Equity valuation of PUMA SE

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Abstract

In this thesis, a valuation of the company "**PUMA SE**" is performed using suitable methods and, in dependence of the current share price, an investment recommendation is given to (potential) investors. As an established manufacturer in the sporting goods industry, PUMA operates in an attractive growth market due to superordinate social trends. Overall, the established players have enjoyed great popularity among investors in recent years. Despite positive outlooks, the entire industry face challenges in the near future due to macroeconomic factors. These must be overcome for a sustainable strategic positioning in the market. The author is confident that PUMA will succeed in taking the steps needed and, regardless of the valuation method chosen, he concludes that PUMA is currently undervalued and that a purchase of the share therefore makes sense. This is in line with the conclusion of the analyst of AlsterResearch AG, with whose equity report the results are compared at the end of the thesis.

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Author: Till Krefting
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Resumo

Nesta tese, a empresa "**PUMA SE**" é avaliada com a ajuda de métodos adequados e, dependendo do preço actual das acções, é dada uma recomendação de investimento aos (potenciais) investidores. Como fabricante estabelecido na indústria de artigos desportivos, a PUMA opera num mercado em crescimento atractivo devido a tendências sociais superiores. Em geral, os intervenientes estabelecidos gozaram de grande popularidade entre os investidores nos últimos anos. Apesar das perspectivas positivas, toda a indústria enfrenta desafios num futuro próximo devido a factores macroeconómicos. Estes têm de ser superados para um posicionamento estratégico sustentável no mercado. O autor está confiante de que a PUMA conseguirá tomar as medidas necessárias e, independentemente do método de avaliação escolhido, conclui que a PUMA está actualmente subvalorizada e que uma compra da acção faz, portanto, sentido. Esta é também a conclusão do analista da AlsterResearch AG, com cujo relatório de equidade os resultados são comparados no final da tese.

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Palavras-chave: Corporate finance, valuation, equity report, PUMA SE, sporting goods industry

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List of abbreviations

#	Number
%	Percentage
Δ	Delta
Ø	On average
β	Beta
A	Assets
AG	Aktiengesellschaft
APT	Arbitrage pricing theory
AP	Accounts payable
Approx.	Approximately
APV	Adjusted present value
AR	Accounts receivable
Bn	Billion
BOP	Beginning of period
BVB	Ballspielverein Borussia 09 e. V. Dortmund
C & CE	Cash & cash equivalents
CA	Current assets
CAGR	Compound annual growth rate
Cap	Capitalization
CAPEX	Capital expenditures
CAPM	Capital asset pricing model
CCC	Cash conversion cycle
CEO	Chief Executive Officer
CF	Cash flow
CL	Current liabilities
COGS	Cost of goods sold
Corp	Corporation
D	Debt
D&A	Depreciation and amortization
D2C	Direct-to-consumer
DAX	Deutscher Aktienindex
DCF	Discounted cash flow

DDM	Dividend discount model
DIO	Days inventories outstanding
Div	Dividend
DPO	Days payables outstanding
DPS	Dividend per share
DSO	Days sales outstanding
DVFA	Association of investment professionals in Germany (Deutsche Vereinigung für Finanzanalyse und Asset Management)
E	Equity
EBIT	Earnings before interest and taxes
EBITA	Earnings before interest, taxes, and amortization
EBITDA	Earnings before interest, taxes, depreciation, and amortization
EEMEA	Eastern Europe, Middle East, and Africa
EER	Expected equity premium
e.g.	exempli gratia (for example)
EMM	Exit multiple method
EOP	End of period
EPS	Earnings per share
EqV	Equity value
etc.	et cetera (and so on)
et al	et alia (and others)
EUR/€	Euro
EV	Enterprise value
FA	Fixed