case it is assumed that the company will not run its operations forever and it will close at a certain time. The TV can be calculated using the following formula:

$$\begin{aligned} \text{Expected Liquidation value: Book Value of Assets}_{\text{term yr}} \\ + (1 + \text{inflation rate})^{\text{average life of assets}} \end{aligned}$$

This method has a limitation since is not able to reflect the earnings that an asset can generate.

- Multiples Approach

This approach follow the same reasoning of the Relative Valuation, but in this case applied to the Terminal Value. Imagine that we know that on average in the industry, companies have a TV 3 times superior when compared to their sales in 6 years. By multiplying the value of sales with the multiple, we will get the terminal Value. Despite of being simple, this is not the most accurate way to compute the TV.

- Stable Growth model

This is probably the most common and most accurate model. In this method the Terminal Value is computed using a perpetuity.

$$\text{Terminal Value}_t = \frac{\text{Cash Flow}_{t+1}}{r - g}$$

The Cash Flow is calculated and divided by the interest rate minus the growth rate. This will assume that the company will growth forever at the same rate. This was the method used during this work.

In conclusion, it is important to emphasize the importance of the Terminal Value. It represents the biggest part in a valuation. Small changes in the growth rate might have big proportions in the expected share value. It is a part that should be carefully treated.

Company Overview

Under Armour is a modern and innovative American sports apparel company. According to Forbes, the 6th most innovative company in the world. The brand explores different business segments in this sector. From performance apparel to a more technological part called Connected Fitness, Under Armour has been growing in every single segment on the last years. The product portfolio of the firm covers a wide segment of sports, including American football, soccer and basketball among others.

The company biggest purpose is improve athletes' performance by regulating the body temperature and increase the comfort. This is possible due to high technological fabrics used to produce Under Armour's equipment. Internationally, the brand is present in 11 countries worldwide but by 2018 expect to be in more than 40.

In 20 years the company faced many strategic and structure changes. Nowadays, Under Armour is a public traded company, quoted in S&P50 and according to NASDAQ website it is seen as a "Bullish" stock by the community rating.

History

Founded in 1996 by Kevin Plank, Under Armour appeared to solve a simple problem. Kevin Plank was a former University of Maryland American football player that had to change his sweat t-shirt quite often. Under Armour was created to overcome this situation and emerged after an intense research about the benefits of the synthetic fabrics.

Under Armour changed the way that athletes dress forever. Its products make possible to athletes to keep their body dry and fresh when facing extreme situations. The company started getting well-known when their products appeared in Hollywood movies such as "Any Given Sunday". The business was getting bigger and many profitable agreements emerged. From sports leagues to famous sports stars, such as Michael Phelps or Stephen Curry, the company has been investing a lot of money to increase its awareness.

Under Armour went public on November 18, 2005 less than 10 years after being created. It was the first U.S.-based public offering that double on its first day in five years.

Focusing in its internationalization process, the company decided to open its new European headquarters in Amsterdam. At this time, Under Armour performance was outstanding, and by the end of 2010 it reached \$1 billion in revenue, four times more than in 2005.

Nowadays, Under Armour is based in Baltimore and it is recognized as the global leader in performance apparel with revenue close to \$4 billion. Please check Appendix A for more detailed information.

Product Segments

Under Armour offers a wide range of different products. Apparel, Footwear and Accessories are the most important where each represent 71%, 17% and 9% of the net revenues, respectively. The last 3 % are related to licensing activities and Connected Fitness platform.

Apparel

Under Armour produces performance clothes, where comfort, mobility and keep the body temperature are the ultimate goals. According to different weather conditions and temperatures, the company presents 3 special gear lines: HEATGEAR[®], COLDGEAR[®] and ALLSEASONGEAR[®]. Inside of each gear line can be found also 3 fit types: compression (tight fit), fitted (athletic fit) and loose (relaxed). More information about the topic in Appendix A.

Footwear and Accessories

The brand provides shoes for several sports. From football to lacrosse, passing by softball or baseball, Under Armour supplies its athletes with light and breathable footwear that improves the stabilization, directional cushioning and moisture management. The accessories are mainly headwear, bags and gloves and are made of high technological products, which provide better comfort and performance.

License and Connected Fitness

Licenses are mostly related to agreements to develop Under Armour apparel, equipment and accessories. The brand works through and monitors these licenses to make sure that the consistency and all the standards are fulfilled. Connected Fitness is a digital platform, where its users can screen and control all the sports activities.

Business Metrics

During the last years, Under Armour has experienced an exponential growth. Its financial performance is following the investors' expectations, putting the company in a comfortable position. In 5 years, the company was able to almost double its revenues, reaching \$4 billion at the end of 2015. The Gross Profit has also been increasing, keeping always a constant value as percentage of sales. The last year, the Gross Profit was \$1,905 billion, representing 48% of the sales.

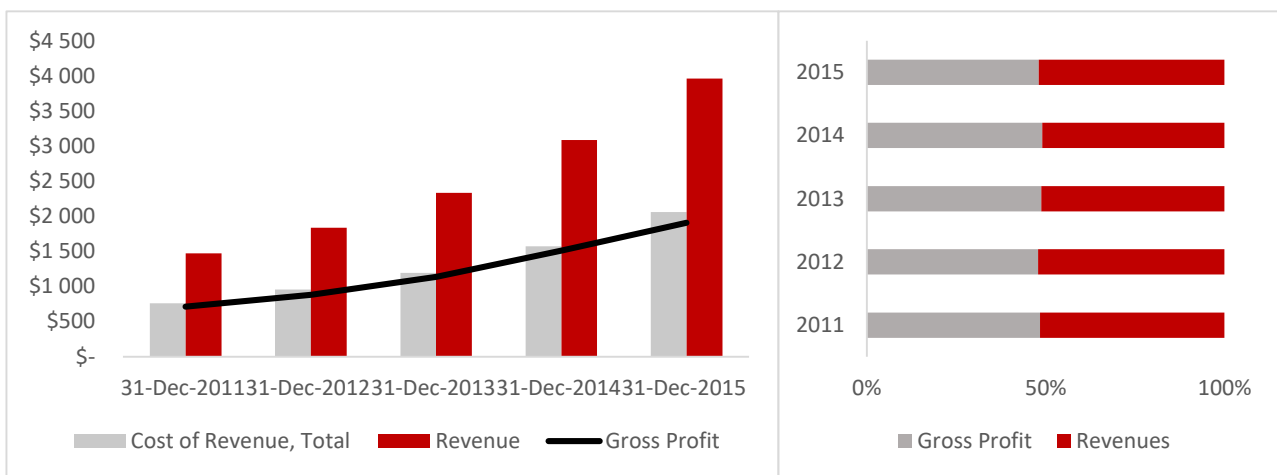


Figure 1-Revenues, COGS and Gross Profit in millions of dollars

The Net Income follows the trend and presents very positive results. Its weight on the Gross Profit remains equal over time.

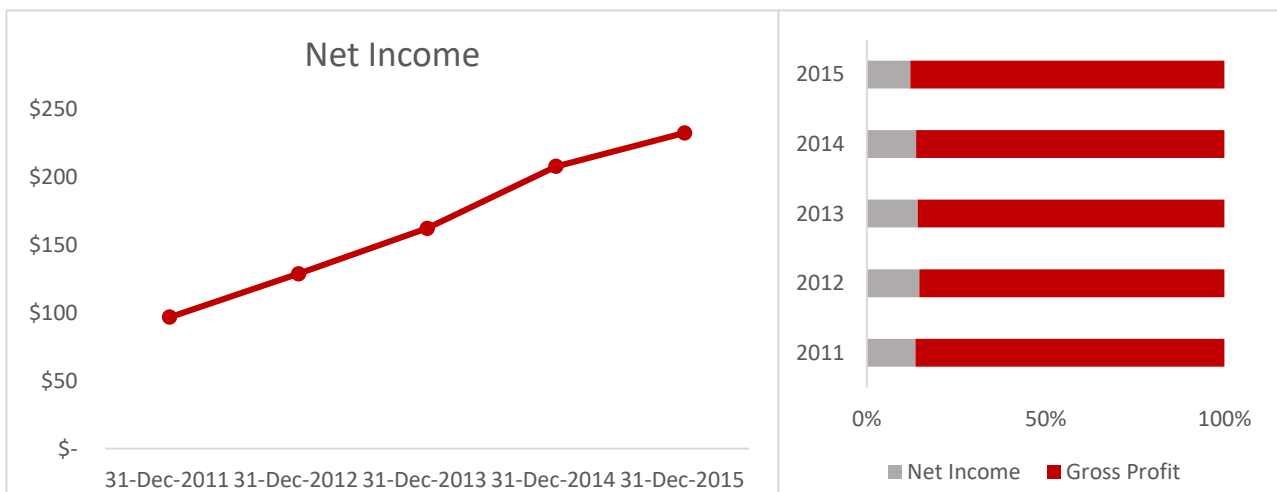


Figure 2-Net Income in millions of dollars

The company’s international exposure has been increasing. If at the end of 2014 Under Armour home market represented 91% of the revenues, in just one year, this value changed around 4%. The table below shows how important the international markets are. Under Armour is

(in thousands)	2015		2014		2013	
	Net Revenues	% of Net Revenues	Net Revenues	% of Net Revenues	Net Revenues	% of Net Revenues
North America	\$ 3 455 737	87,20%	\$ 2 796 374	90,70%	\$ 2 193 739	94,10%
International	\$ 454 161	11,50%	\$ 268 771	8,70%	\$ 137 244	5,90%
Connected Fitness	\$ 53 415	1,30%	\$ 19 225	0,60%	\$ 1 068 -	-
Total	\$ 3 963 313	100,00%	\$ 3 084 370	100,00%	\$ 2 332 051	100,00%

Table 1-Net Revenues by geographic area

decreasing the dependence of its domestic market. This is a tendency that will continue and in the future the international portion will be even more significant. The same happens with the Connected Fitness part that is a market where Under Armour place huge expectations.

Previously in this work, it was mentioned that the Products were divided in 5 different segments. On the graph below, it is shown the importance of each segment in the total of revenues. Obviously the apparel is the most relevant, but in this specific graph I want to emphasize the evolution of the footwear. Under Armour has been signing worldwide famous athletes. Stephen Curry is a Golden State Warriors player and one of the most important NBA superstars nowadays. According to Jay Sole, an analyst at Morgan Stanley, released a note diving into Under Armour's business, “UA's US basketball shoe sales have increased over 350% YTD”. Curry’s importance in UA is very significant and if he continues his high level performance, the company can expect even more from the footwear sales.

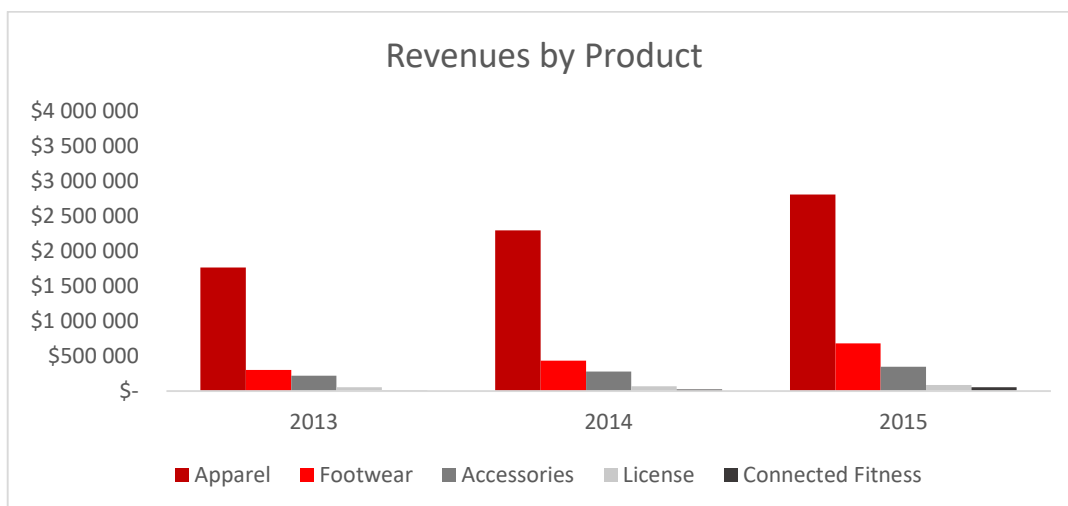


Figure 3-Revenues by product in thousands of dollars.

Strategy

In its portfolio, Under Armour has an important presence in many typical American sports. The firm is officially the responsible to supply footwear and gloves to the National Football League (NFL) and performance footwear to Major League Basketball. Despite of the fact of not being an official retailer, UA has an important partnership with NBA, where it is allowed to market their NBA players in game equipment with the basketball shoes.

The brand is trying to increase its relevance in other sports worldwide. Soccer is the most important sport worldwide, and UA have already made a move into it. Premier League clubs such as Tottenham Hotspur and Southampton (will start next season) are clubs that use UA. Not just English teams are supported by UA, Colo-Colo from Chile or Cruz Azul from Mexico are just some other examples. Also important players were signed. Dutch young superstar and Manchester United player, Memphis Depay is probably the most charismatic soccer player using UA. A recent deal brought Andy Murray, one of the most awarded and world top 3 tennis player. One of the most famous faces of the brand is Dwayne Johnson, also known as “The Rock”. Dwayne is a famous movie actor and ex WWE superstar that have already started his UA product line called “Project Rock”.

“Change the way athletes live” is a slogan used to show UA’s position in the market. The company wants to keep its sustainable growth, giving importance to some specific segments of the activity. By 2018 they expect a CAGR (cumulative annual growth rate) of 40% for the footwear segment that will represent \$1,7 billion in revenues. They plan to establish product leadership in this fragment and start building franchises.

In North America they expect more than two times the growth by 2018. This will represent a CAGR of 21%. They stand that this growth will come from the existing distribution and once again, the footwear will have a tremendous importance in this particular case.

For 2016, Under Armour want to “attack” international markets. If in 2015 they focused to accelerate the growth on key markets, this year they want to enter into new markets. The internationalization “attack” will be focused in:

- Prioritizing Categories
- Premium Distribution
- Strategic International Expansion

Premium Distribution using wholesales in superior location, balancing the own retail and partnership stores (expecting more than 800 in 2018) and expand its ecommerce platform to new geographies, keeping in mind the importance of build costumers' loyalty.

Under Armour has already settled its target markets until 2018. According to its expectations, this will result in a CAGR of 50%. At this stage they want to be in more than 40 countries that will represent 80% of its business locations.

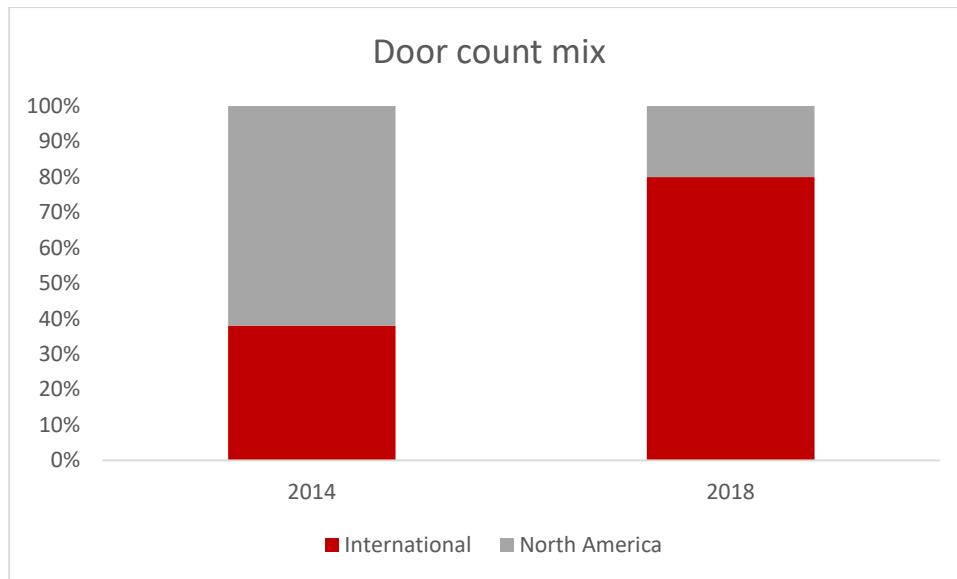


Figure 4-Door count mix

The company forecast expects that International revenues will represent 18% of the total for 2018. Also the Connected Fitness segment is expect to reach 3% of the revenues by 2018. Actually, Kevin Plank considers the Connected Fitness part an important element on UA strategy. Smartphones are the most used media nowadays. Actually it suffered a 20% increase in its consumption since 2009 (more than any other media).

Under Armour plans to create the world's largest digital health and fitness community. The team members has been growing and nowadays are more than 500. The platform has 150 million users registered where 60 million are active users. The company has been acquiring other companies to expand this project. Just in the last year, hundreds of dollars were invested in the acquisition of Endomondo, a Denmark-based digital fitness company and MyFitnessPal, a digital nutrition and connected Fitness Company. More than \$500 million were invested to keep this project in the right path and with the expectation of revolutionary the digital fitness market.

Industry Overview

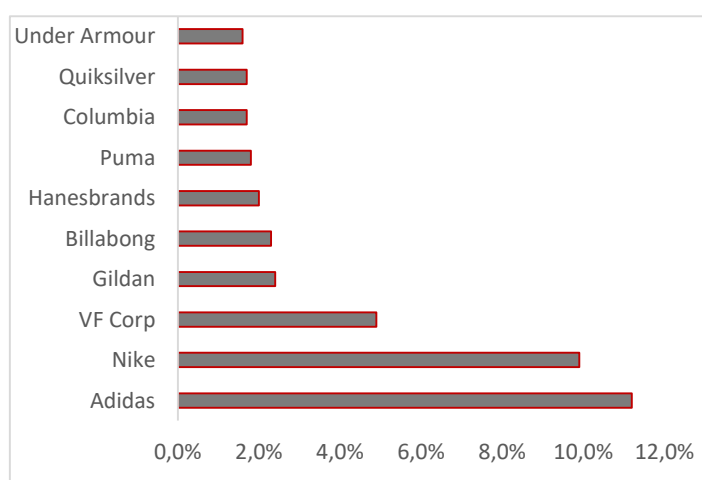
The sport's apparel market is extremely competitive. There are many players in this industry where Nike and Adidas are on the lead. Under Armour is a raising opponent that wants to compete against these two. Lululemon, an American based company focused in yoga, is also an active competitor in the market. This company plan to expand its operations to different segments of the market. When compared to Under Armour, Lululemon presents a size, ambitions and financial ratios quite similar.

The competitors' performance and evolution in the market, the future projections about an industry that is expected to keep growing on the following years and the major risks that companies will have to face, are the topics that will be covered in this chapter.

Industry Evolution and Market Players

On the last years, the sports apparel industry has been constantly changing. Costumers became more demanding and brands are making a huge effort to fulfil all their needs. A Morgan Stanley research made in 2015 shows that the industry growth 42% on the last 7 years, generating \$270 billion in sales. People are becoming more pro-active, making sports a daily routine in their life.

Nowadays people tend to focus on healthy living and fitness. The younger classes are continuously seeking for a more active lifestyle. Morgan Stanley, during its report about Athletic Lifestyle, shows that in North America teenagers are really changing their attitude resulting in the increase of the high school participation rate since 1980.



By 2011, Adidas was the biggest player in the sports apparel market (11,2%). Nike was the second company with the biggest market share, representing 10% of the market. Then some players had a very similar market share, leaving Under Armour on 10th position.

Figure 5-Sports' apparel market share by company in 2011

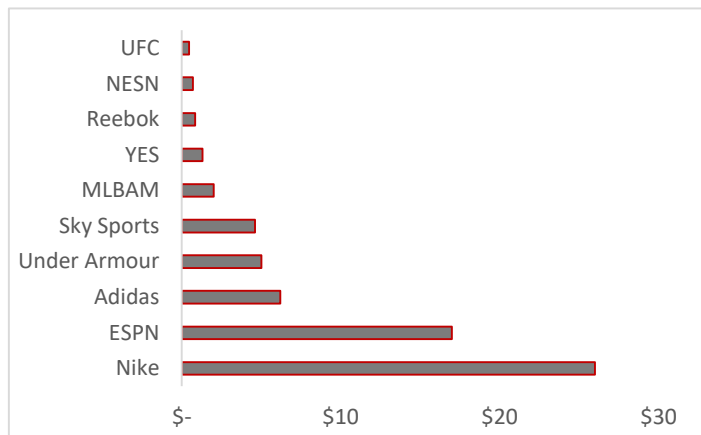


Figure 6- Sports industry brand value by company

In 5 years the market suffered a revolution. Nike became the biggest company in the sports industry, with a brand value of \$26 billion. Adidas' performance dropped, and now it is significantly smaller than Nike. Under Armour is now on the 4th position. The graph shows not only sports apparel firms, but also sports media and entertainment enterprises such as

ESPN, Sky Sports or UFC.

If in 2011, Nike and Adidas were fighting for the title of the biggest firm, on the last 5 years this war was not even balanced.

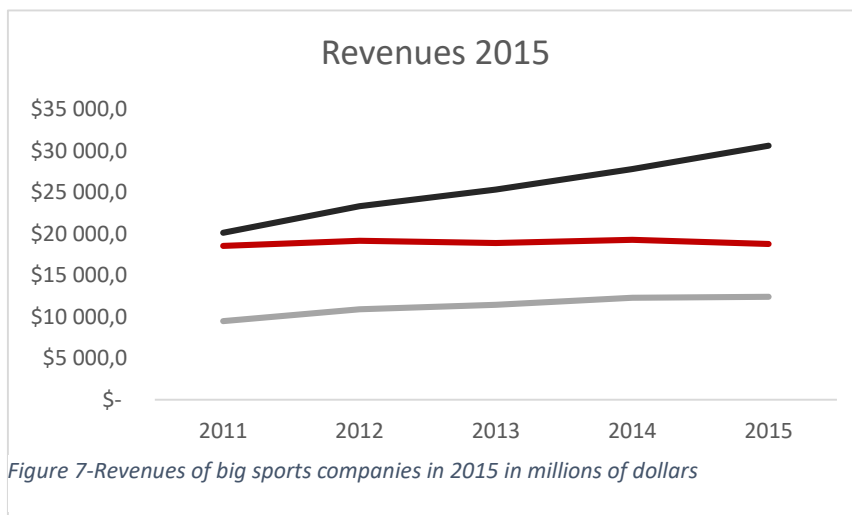


Figure 7-Revenues of big sports companies in 2015 in millions of dollars

In 5 years Nike has increased its revenues in \$10 billion to \$30 billion while Adidas was not able to compete and kept a constant value of \$18 billion. While these two players were competing on the top of the table, some small players

started raising its aspirations and increased their revenues. This is the case of Under Armour and Lululemon that in this 5 years were able to double their revenues (figure 8).

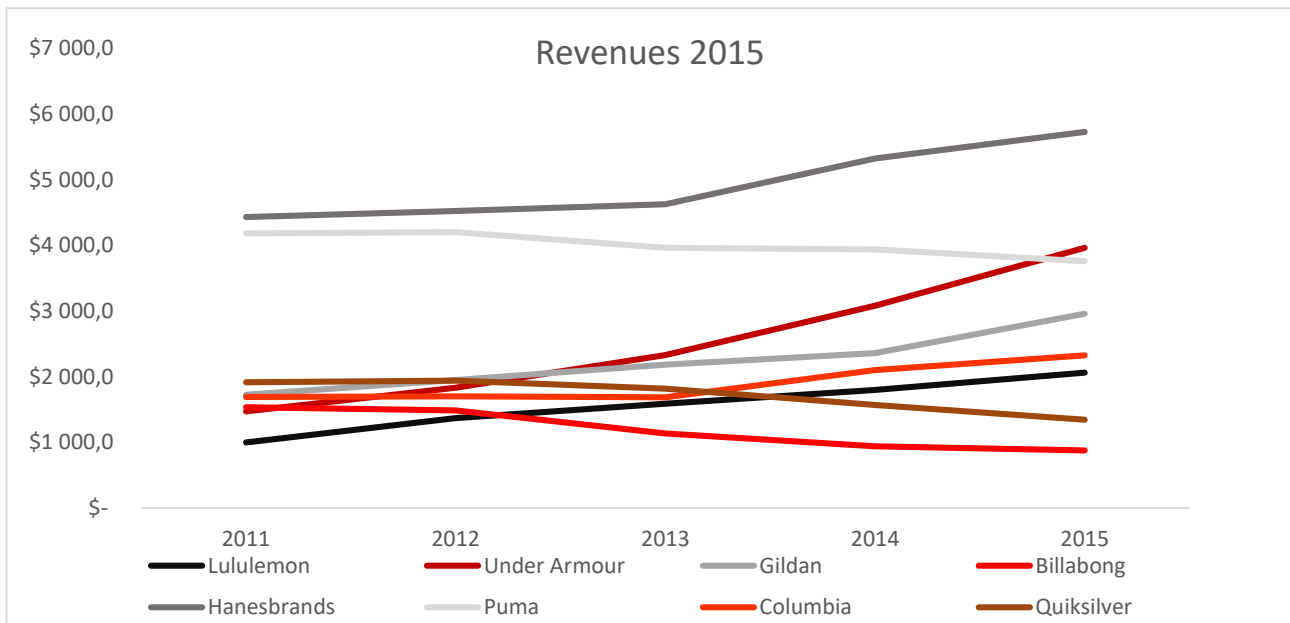


Figure 8-Revenues of sports companies in 2015 in millions of dollars

Risk Factors

There are many different risks associated with this activity, but most of them are related to the economic conditions. It is obvious that sales is a consequence of consumers' wealth. Once this market does not regard primary goods, such as food or healthcare, in case of financial distress, customers will cut in discretionary items immediately.

As it was mentioned before, the competition is increasing, so it has become more and more important the forecast of customers' preferences. If a company fail in this very important point can put itself in a very problematical position. If the firm is not able to be one step ahead of its competitors, launching more innovative products or creating trends on the market, it will not be able to keep its position and profitability may fall. The market is so competitive that the pressure on pricing is really big. If a price war would start, margins and profitability will decrease, putting companies in a dangerous position.

The investments are also an important risk factor. If a substantial investment is not successful, company's performance may decline and the impact in its stock might be huge.

The sales will not increase at this level forever so it is important for the company to know how to keep the business growing if this happens. The internationalization process increase the number of risk factors. The company exposure to new and different types of risk is enormous. New regulations (trade and labour), enter in markets where the competitors have a better know-how of the processes and where the inventory management is a key factor for the firm's

performance, are the main obstacles in the internationalization, so the company has to be prepared to face these new challenges.

Profit is a function of sales and costs. If it was explained what can influence revenues, it is important to explain that the costs are also a risk factor. If the COGS increase, the profitability might decrease. The fluctuations on the prices, if the company is not able to predict and control it, is an issue that may create several complications.

Market Trends

Active wear is a big market where some opportunities are developing. According to Morgan Stanley, it is expected that by 2020 the market values 30% more than today. Also Statista, a market statistics' website, expects that the market grow around 30% but in this case between 2016 and 2022. From \$160 billion to \$206 billion, Statista's projections are 2% lower than Morgan Stanley.

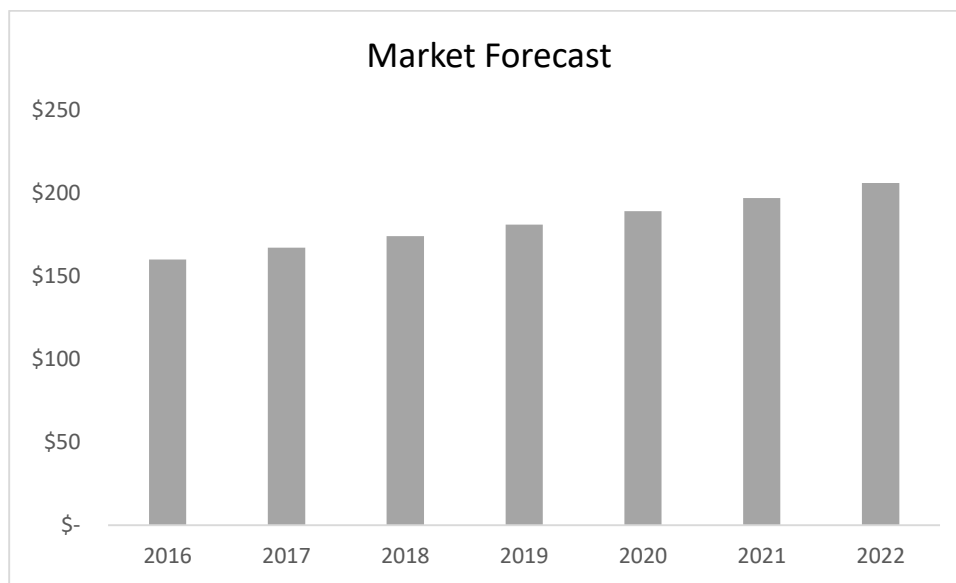


Figure 9-Statista Market forecasts for Sports industry in billions of dollars

Some markets are emphasized in Morgan Stanley report. The U.S market so far is the strongest one representing 36% of the sportswear sales. Europe, despite of the fact that does not have the same volume, it is expected that grow on average 5% a year until 2020. China is seen as a market with a huge potential. They are changing their routines and the government expect that by 2025, 500 million Chinese will practice sports regularly. The investment in new facilities is being made and they expect to have 60% more by the same date.

Valuation

Explicit Period

Under Armour expects to reach a volume of revenues of \$7.5 billion and increase its international presence by 2018, as it is mentioned in its strategic plan.

Under Armour is a growing company and its strategy reflects this. Its purpose is to boost the internationalization process and obviously increase the sales worldwide, while the dependence of its domestic market decrease.

In the explicit period it is predictable that the company reach the steady state. Basically a company in steady state is a company in equilibrium. Its revenues growth is becoming constant and its CAPEX values are getting very similar to the depreciation ones which means that the company is just investing money to replace the depreciation of its assets.

By 2018, Under Armour will not be in steady state, but it will start. The firm will finish its growth period and start the maturity one. The period of transition until the results get stable and ready to assume a perpetual growth rate will be 3 years.

At the end we will have an explicit period of 6 years, where the first 3 will represent the boost and the last 3 the time needed to stabilize the results.

Revenues Estimation

The revenues estimation represents the most sophisticated assumption in the model. They are divided in four categories (Apparel, Footwear, Accessories & Licensing and Connected Fitness) where the amount of sales that each represents is calculated independently. In order to forecast the value of the revenues, four different inputs were used:

- Under Armour Estimations
- Bloomberg Estimations
- Industry Estimations
- GDP Estimations

These four distinct sources allowed the creation of a more precise prediction tool. As it was mentioned before, the explicit period is divided in 2 different stages. The first one, until 2018

when the company is growing more, has as inputs all the different estimations expect the GDP. The GDP will just be used on the second part to smooth and reach the perpetual growth rate.

Under Armour Estimations

In its Strategic Plan Under Armour expect \$7,5 billion in revenues by 2018. With this information, it was assumed that between 2015 and 2018 the sales would increase the same amount per year, and the weight of each product in the company portfolio by 2018 will be the one predicted by the company.

	2015	2016	2017	2018		%
Expected Revenues	\$ 3 963 313	\$ 5 142 209	\$ 6 321 104	\$ 7 500 000		100%
Apparel	\$ 2 801 062	\$ 3 492 375	\$ 4 183 687	\$ 4 875 000		65%
Footwear	\$ 677 744	\$ 1 001 829	\$ 1 325 915	\$ 1 650 000		22%
Accessories & Licensing	\$ 431 092	\$ 537 395	\$ 643 697	\$ 750 000		10%
Connected Fitness	\$ 53 415	\$ 110 610	\$ 167 805	\$ 225 000		3%

Table 2-Under Armour Estimations (Revenues) in thousands of dollars

Once the explicit period lasts until 2021, from 2019 the expected growth rate value will be calculated based on a weighted average of the last 3 years.

$$g_n = 0,5 * g_{n-1} + 0,3 * g_{n-2} + 0,2 * g_{n-3}$$

	2016	2017	2018	2019	2020	2021
Apparel	24,68%	19,79%	16,52%	19,14%	18,48%	18,29%
Footwear	47,82%	32,35%	24,44%	31,49%	29,55%	29,11%
Accessories & Licensing	24,66%	19,78%	16,51%	19,12%	18,47%	18,28%
Connected Fitness	107,08%	51,71%	34,08%	4,51%	4,32%	4,23%

Table 3-Revenues Projection as percentage of total revenues

Bloomberg Estimations

Bloomberg seems even more confident in Under Armour performance.

	2015	2016	2017	2018	2019	2020
Revenues	\$ 3 963 313	\$ 4 958 500	\$ 6 194 500	\$ 7 791 100	\$ 9 679 000	\$ 11 677 000
g		25,11%	24,93%	25,77%	24,23%	20,64%

Table 4-Bloomberg revenues estimations in thousands of dollars.

In 2018 expects almost more \$300 million when compared to the forecasts presented by Under Armour. Once again the most important part here are the growth rates that it will be used to compute the revenues.

Market Estimations

During the Industry Overview it was shown Statista’s forecasts for the sportswear market. The growth rate considered by Statista is much lower when compared with Under Armour and Bloomberg information. It seems a normal factor since Under Armour is in its growth stage, but it is important to consider these values to soften the almost exponential rates.

Projections market			g
2016	\$ 160		-
2017	\$ 167		4,4%
2018	\$ 174		4,2%
2019	\$ 181		4,0%
2020	\$ 189		4,4%
2021	\$ 197		4,2%
2022	\$ 206		4,6%

Table 5-Market projections in billions of dollars by Statista

GDP Estimations

The last part of the equation is the GDP estimations. This input will just be used on the last 3 years, as it was mentioned before to reach the perpetual growth rate.

	2016	2017	2018	2019	2020	2021
Weighted GDP growth	2,70%	4,00%	4,38%	4,36%	4,19%	4,06%

Table 6-Weighted average of GDP estimations

Here a weighted average of the countries where the company has activity is used. North America is the one who has more weight. Its value is decreasing at the same level as the Under Armour’s dependence of its home market is getting lower. By 2018, North America represents 80% of this average being the rest divided by Europe, Latin America, North Africa and Asia.

Forecasts

Until 2018 the forecasts were based on the information provided by Under Armour, Bloomberg and Market indicators. During this period, these three sources of information were combined and at the end it was possible to get the best output. It is important to mention that despite of the fact that Under Armour and Bloomberg have very similar forecasts, they are much more optimistic than the market, creating the necessity to introduce this input in the equation. On the first year of the period (2016) it was used just Under Armour information. The formula bellow shows how the growth rate was predicted for 2017 and 2018 based on the different sources.

$$g_{Revenues} = 0,7 * g_{Under\ Armour} + 0,2 * g_{Bloomberg} + 0,1 * g_{Market}$$

On the last 3 years, the GDP is introduced and the process follow the same logic. In this case Under Armour and Bloomberg forecast lose weight during the years until 2021 when we reach steady state and the growth it is equal to the GDP.

	2019	2020	2021
Under Armour	25%	12,5%	0%
Bloomberg	25%	12,5%	0%
Market	30%	25%	0%
GDP	20%	50%	100%

Table 7-Weight of the different sources of information (2019-2021)

When everything is combined, the final growth rates are computed and we are able to calculate the values of the revenues.

	2016	2017	2018	2019	2020	2021
Apparel	24,68%	19,28%	17,14%	12,92%	8,09%	4,06%
Footwear	47,82%	28,07%	22,68%	16,01%	9,47%	4,06%
Accessories & Licensing	24,66%	19,27%	17,13%	12,92%	8,09%	4,06%
Connected Fitness	107,08%	51,71%	34,08%	4,36%	4,19%	4,06%

Table 8-Annual growth rates forecast by product (2016-2021)

The table with the final values for the revenues can be seen in the Appendix D.

COGS and S&A costs estimation

The COGS and S&A were computed as a percentage of the sales. In order to do this, the following steps were used:

- First, the weighted average of these costs giving more relevance to the last years were computed.

Under Armour							
	2011	2012	2013	2014	2015	Average	Weighted Average
COGS/Revenue	51,59%	52,08%	51,26%	50,97%	51,92%	51,56%	51,54%

Table 9-UA COGS as percentage of Revenue (2011-2015)

- Since the company is not in the mature stage, it was important to consider its peers performance. The same process was done for these companies in the peer group, except Lululemon that is in the growth stage (Appendix D).
- The final result is a combination of both inputs. In the case of the COGS, Under Armour has the following results on the past 5 years:

Forecast						
	2016	2017	2018	2019	2020	2021
COGS/Revenue	51,54%	51,81%	52,09%	52,36%	52,64%	52,91%

Table 10- COGS as percentage of Revenue (2016-2021)

On the first year, the weighted average of Under Armour is the one exclusively used and on the last one just the average of the peers is considered. During the explicit period, when this information is crossed with the one from the peers, we finish with the following results:

The S&A follow the same reasoning used for the COGS. The table below shows the weight of the S&A over sales in the last five years and the respective averages.

Under Armour							
	2011	2012	2013	2014	2015	Average	Weighted Average
S&A/Revenue	37,16%	36,43%	37,31%	37,28%	37,42%	37,12%	37,25%

Table 11- UA S&A as percentage of Revenue (2011-2015)

The values of the peers were computed and added to the equation. The final result is shown by the table 12 being in this case be possible to Under Armour to optimize these costs in 7%.

Forecast						
	2016	2017	2018	2019	2020	2021
S&A/Revenue	37,25%	35,91%	34,56%	33,22%	31,88%	30,54%

Table 12-S&A as percentage of Revenue (2016-2021)

CAPEX

During the last years, Under Armour has made substantial investments, especially in the acquisition of companies such as MyFitnessPal or Endomondo for its Connected Fitness platform. This goes according to the firm strategy with the goal of creating the biggest and more sophisticated fitness app.

Under Armour sees in this platform the future of the sports activity. When the level of CAPEX as percentage of the sales is compared, easily we can identify the effect of these acquisitions on the last year values.

	2011	2012	2013	2014	2015
Revenues	\$ 1 472 700	\$ 1 834 900	\$ 2 332 100	\$ 3 084 400	\$ 3 963 300
Capex	\$ 57 400	\$ 5 200	\$ 88 300	\$ 141 400	\$ 301 500
% of Revenues	3,90%	0,28%	3,79%	4,58%	7,61%

Table 13-CAPEX as percentage of Revenues (2011-2015)

The CAPEX in 2015 represents 7,61% of the last year sales. It is a considerable value, particularly when the comparison with its peers is made (check Appendix D). This benchmark allows us to understand that Under Armour will not keep this level in a maturity stage. Once again, following the process used in COGS and S&A, the information is crossed between Under Armour and the peers. This will allow the company to optimize the value of CAPEX over time and reach a more realistic approach.

Forecast						
	2016	2017	2018	2019	2020	2021
Capex/Revenues	5,21%	4,72%	4,23%	3,74%	3,25%	2,76%

Table 14- CAPEX as percentage of Revenues (2016-2021)

Using this method, the percentage of CAPEX in proportion of sales will decrease during the explicit period.

Depreciation & Amortization

In the D&A calculation was used a simpler process based just on averages. D&A is divided in two areas, the intangible and the tangible, which means that the total will be a function of these two.

The calculation of the intangible part was made using the next formula:

$$D\&A \text{ Intangible} = \text{Gross Intangible Assets} - \text{Net Intangible Assets}$$

Gross Intangible Assets were forecasted as a percentage of revenues and the Net as a percentage of the gross. Since this formula provides the accumulated Amortization, the difference between periods will result in the Amortization of the period.

The tangible part was predicted as a percentage of the last year accumulated “tangible” Depreciation. Basically the average of the depreciation of the last 5 years multiplied by the accumulated of the previous year, made possible the forecasts (Appendix D).

$$D\&A_n = \text{Accumulated } D\&A_{n-1} * \text{Average}$$

When the total D&A is computed and compared with the CAPEX, we can see the trend. The two values are getting closer over the years.

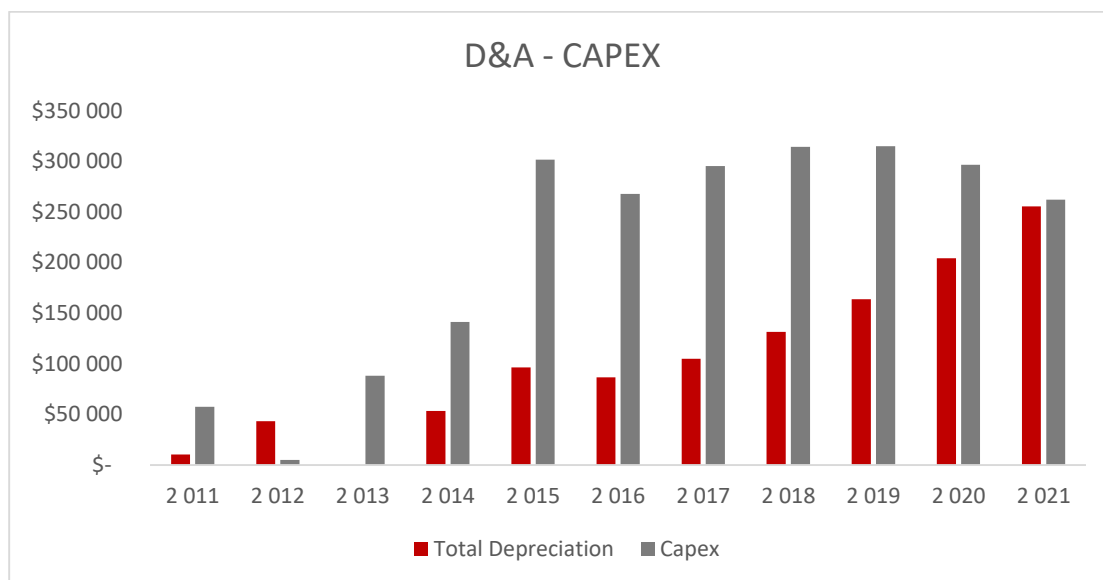


Figure 10-Total Depreciation and CAPEX in thousands of dollars (2011-2021)

If at the end of the last year D&A just represented 32% of the CAPEX value, by 2021 it is expected that its importance is getting bigger reaching the 97%. In the future, these two features will keep very similar values, which means that CAPEX will be used to replace D&A.

Changes in NWC

In order to compute the Net Working Capital, current assets and current liabilities are compared. There are several items that represent these features than you can see on the table below.

To forecast all of these items, the average of the last 5 years was used. All of them except the

	2 016	2 017	2 018	2 019	2 020	2 021
Assets						
Accounts Receivable - Trade, Net	\$ 507 006,56	\$ 616 966,22	\$ 732 530,40	\$ 830 079,33	\$ 898 830,09	\$ 935 325,06
Total Inventory	\$ 975 838,27	\$ 1 193 829,12	\$ 1 424 986,22	\$ 1 623 292,12	\$ 1 766 992,56	\$ 1 848 365,33
Prepaid Expenses	\$ 160 500,66	\$ 196 354,64	\$ 234 374,12	\$ 266 990,42	\$ 290 625,50	\$ 304 009,25
Other Current Assets, Total	\$ 50 632,67	\$ 61 613,89	\$ 73 154,81	\$ 82 896,62	\$ 89 762,48	\$ 93 407,08
Liabilities						
Accounts Payable	\$ 322 094,74	\$ 394 046,94	\$ 470 344,92	\$ 535 799,71	\$ 583 230,88	\$ 610 089,58
Accrued Expenses	\$ 254 152,06	\$ 309 272,59	\$ 367 202,56	\$ 416 101,85	\$ 450 565,21	\$ 468 859,39
Notes Payable/Short Term Debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Current Port. of LT Debt/Capital Leases	\$ 41 710,20	\$ 50 756,32	\$ 60 263,50	\$ 68 288,61	\$ 73 944,57	\$ 76 946,93
Other Current liabilities, Total	\$ 52 482,93	\$ 63 865,44	\$ 75 828,10	\$ 85 925,91	\$ 93 042,66	\$ 96 820,45
Net Working Capital	\$ 1 023 538	\$ 1 250 823	\$ 1 491 406	\$ 1 697 142	\$ 1 845 427	\$ 1 928 390
Changes in Net Working Capital	\$ 133 538,23	\$ 227 284,35	\$ 240 583,89	\$ 205 735,94	\$ 148 284,89	\$ 82 963,08

Table 15-Changes in NWC in thousands of dollars (2016-2021)

Inventories were computed as percentage of the Revenues. This specific one was calculated as a percentage of the COGS.

The calculation of the Net Working Capital was made taking in account the difference between the sum of all the current assets and current liabilities. The Changes are simply difference between the Net Working Capital on that year and in the year before.

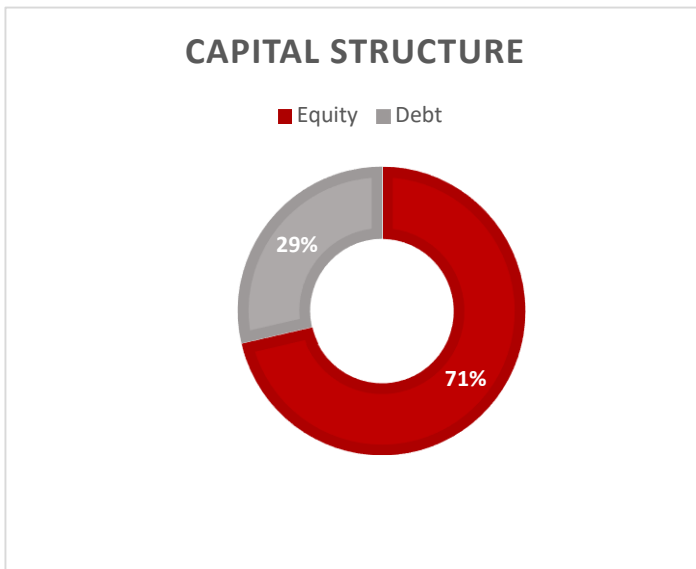
WACC Calculation

Rf	2,435%
Adjusted Beta	0,78
Market Risk Premium	5,810%
Ke	6,971%
Kd	3,27%
E/(D+E)	71,38%
D/(D+E)	28,62%
Tax Rate	35,00%
WACC	5,58%

Table 16-UA WACC

With all of the inputs together, the value of the WACC for Under Armour is 5,16%. The process made to get this value will be clarified ahead with full explanation about the calculation of each component.

Capital Structure



With a book value of \$1,66 billion, it is possible to see in the figure 11 that equity represents 71,38% of Under Armour value. Debt has a book value of \$669 million which represents 40,1% of the Equity Value.

In the Debt structure, there is not registry of traded debt, so the value is all composed by bank loans.

Figure 11-UA Capital Structure

Cost of Equity

In the beginning of the literature review it was presented two different methods to calculate the Cost of Equity. The one explained in more detail, the CAPM was the one used and you will see in this segment how its components were computed.

Risk-Free

The risk-free rate was calculated based on a weighted average of the different markets where Under Armour act. For each of the markets were used a specific government bonds with 15 years maturity.

<u>Government bonds</u>	<u>Value</u>
U.S.A	2,171%
Germany	0,615%
Mexico	6,681%
China	3,180%

Table 17-Government Bonds by country

All the information was extracted on March 11th, 2016. In this average, U.S.A had the biggest portion since is where the company has its headquarters and the high volume of revenues. U.S.A represents 80% of the final value and the rest divided by the others. At the end it was possible to finish with a value of 2,435% that was the one used in the CAPM model.

Beta

The Beta for Under Armour was calculated using its peers. The average of Asset betas of Nike, Adidas, VF Corp and Lululemon was considered to compute the Beta for UA. The result was 0,53.

In order to get the levered Beta, this value has to be adjusted using Under Armour capital structure, finishing with a value of 0,67.

This value reflects historical data and do not project it for the future. As it was mentioned during the literature review, Bloomberg's formula will allow us to adjust this value, getting a more reliable one. The beta used was 0,78 after the levered beta value has been adjusted.

Market Risk-Premium

The value of 5.81% showed in the table 17 was extracted from Damodaran database. This value was estimated in July 2015 and basically represents the premium required by investors to invest in a specific market, U.S.A in this case.

Cost of Debt

The cost of debt was calculated by dividing the interest paid on 2015 by the average of the total debt. In 2015 it was used the value of debt in the beginning and in the end of the period to get the value. On average the value of debt in 2015 was \$476,6 million. Once the value of interest paid in the period was \$15,6 million, we reach a value of 3,27% for the cost of debt.

An alternative way was used, but the results were not so accurate. Basically it was calculated the interest coverage ratio and then check the company rating. Using this rating we will get a spread that in conjunction with the risk free, will provide the cost of debt. In this case the cost would be 2,07%. Since the cost of debt is calculated in a synthetic way, the result might not be as precise as the first one and that's why this was not used.

Tax Rate

Over the last years, Under Armour's effective rate has been changing. The value of the tax rate has been increasing, from 37,8% in 2013 to 39,9% in 2015. The increase of the value, mainly in the last year is duo to the increase of the non-deductible costs. This is a consequence of the acquisitions made in 2015. The value of 35% represents the U.S. income tax rate. Since the

consolidation of the accounts is made in the U.S.A and it was assumed that all the variables that can affect the effective tax rate (tax credits, tax liabilities, etc.) will converge and approximate to the corporate tax rate in the long run, this value (35%) was used in the WACC calculation.

Growth Rate

The perpetual growth rate has a huge impact in the DCF Valuation, as you will see during the sensitivity analyses.

With the aim of be more meticulous, the growth rate was based in the International Monetary Fund GDP projections for countries were UA operates. The result was the one shown in the Appendix D.

The perpetual growth rate was calculated based on the average of the forecasted annual growth rates for each year of the explicit period. This approach yielded a 3,58% rate, which seems too optimistic to consider as a sustainable perpetuity growth rate. To overcome this situation, it was subtracted 1% to this output, in order to obtain a more attainable value. At the end, a 2,58% growth rate was considered for the perpetuity.

Net Debt

Based in the following formula, the Net Debt was calculated.

$$\text{Net Debt} = \text{Long Term Liabilities} + \text{Short Term Liabilities} - \text{Cash and Equivalents}$$

Under Armour presents a value of \$539,1 million and according to the disclosed information, they do not pretend to increase the value of their liabilities or invest the cash.

DCF Valuation

After the explanation of all the inputs needed to proceed the DCF Valuation, it is time to analyse its results. The table below shows all the data that it was used to run this method.

	2015	2016	2017	2018	2019	2020	2021
Revenue (+)	\$ 3 963 300,00	\$ 5 142 208,67	\$ 6 257 451,62	\$ 7 429 537,31	\$ 8 418 907,09	\$ 9 116 197,43	\$ 9 486 340,05
Cost of Revenue (-)	\$ 2 057 800,00	\$ 2 650 122,07	\$ 3 242 128,34	\$ 3 869 890,69	\$ 4 408 437,77	\$ 4 798 690,65	\$ 5 019 677,86
Other Expenses (-)	\$ 1 483 100,00	\$ 1 915 372,01	\$ 2 246 812,77	\$ 2 567 971,16	\$ 2 796 971,58	\$ 2 906 303,50	\$ 2 897 015,28
Depreciation	\$ 96 521,00	\$ 86 682,81	\$ 104 966,50	\$ 131 538,31	\$ 163 750,17	\$ 204 188,00	\$ 255 618,42
EBIT (=)	\$ 325 879,00	\$ 490 031,78	\$ 663 544,01	\$ 860 137,14	\$ 1 049 747,58	\$ 1 207 015,28	\$ 1 314 028,49
Taxes (-)	\$ 130 025,72	\$ 171 511,12	\$ 232 240,40	\$ 301 048,00	\$ 367 411,65	\$ 422 455,35	\$ 459 909,97
D&A (+)	\$ 96 521,00	\$ 86 682,81	\$ 104 966,50	\$ 131 538,31	\$ 163 750,17	\$ 204 188,00	\$ 255 618,42
Changes in NWC (-)	\$ 355 500,00	\$ 133 538,23	\$ 227 284,35	\$ 240 583,89	\$ 205 735,94	\$ 148 284,89	\$ 82 963,08
CAPEX (-)	\$ 301 500,00	\$ 267 877,67	\$ 295 371,91	\$ 314 362,75	\$ 315 051,45	\$ 296 561,09	\$ 262 207,76
FCFF (=)	\$ -364 625,72	\$ 3 787,57	\$ 13 613,85	\$ 135 680,81	\$ 325 298,70	\$ 543 901,94	\$ 764 566,10
Discount factor		1,00	0,95	0,90	0,85	0,80	0,76
PV of Cash Flows		\$ 3 787,57	\$ 12 893,76	\$ 121 707,10	\$ 276 362,15	\$ 437 638,57	\$ 582 651,35
PV of Terminal Value							\$ 20 195 644,79
Net Debt	\$ 539 100						
# shares outstanding	223000						
Share Price	\$ 94,58						

Table 18-DCF Valuation

According to the model, at the end of 2016, Under Armour shares will worth \$94,58. Revenues will increase over time, costs will be optimized and CAPEX and Depreciation will get closer.

	2016	2017	2018	2019	2020	2021
Revenues	\$ 5 142 208,67	\$ 6 257 451,62	\$ 7 429 537,31	\$ 8 418 907,09	\$ 9 116 197,43	\$ 9 486 340,05
FCFF	\$ 3 787,57	\$ 13 613,85	\$ 135 680,81	\$ 325 298,70	\$ 543 901,94	\$ 764 566,10
FCFF as % of Revenues	0,1%	0,2%	1,8%	3,9%	6,0%	8,1%

Table 19-FCFF as percentage of Revenues (2016-2021)

All of these helps to explain the expected growth in the FCFF. The behaviour of the FCFF goes exactly with the expectations seen in the strategic plan. In the first three years, the revenues grow at higher rates than the FCFF. Just when the company start being ready to optimize all the costs and reduce the volume of CAPEX, the FCFF will start to be more significant in percentage of sales.

All the expected FCFF were discounted at the WACC rate in order to get their present value. The Terminal Value, as expected, has a huge weight on the company's value, representing 93% of this.

DCF Analysis

Expecting a value per share of \$94,58 at the end of the current year, Under Armour's market capitalization will be \$21,091 billion by this time. Being \$539,1 million the net debt value, we will finish with an Enterprise Value of \$21,630 billion at the end. It was assumed that the capital structure will be constant over time and that's why the DCF approach was used.

Sensitivity Analysis

The DCF valuation was based in assumptions that can be more or less questionable. In this section of the dissertation, we will aim to test how the price of the Under Armour's share will change with differences in the WACC, perpetual growth rate and cost of debt.

During this simulation, the values were chosen based in very precise situations. The different WACCs were chosen based in different capital structures. It was used the different capital structures of the peers and it was tested their impact in the WACC of the company. For the growth rate, it was considered the average of GDP growth expectations of the different areas where the company has activity. It was also checked the impact of different cost of debt, associated with different default ratings on the valuation.

The table 20 shows the impact of the different capital structures in the WACC.

Capital Structure (D/E)		WACC
0,00%	Lululermon	6,97%
16,76%	Nike	6,16%
40,10%	Under Armour	5,58%
42,44%	Adidas	5,30%
51,94%	VF Corp	5,05%

Table 20-WACC by peers Capital Structure

The Perpetual Growth Rate was tested according to the IMF's expectations for the different economies as it is shown in table 21. According to the strategic plan, Under Armour wants to consolidate and expand its position in emerging markets. They see a lot of potential in Developing Economies, where the big problem might be the risk of these predictions do not match with the reality. These emerging markets represent the more optimistic scenario, where higher growth rates are expected. On the other hand appears European Union. Here it seems that the economy will take longer to recover from the financial crisis suffered, being its expected growth rate the lowest one.

g	Region
0,97%	European Union
2,12%	Advanced Economies
2,87%	
3,96%	United States
4,72%	Emerging market and developing economies

Table 21-Average GDP rates by group of countries

When these two inputs are combined, we are able to see a full description of what can happen to Under Armour’s stock if these two variables change. The table below shows all the information crossed.

		WACC				
		5,05%	5,30%	5,58%	6,16%	6,97%
g	0,97%	\$ 71,07	\$ 67,06	\$ 62,93	\$ 55,98	\$ 48,55
	2,12%	\$ 98,02	\$ 90,22	\$ 82,55	\$ 70,51	\$ 58,64
	2,58%	\$ 115,80	\$ 104,95	\$ 94,58	\$ 78,92	\$ 64,15
	3,96%	\$ 258,87	\$ 209,72	\$ 171,31	\$ 125,06	\$ 90,68
	4,72%	\$ 861,26	\$ 485,42	\$ 319,64	\$ 188,71	\$ 119,42

Table 22-Sensitivity Analysis

Here you have all the simulations made. The range of values vary between \$48,55 and \$861,26, which is too optimistic. The use of 3,96% and 4,72% for the growth rate seems quite unrealistic because it will be hard for the company to grow at this rates forever. The values associated with a 2,12% growth rate can also be considered very consistent since it is the average for advanced economies and in the long-term seems a very plausible expectation.

DCF Conclusion

The value obtained contains all the information collected and reflects the assumptions made. At the end, the value of \$94,58 might seem quite big according to the current stock performance of the company. That is why it is so important a reliable sensitivity analysis. The perpetual growth rate and WACC have a huge impact in the terminal value and as consequence in the share price. Putting this and consider the more realistic scenarios (those using 2,12% and 2,58% as growth rate and 5,58% and 6,16% as WACC), it is possible to expect that Under Armour stock will have a value between \$70,51 and \$94,58.

Relative Valuation

Peer Group

In order to choose the most appropriate peer group, several criteria had to be followed. It was the mix between industry and size that but also financial ratios, structure and ROIC that made possible to choose the final peer group. The first two variables were the most relevant, being the others used a complement to get the group more restrict.

Industry was the first criteria, since it was considered very important the market segment where the companies act. Being a sportswear company with some presence in the technological market, the companies chosen for the peer group would have to follow this reasoning. There were some options that could be considered for the peer group but after a deep research on company's financial information, Nike, Adidas, VF Corp and Lululemon were the companies designated. The first three are companies known in the market, with a long history and a relatively strong market share. The last one, it is very similar in size and sales volume to Under Armour, but with a capital structure totally different since it is totally equity financed.

Company Name	ROE	Return on Capital
Under Armour Inc	14,50%	11,50%
Nike Inc	30,10%	24,00%
adidas AG	16,60%	8,60%
Lululemon Athletica Inc	23,10%	23,90%
VF Corp	24,60%	15,50%

Table 23-Peers ROE and Return on Capital

Once the values of the ROE and Return on Capital being different of its peers, this criteria is complemented by all the others mentioned before. The peers had an extreme importance in this dissertation. They were used not only in the relative valuation but also to optimize costs among others.

Under Armour is an active player in the sportswear markets, but also in the technological part that can be related with it, like the Connected Fitness platform. This will help to emphasize the importance of Nike and Adidas since it seems that Under Armour want to follow their success and moves but keeping always in mind its entity.

Multiples Valuation

In the Relative Valuation was followed the same reasoning explained on the section XX of the literature review. It would be hard to get a very precise Valuation using just multiples, but it works as a perfect complement to a DCF Valuation since it gives a better overview about the market trends. So in order to proceed with this method, Goedhart et al. recommends the use of forward multiples if they are from a trustfully source. Reuters is a well-known financial information provider and all the forward multiples were extracted from there.

It was used EV/Revenues, EV/EBITDA and P/E multiples. The last one shows how many times more an investor is prepared to pay for the company regarding its earnings. The problem with this approach is that will make less accurate the evaluation of companies with different debt structures. The same does not happen with Enterprise Multiples and that is why they should be more precise.

The result was produced by multiplying the median of the multiples with the respective value associated with it. It was used the median and not average in order to exclude outliers. The values of Revenues, EBITDA and Earnings used were extracted from Bloomberg projections.

Company Name	EV / Revenue	EV / EBITDA	Price / Earnings
Nike Inc	2,78	16,28	24,47
adidas AG	1,21	13,43	25,05
Lululemon Athletica Inc	2,11	12,34	18,92
VF Corp	3,59	16,51	29,70
Median	2,44	14,86	24,76
Revenues 2016	\$ 4 958 500,00	-	-
EBITDA 2016	-	\$ 617 000,00	-
Earnings 2016	-	-	\$ 276 400,00
Enterprise Value	\$ 12 122 475,11	\$ 9 166 641,14	\$ 6 844 002,10
Equity Value	\$ 11 583 375,11	\$ 8 627 541,14	\$ 6 304 902,10
#Shares	223000	223000	223000
Share Price	\$ 51,94	\$ 38,69	\$ 28,27

Table 24-Multiples Valuation

The results, when compared with the DCF valuation are the significantly lower. The multiples do not regard all the information considered in the previous method but it can also be an indicator that the DCF valuation was too optimist. Under Armour is a company that is pushing the market. It has been an example of success over the last years and its performance has been

outstanding. The values presented will have an important weight for the range of Under Armour's final stock price presented in the conclusions.

Investment Bank Comparison

The valuation made was compared with an investment bank report. The report was made by JP Morgan in the beginning of this year, projecting the Under Armour's stock value in December of 2016.

The value projected was \$90 per share, almost \$5 lower than the one predicted in this dissertation using the DCF. In order to reach this value, the analyst used an explicit period of just one year. The values for 2015 were also projected since the report was made before the Under Armour's annual report had been published. It was also predicted the EPS for 2017 in order to proceed to the valuation.

The analyst used a forward multiple approach. The price earnings ratio was used based on Nike results. It was given a premium to the ratio presented by Nike since in their point of view, the sector is improving and Under Armour is growing more than its competitors, Nike in this case. The analyst had multiplied 54x the earnings per share in 2017, reaching a final value of \$90.

The analyst justify Under Armour's success to 5 different factors:

- It is expected that Apparel category keeps growing at high rates;
- The footwear sector is having an exponential growth, giving special relevance to the premium shoes that had doubled their sales over the last year. Here, the Stephen Curry's collection is mentioned as a key feature;
- The fact of Under Armour is increasing its international position;
- It is expected that product margins improve and
- All the athletes that Under Armour's have signed over the last years will keep boosting the company's sales.

The difference between the results presented in the report and in the dissertation can be explained by several different reasons. The projections made in the dissertation are based in a longer explicit period. They seem a bit more optimistic for 2016 when compared with the report.

	JP Morgan	Dissertation
Revenues	\$ 4 979 000,00	\$ 5 142 208,67
% change		3,28%
Operating Income	\$ 503 000,00	\$ 576 714,59
% change		14,65%
Net Income	\$ 287 000,00	\$ 318 520,66
% change		10,98%

Table 25-Investment Bank Comparison

The optimization of costs over time, the tax rate used and especially the development of the FCF over the explicit period can be translated in a higher value at the end. If the same approach was used in this work (54x EPS 2017), we will finish with a value of \$104,44 having EPS of \$1,93.

The analyst recommendation is Neutral, this despite the fact of the company's stock price was \$68,58 at the time of the valuation. This is justified by the fact of economic climate where the changes in the employment rates can change and the consumer trends. It is also mentioned that despite of the fact of Under Armour tried to diversify its risk increasing the international presence and here a less success full investment can have a big impact in the stock performance, its highly dependence of the domestic market can bring serious risks.

Conclusion

This dissertation aimed to do an Equity Valuation on Under Armour. Under Armour is a growing company in the sportswear market with the objective of compete with Nike and Adidas on the top.

The final value is not just a simple result that was made of a simple calculation. This result reflects broad information and knowledge that was collected during this work. The literature review had a huge importance in the theoretical background. It was fundamental for all the calculations and decisions made.

Studying the company was needed and understanding its strategy and aspirations even more. The company overview was a very useful tool, especially in the forecasts. The strategic plan provided by Under Armour had a strong impact in this dissertation, being one of the most reliable sources of information used. The industry overview was one of the most interesting topics presented. By studying the competitors, market trends and risks, I was able to fundament and reach the best assumptions used in this work. CAPEX and costs are some good examples where the peers had a significant importance. It was used Nike, Adidas and VF Corp financial information to better forecasting the Under Armour's performance over the years.

The value of \$94,58 reflects the future projections considered in this thesis. The growth in revenues used in the forecasts is not so optimist as the one made by Bloomberg because it also considered other sources of information. The Market and GDP growth were contemplated in the forecasts, which helped to smooth the growth rates. The fact of COGS and S&A rates were being adjusted over time, it made the Operating Profit grow in the explicit period. These assumptions result in a high FCFF expected for 2021 and that is one of the reasons why the valuation is more optimistic than in the analyst report. The multiples presents a lower valuation than the DCF, but as it was mentioned before, this is a normal result since the company is outperforming the market. As it was used by JP Morgan, a premium would have to be applied for a more precise output.

At the end, and regarding also the results of the Sensitivity Analysis, the recommendation would be BUY. The fair value for UA would be within a range of \$70,51 and \$94,58. These values represent slightly differences in the perpetual growth rate (0,46%) and WACC (0,58%) that can affect the company's value. JP Morgan, despite of the fact of presenting a similar value, duo to some economic changes that might incur in the economy recommends to keep the stock and

not directly to buy it. In my opinion, Under Armour will improve its performance being able to reach the target price based on all the information presented in this work.

It seems that the company has been valued under its Fair price, making Under Armour a very good investment opportunity.

“It's far better to buy a wonderful company at a fair price than a fair company at a wonderful price.”

Warren Buffett

Appendices

Appendix A-Company Overview



Figure 13-Kevin Plank (source: Forbes)



Figure 12-UA headquarters in Baltimore (source: The Columbus Dispatch)










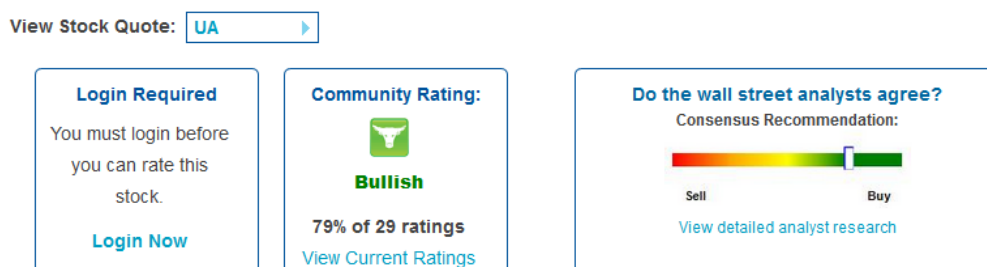
Rank	Company	Country	12-Month Sales Growth	Innovation Premium*
#1	 Tesla Motors	United States	23,355,037,28%	82.4%
#2	 Salesforce.com	United States	25,003,106,23%	75.5%
#3	 Regeneron Pharmaceuticals	United States	36,881,725,24%	72.9%
#4	 Incyte	United States	46,069,937,1%	70.8%
#5	 Alexion Pharmaceuticals	United States	19,242,114,1%	70%
#6	 Under Armour	United States	29,274,172,6%	68.9%
#7	 Monster Beverage	United States	13,376,387,36%	68.8%
#8	 Unilever Indonesia	Indonesia	-13,984,279,81%	67.93%
#9	 Vertex Pharmaceuticals	United States	147,949,303,3%	67.9%

Figure 14-Most Innovative companies (source: Forbes)

Under Armour, Inc. (UA) Stock Ratings



Bullish (“Word used to describe an investor's attitude. Bullish refers to an optimistic outlook, while bearish means a pessimistic outlook”)

Figure 15-UA rating (source: NASDAQ)

History

Founded in 1996 by Kevin Plank, Under Armour appeared to solve a simple problem. Kevin Plank was a former University of Maryland American football player that had to change his sweat t-shirt quite often. Under Armour was created to overcome this situation and emerged after an intense research about the benefits of the synthetic fabrics.

Under Armour changed the way that athletes dress forever. Its first model, the #0037, with moisture-wicking performance fibers that keep the players’ body fresh and dry when facing extreme conditions. Born in Washington at Kevin Plank’s grandmother’s basement, Under Armour moved to its headquarters in Baltimore by 1998.

Kevin Plank’s company got well-known and its products began to appear in movies such as “Any Given Sunday” with Jamie Foxx and Al Pacino. This brought Under Armour to the next level and, in order to increase the brand awareness, Plank decided to launch its first printed ad in ESPN’s magazine. The result of this marketing campaign was incredible and Under Armour experienced a \$750,000 increase in sales.

The company was growing and the agreements with key retail partners and professional sports leagues such as Major League Baseball or National Hockey League were the next step. The marketing campaigns continued and in 2003 the first TV commercial was launched. Under Armour awareness was increasing, people were talking about the brand and the firm kept introducing new business classes, for example Women and Golf apparel.

Under Armour went public on November 18, 2005 less than 10 years after being created. It was the first U.S.-based public offering that doubled on its first day in five years.

Click-Clack® was the campaign used to introduce Under Armour into the footwear business. Under Armour launched its first football boots and just in the first year, captured 23% share of the market. The cleats were being so successful that the brand decided to expand it to other business areas such as baseball, softball and lacrosse.

Plank knew that marketing was important to the company's growth, and the "face" of the brand even more. Under Armour started signing world-class athletes involving future NFL Hall-of-Famer Ray Lewis, gold medal skier Lindsey Vonn, or MMA World Champion Georges St-Pierre. This was basically just the beginning, because at the end of 2010, the brand was signing with the most accomplished Olympian of all time, Michael Phelps and the American football superstar, Tom Brady.

Focusing in its internationalization process, the company decided to open its new European headquarters in Amsterdam. At this time, Under Armour performance was outstanding, and by the end of 2010 it reached \$1 billion in revenue, four times more than in 2005.

In 2011, the brand signed Tottenham Hotspur, a historical team of the Barclays Premier League. In the same year, Under Armour decided to finish its "campaign" against cotton and created Charged Cotton®, a line of cotton apparel that dries fast and performs. R&D is a very important asset of the company, always bringing it to the next level. The result was the first athlete's performance monitoring system, Armour39™.

Nowadays, Under Armour is recognized as the global leader in performance apparel with revenue close to \$4 billion.

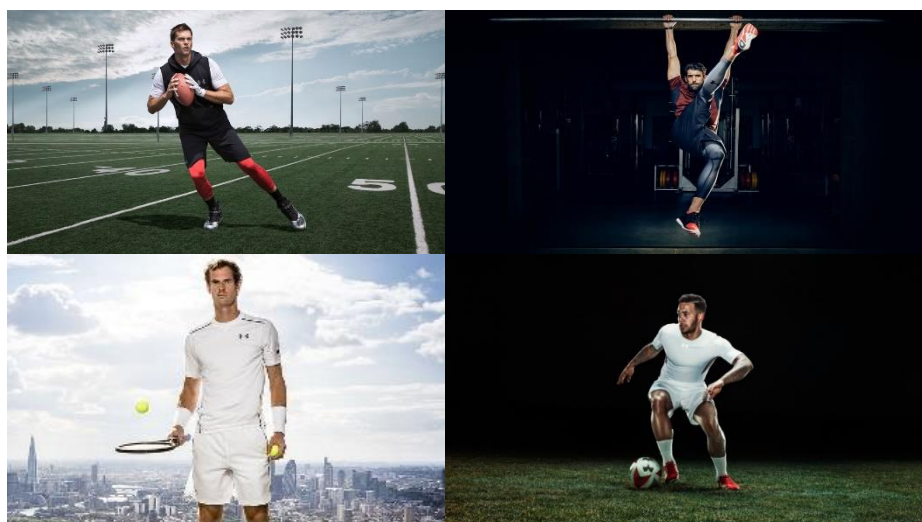


Figure 16: Tom Brady, Michael Phelps, Andy Murray and Memphis Depay (source: Under Armour)



Figure 17-Stephen Curry (source: Under Armour)



Apparel

HEATGEAR[®] is used for warm temperatures. This product was designed to help the body to stay cold, dry and light. In order to wick moisture from the body to keep the body temperature in particularly cold situations, COLDGEAR[®] was created. It is important to mention that this specific gearline is sold at a higher value when compared with the others. The last gearline is ALLSEASONGEAR[®]. Easily we can understand that this line is used between the two previous extreme presented. Its function is keep the body dry and fresh whereas is hot or keep the body temperature to stay warmer if it is cold.



Figure 18-"The Rock" using its own UA collection "Project Rock" (source: www.impeccabledwaynejohnson.org)



Figure 19-Connected Fitness Platform (source: Under Armour)

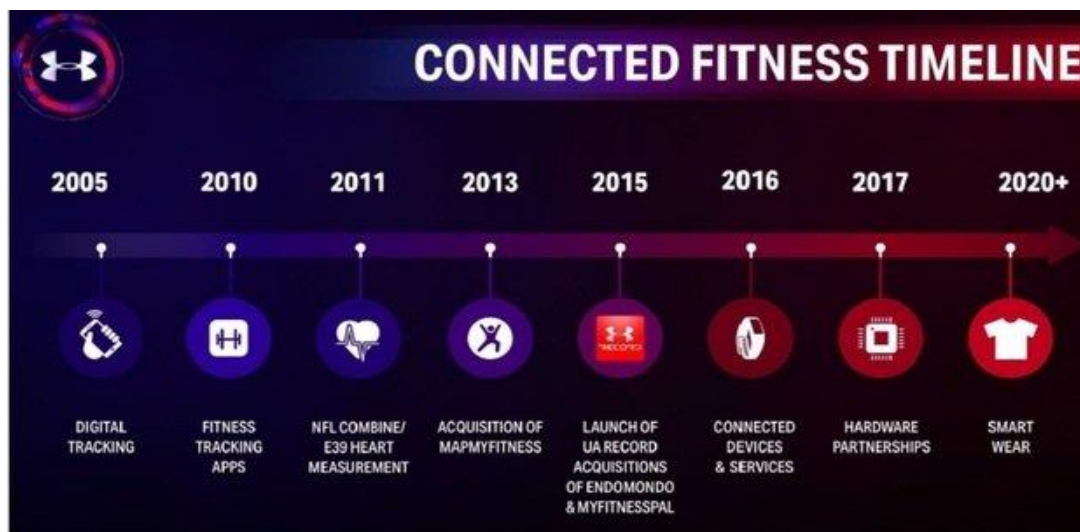


Figure 21-Connected Fitness Timeline (source: Under Armour)



Figure 20-Internationalization process (source: Under Armour)



Figure 22-UA strategy focus (source: Under Armour)

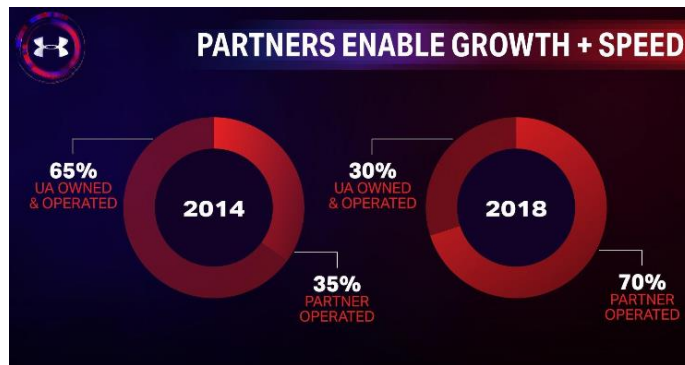


Figure 24-UA expected retail strategy (source: Under Armour)

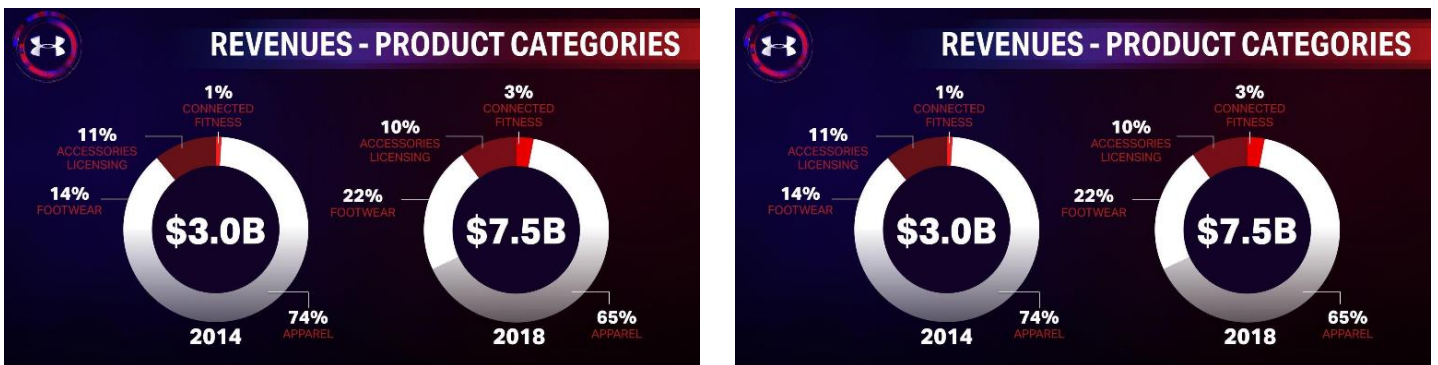


Figure 23-UA expected revenues in 2018 by product and by geography (source: Under Armour)

Appendix B-Industry Overview

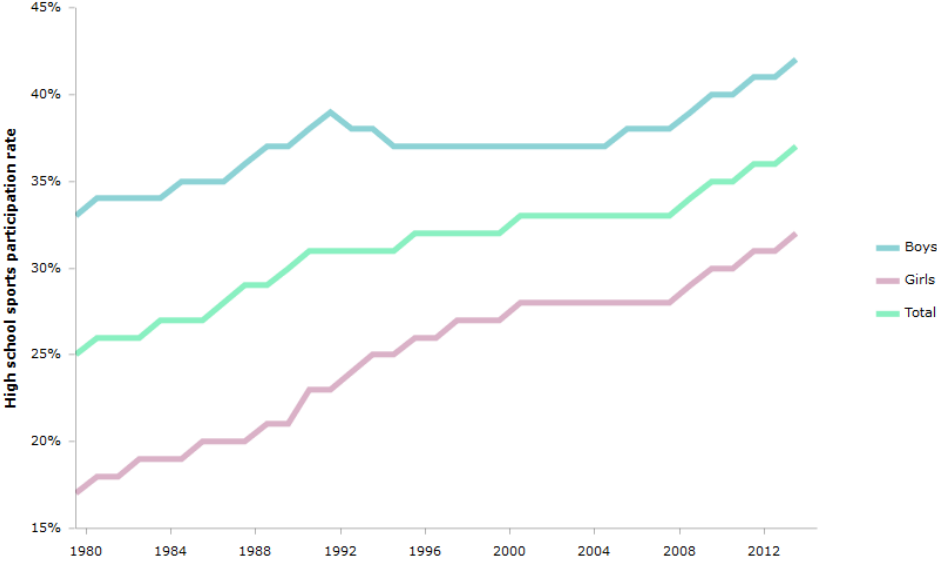


Figure 25-High school sports participation rate (source: Morgan Stanley)

Appendix C-Macroeconomic Overview

Gross Domestic Product (GDP)

GDP is one of the most important financial indicators for an economy. This instrument is so important because it measures the total amount of goods and services produced in an economy.

During the last years, the U.S. economy has been growing at an almost constant rate. The Emerging Markets has shown a different scenario. If in 2011 they were able to grow at rates around 17,5% but this value has been decreasing, being negative on the last year. Advanced Economies followed the trend and their growth rates had decrease over these years. The only difference between these last two was the fact of Advanced Economies were able to slightly recover between 2012 and 2014.

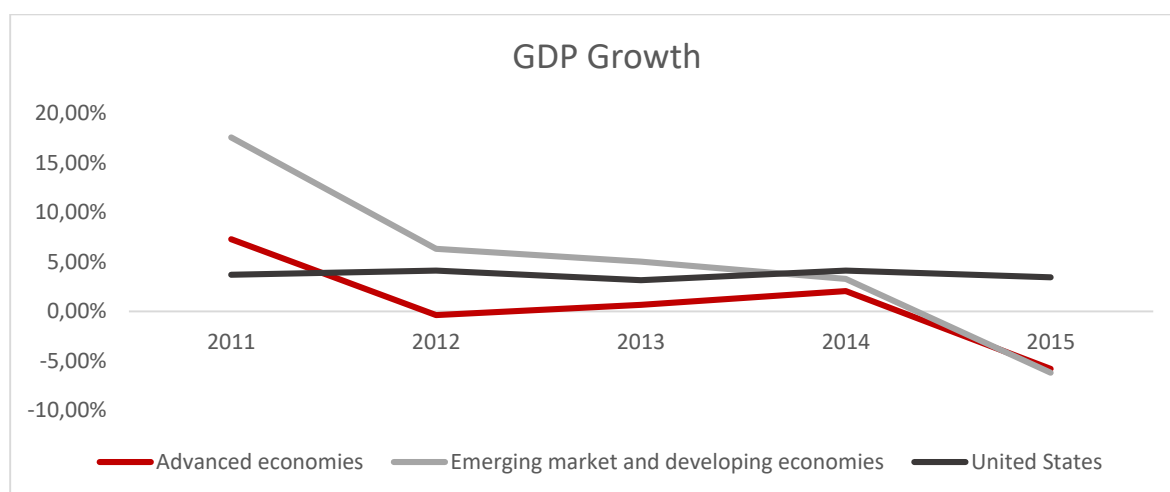


Figure 26-GDP growth (2011-2015) (source: IMF)

If the last year was not the best for global economies, IMF forecasts show that this scenario would change in the next years. In the table 26 you can see the expected growth rates for this economies until 2021, the end of the explicit period used in this dissertation.

	2016	2017	2018	2019	2020	2021
Advanced economies	2,15%	3,72%	3,60%	3,88%	3,87%	3,47%
Emerging market and developing economies	-0,46%	7,33%	7,59%	8,08%	8,51%	8,23%
United States	3,41%	3,92%	4,46%	4,32%	4,08%	4,08%

Table 26-GDP projections (2016-2021) (source: IMF)

According to Bloomberg, the U.S economy is not growing as it was expected during the second quarter of 2016. Bloomberg analysts had predicted 2,5% growth for this period. The values presented were 1,2% that are almost two times lower than the one projected. This can be an

indicator the economy is not recovering as well as it was expected and the forecasts might have to be reviewed.

Inflation

If the GDP measures production, Inflation measures how prices changes in an economy. From 2011 to 2015 inflation rates have been decreasing, being the United States the only one where the inflation had increased in the last year. This means that despite of the fact of prices are raising year over year, since the rates are positive, the changes are getting lower.

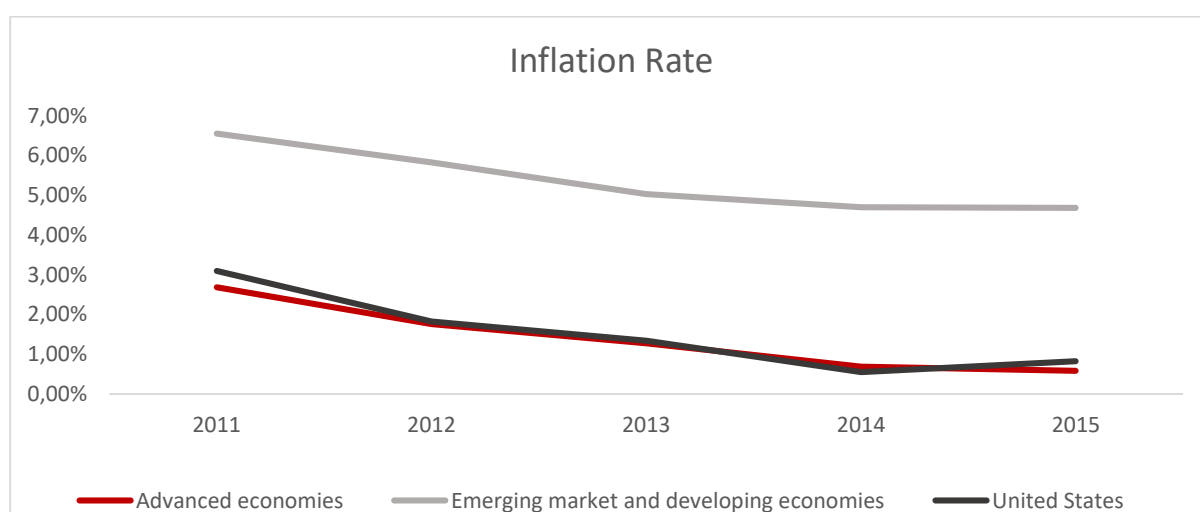


Figure 27-Inflation Rate (2011-2015) (source: IMF)

IMF forecasts for the next years are described in the table 28. The scenario shows a different trend from the last years. Since it is expected that economies will boost in the following years, the prices will rise as it is shown for Advanced Economies and United States. On the other hand, Emerging Markets will have lower and lower inflation rates.

	2016	2017	2018	2019	2020	2021
Advanced economies	0,90%	1,78%	1,92%	1,95%	1,91%	1,94%
Emerging market and developing economies	4,48%	4,06%	3,97%	3,90%	3,96%	3,92%
United States	0,82%	2,17%	2,47%	2,45%	2,22%	2,15%

Table 27-Inflation rate projections (2016-2021) (source: IMF)

According to Forbes this seems a normal scenario for Emerging Economies. They work in cycles, always switching between a boom and a bust. This bust situation happens since expectations do not match the real results. Investors should not panic since it is considered a systematic cycle and the boom will happen again. The fact of the inflation rates do not match totally what is expected for the GDP rates, in the case of the Emerging Markets, which can indicate that this lower rates are just the prices that adjusting themselves to the market.

Appendix D-Valuation

	2015	2016	2017	2018	2019	2020	2021
Apparel	\$ 2 801 062	\$ 3 492 375	\$ 4 165 681	\$ 4 879 714	\$ 5 510 266	\$ 5 956 125	\$ 6 197 960
Footwear	\$ 677 744	\$ 1 001 829	\$ 1 283 017	\$ 1 574 053	\$ 1 826 062	\$ 1 999 068	\$ 2 080 236
Accessories	\$ 346 885	\$ 432 423	\$ 515 750	\$ 604 119	\$ 682 162	\$ 737 349	\$ 767 287
Total net sales	\$ 3 825 691	\$ 4 926 627	\$ 5 964 447	\$ 7 057 886	\$ 8 018 490	\$ 8 692 542	\$ 9 045 483
License	\$ 84 207	\$ 104 972	\$ 125 199	\$ 146 651	\$ 165 596	\$ 178 993	\$ 186 260
Connected Fitness	\$ 53 415	\$ 110 610	\$ 167 805	\$ 225 000	\$ 234 821	\$ 244 663	\$ 254 597
Total net revenues	\$ 3 963 313	\$ 5 142 209	\$ 6 257 452	\$ 7 429 537	\$ 8 418 907	\$ 9 116 197	\$ 9 486 340

Table 28-Revenues by product (2015-2021)

Nike								Nike							
	2011	2012	2013	2014	2015	Average	Weighted Average		2011	2012	2013	2014	2015	Average	Weighted Average
COGS/Revenue	54,26%	56,50%	56,41%	55,23%	54,03%	55,29%	55,01%	S&A/Revenue	31,62%	30,34%	30,80%	31,53%	32,33%	31,32%	31,63%
Adidas								Adidas							
COGS/Revenue	52,49%	52,27%	50,71%	52,36%	51,72%	51,91%	51,85%	S&A/Revenue	39,03%	38,67%	10,20%	10,63%	39,52%	27,61%	26,35%
VF Corp								VF Corp							
COGS/Revenue	54,22%	53,47%	51,94%	51,20%	51,69%	52,50%	51,89%	S&A/Revenue	32,63%	33,06%	33,63%	33,87%	33,76%	33,39%	33,65%
Lululemon								Lululemon							
COGS/Revenue	43,12%	44,33%	47,20%	49,13%	51,61%	47,08%	49,05%	S&A/Revenue	28,22%	28,20%	28,20%	29,94%	30,48%	29,01%	29,64%
Average							52,91%	Average							30,54%

Table 29-Peers COGS and S&A as percentage of Revenues (2011-2015)

	2015	2016	2017	2018	2019	2020	2021
Revenue (+)	\$ 3 963 300,00	\$ 5 142 208,67	\$ 6 257 451,62	\$ 7 429 537,31	\$ 8 418 907,09	\$ 9 116 197,43	\$ 9 486 340,05
Cost of Revenue (-)	\$ 2 057 800,00	\$ 2 650 122,07	\$ 3 242 128,34	\$ 3 869 890,69	\$ 4 408 437,77	\$ 4 798 690,65	\$ 5 019 677,86
Other Expenses (-)	\$ 1 483 100,00	\$ 1 915 372,01	\$ 2 246 812,77	\$ 2 567 971,16	\$ 2 796 971,58	\$ 2 906 303,50	\$ 2 897 015,28
Depreciation	\$ 96 521,00	\$ 86 682,81	\$ 104 966,50	\$ 131 538,31	\$ 163 750,17	\$ 204 188,00	\$ 255 618,42
EBIT (=)	\$ 325 879,00	\$ 490 031,78	\$ 663 544,01	\$ 860 137,14	\$ 1 049 747,58	\$ 1 207 015,28	\$ 1 314 028,49
Taxes (-)	\$ 130 025,72	\$ 171 511,12	\$ 232 240,40	\$ 301 048,00	\$ 367 411,65	\$ 422 455,35	\$ 459 909,97
Net Income	\$ 195 853,28	\$ 318 520,66	\$ 431 303,61	\$ 559 089,14	\$ 682 335,93	\$ 784 559,93	\$ 854 118,52

Table 30-Net Income (2015-2021)

Nike								
	2011	2012	2013	2014	2015	Average	Weighted Average	
Capex/Revenues	2,15%	2,41%	2,36%	3,17%	3,15%	2,65%	2,91%	
Adidas								
Capex/Revenues	2,82%	2,92%	3,34%	3,77%	3,03%	3,18%	3,28%	
VF Corp								
Capex/Revenues	2,42%	2,32%	2,37%	1,91%	2,06%	2,21%	2,10%	
Lululemon								
Capex/Revenues	12,22%	6,80%	6,69%	6,66%	6,96%	7,87%	7,08%	
Average							2,68%	2,76%

Table 31-Peers CAPEX as percentage of Revenues (2011-2015)

(In thousands)	2 011	2 012	2 013	2 014	2 015	Average	2 016	2 017	2 018	2 019	2 020	2 021
Intangible Assets Gross	\$ 16,000	\$ 17,200	-	\$ 35,000	\$ 95,800		\$ 90,060	\$ 109,593	\$ 130,120	\$ 147,448	\$ 159,661	\$ 166,143
% of Revenues	1.09%	0.94%	-	1.13%	2.42%	1.75%						
Intangible Net	\$ 5,500	\$ 4,500	\$ 24,100	\$ 26,200	\$ 75,700		\$ 61,259	\$ 74,545	\$ 88,508	\$ 100,295	\$ 108,602	\$ 113,011
% of Intangible Assets Gross	34.38%	26.16%	-	74.88%	79.02%	68.02%						
D&A Intangible	\$ 10,500	\$ 12,700	-	\$ 8,800	\$ 20,100		\$ 28,801	\$ 35,047	\$ 41,612	\$ 47,153	\$ 51,059	\$ 53,132
Depreciation of the Period							\$ 8,701	\$ 6,246	\$ 6,585	\$ 5,541	\$ 3,905	\$ 2,073

(In thousands)	2 011	2 012	2 013	2 014	2 015	Average	2 016	2 017	2 018	2 019	2 020	2 021
Accumulated depreciation	\$ 114,675	\$ 145,271	\$ 172,134	\$ 216,612	\$ 233,233		\$ 371,215	\$ 463,935	\$ 534,909	\$ 753,117	\$ 953,400	\$ 1,206,345
Depreciation of the Period	\$ -	\$ 30,596	\$ 26,863	\$ 44,678	\$ 76,421		\$ 77,961	\$ 98,720	\$ 124,973	\$ 158,208	\$ 200,282	\$ 253,545
% of Revenues	-	26.66%	18.43%	25.95%	35.25%	26.53%						

(In thousands)	2 011	2 012	2 013	2 014	2 015	Average	2 016	2 017	2 018	2 019	2 020	2 021
Total Depreciation	\$ 10,500	\$ 43,296	\$ -	\$ 53,478	\$ 96,521		\$ 86,682	\$ 104,966	\$ 131,538	\$ 163,750	\$ 204,188	\$ 255,618

Table 32-Total Depreciation in thousands of dollars (2011-2021)

	2015	2016	2017	2018	2019	2020	2021	Average
Weighted GDP growth	1,39%	2,70%	4,00%	4,38%	4,36%	4,19%	4,06%	3,58%

Table 33-Weighted GDP growth (2015-2021)

	2015	2016	2017	2018	2019	2020	2021
Assets (\$ Millions)							
Cash and Short Term Investments	\$ 129 900,00	\$ 559 878,06	\$ 610 679,75	\$ 307 806,30	\$ 773 986,05	\$ 1 505 958,23	\$ 2 517 586,97
Accounts Receivable - Trade, Net	\$ 433 600,00	\$ 507 006,56	\$ 616 966,22	\$ 732 530,40	\$ 830 079,33	\$ 898 830,09	\$ 935 325,06
Accounts Receivable - Trade, Gross	\$ 439 500,00	\$ 516 136,81	\$ 628 076,63	\$ 745 721,91	\$ 845 027,52	\$ 915 016,35	\$ 952 168,53
Provision for Doubtful Accounts	\$ -5 900,00	\$ -9 130,25	\$ -11 110,41	\$ -13 191,51	\$ -14 948,18	\$ -16 186,26	\$ -16 843,46
Total Receivables, Net	\$ 433 600,00	\$ 507 006,56	\$ 616 966,22	\$ 732 530,40	\$ 830 079,33	\$ 898 830,09	\$ 935 325,06
Total Inventory	\$ 783 000,00	\$ 975 838,27	\$ 1 193 829,12	\$ 1 424 986,22	\$ 1 623 292,12	\$ 1 766 992,56	\$ 1 848 365,33
Prepaid Expenses	\$ 148 400,00	\$ 160 500,66	\$ 196 354,64	\$ 234 374,12	\$ 266 990,42	\$ 290 625,50	\$ 304 009,25
Other Current Assets, Total	\$ 3 800,00	\$ 50 632,67	\$ 61 613,89	\$ 73 154,81	\$ 82 896,62	\$ 89 762,48	\$ 93 407,08
Total Current Assets	\$ 1 498 800,00	\$ 2 253 856,22	\$ 2 679 443,61	\$ 2 772 851,85	\$ 3 577 244,54	\$ 4 552 168,86	\$ 5 698 693,70
Property/Plant/Equipment, Total - Gross	\$ 831 800,00	\$ 1 021 659,87	\$ 1 218 311,64	\$ 1 407 700,82	\$ 1 564 543,46	\$ 1 660 822,01	\$ 1 669 484,49
Property/Plant/Equipment, Total - Net	\$ 538 500,00	\$ 650 445,06	\$ 748 376,70	\$ 812 792,30	\$ 811 426,14	\$ 707 422,15	\$ 462 539,34
Accumulated Depreciation, Total	\$ -293 200,00	\$ -371 214,81	\$ -469 934,94	\$ -594 908,52	\$ -753 117,32	\$ -953 399,86	\$ -1 206 945,15
Goodwill, Net	\$ 585 200,00	\$ 276 900,00	\$ 276 900,00	\$ 276 900,00	\$ 276 900,00	\$ 276 900,00	\$ 276 900,00
Intangibles, Net	\$ 75 700,00	\$ 61 259,31	\$ 74 545,24	\$ 88 508,34	\$ 100 294,73	\$ 108 601,58	\$ 113 011,10
Intangibles - Gross	\$ 95 800,00	\$ 90 060,32	\$ 109 592,61	\$ 130 120,44	\$ 147 448,20	\$ 159 660,50	\$ 166 143,16
Accumulated Intangible Amortization	\$ -24 100,00	\$ -28 801,00	\$ -35 047,37	\$ -41 612,11	\$ -47 153,47	\$ -51 058,92	\$ -53 132,06
Long Term Investments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Note Receivable - Long Term	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Long Term Assets, Total	\$ 170 700,00	\$ 94 600,00	\$ 94 600,00	\$ 94 600,00	\$ 94 600,00	\$ 94 600,00	\$ 94 600,00
Total Assets	\$ 2 868 900,00	\$ 3 337 060,59	\$ 3 873 865,55	\$ 4 045 652,48	\$ 4 860 465,41	\$ 5 739 692,59	\$ 6 645 744,13

Table 34-Balance Sheet (Assets) in thousands of dollars (2015-2021)

	2015	2016	2017	2018	2019	2020	2021
Liabilities (\$ Millions)							
Accounts Payable	\$ 200 500,00	\$ 322 034,74	\$ 394 046,34	\$ 470 344,92	\$ 535 799,71	\$ 583 230,88	\$ 610 089,58
Payable/Accrued	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Accrued Expenses	\$ 192 900,00	\$ 254 152,06	\$ 309 272,59	\$ 367 202,56	\$ 416 101,85	\$ 450 565,21	\$ 468 859,39
Notes Payable/Short Term Debt	\$ -	\$ -	\$ 100 000,00	\$ -	\$ -	\$ -	\$ -
Current Port. of LT Debt/Capital Leases	\$ 42 000,00	\$ 41 710,20	\$ 50 756,32	\$ 60 263,50	\$ 68 288,61	\$ 73 944,57	\$ 76 946,93
Other Current Liabilities	\$ 43 400,00	\$ 52 482,93	\$ 63 865,44	\$ 75 828,10	\$ 85 925,91	\$ 93 042,66	\$ 96 820,45
Total Current Liabilities	\$ 478 800,00	\$ 670 439,93	\$ 817 941,29	\$ 973 639,08	\$ 1106 116,08	\$ 1200 783,32	\$ 1252 716,34
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Long Term Debt	\$ 627 000,00	\$ 585 000,00	\$ 543 000,00	\$ -	\$ -	\$ -	\$ -
	\$ 42 000,00	\$ 42 000,00	\$ 42 000,00	\$ 543 000,00	\$ -	\$ -	\$ -
Total Debt	\$ 669 000,00	\$ 627 000,00	\$ 585 000,00	\$ 543 000,00	\$ -	\$ -	\$ -
Deferred Income Tax	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Minority Interest	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Liabilities, Total	\$ 94 900,00	\$ 94 900,00	\$ 94 900,00	\$ 94 900,00	\$ 94 900,00	\$ 94 900,00	\$ 94 900,00
Total Liabilities	\$ 1200 700,00	\$ 1350 339,93	\$ 1455 841,29	\$ 1068 539,08	\$ 1201016,08	\$ 1295 683,32	\$ 1347 616,34
Common Stock, Total							
	\$ 100,00	\$ 100,00	\$ 100,00	\$ 100,00	\$ 100,00	\$ 100,00	\$ 100,00
Additional Paid-In Capital	\$ 636 600,00	\$ 636 600,00	\$ 636 600,00	\$ 636 600,00	\$ 636 600,00	\$ 636 600,00	\$ 636 600,00
Retained Earnings (Accumulated Deficit)	\$ 1076 500,00	\$ 1395 020,66	\$ 1826 324,26	\$ 2 385 413,41	\$ 3 067 749,33	\$ 3 852 309,27	\$ 4 706 427,78
Treasury Stock - Common	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ESOP Debt Guarantee	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Unrealized Gain (Loss)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Equity, Total	\$ -45 000,00	\$ -45 000,00	\$ -45 000,00	\$ -45 000,00	\$ -45 000,00	\$ -45 000,00	\$ -45 000,00
Total Equity	\$ 1668 200,00	\$ 1986 720,66	\$ 2 418 024,26	\$ 2 977 113,41	\$ 3 659 449,33	\$ 4 444 009,27	\$ 5 298 127,78
Total Liabilities & Shareholders' Equity	\$ 2 868 900,00	\$ 3 337 060,59	\$ 3 873 865,55	\$ 4 045 652,48	\$ 4 860 465,41	\$ 5 739 692,59	\$ 6 645 744,13

Table 35-Balance Sheet (Liabilities + Equity) in thousands of dollars (2015-2021)

Appendix E-APV

If interest coverage ratio is

greater than	≤ to	Rating is	Spread is
12.5	100000	Aaa/AAA	0.75%
9.5	12.499999	Aa2/AA	1.00%
	9		
7.5	9.499999	A1/A+	1.10%
	6	A2/A	1.25%
	7.499999		
4.5	5.999999	A3/A-	1.75%
	4	Baa2/BBB	2.25%
	4.499999		
3.5	3.999999	Ba1/BB+	3.25%
	3	Ba2/BB	4.25%
	3.499999		
2.5	2.999999	B1/B+	5.50%
	2	B2/B	6.50%
	2.499999		
1.5	1.999999	B3/B-	7.50%
1.25	1.499999	Caa/CCC	9.00%
0.8	1.249999	Ca2/CC	12.00%
0.5	0.799999	C2/C	16.00%
-100000	0.499999	D2/D	20.00%

Table 36-Default rating table (source: Damodaran)

	2015	2016	2017	2018	2019	2020	2021
Interest paid @ rf +spread of rating	\$ 15 600,00	\$ 16 291,49	\$ 15 894,76	\$ 15 507,69	\$ 15 130,05	\$ 14 761,60	\$ 14 402,12
Dividend		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Retained profit		\$ 307 931,19	\$ 420 972,01	\$ 549 009,15	\$ 672 501,40	\$ 774 964,89	\$ 844 757,14
Equity @bv	\$ 1 668 200,00	\$ 1 976 131,19	\$ 2 397 103,20	\$ 2 946 112,35	\$ 3 618 613,75	\$ 4 393 578,64	\$ 5 238 335,78
Debt	\$ 669 000,00	\$ 652 708,51	\$ 636 813,75	\$ 621 306,07	\$ 606 176,02	\$ 591 414,42	\$ 577 012,30
D/E@bv	40,10%	33,03%	26,57%	21,09%	16,75%	13,46%	11,02%
and see what happens to the rating							
Debt/EBIT (x)	2,05	1,33	0,96	0,72	0,58	0,49	0,44
EBIT/Juros (x)	20,89	30,08	41,75	55,47	69,38	81,77	91,24
Expected rating	AAA	AAA	AAA	AAA	AAA	AAA	

Table 37-PVTS

NPV of FCFF	\$	1 438 135,37
NPV of TV	\$	20 640 223,40
Value of company without leverage	\$	22 078 358,77
NPV of tax-shields -explicit period	\$	29 818,77
NPV of tax-shields -terminal value	\$	127 902,59
E(bankruptcy costs)	\$	883 134,35
EV with leverage	\$	21 352 945,77
Net Debt	\$	539 100,00
Equity Value	\$	20 813 845,77
#shares		223000
Share price		93,33563127
Ke		5,53%
Kd		3,27%

Table 38-APV Valuation

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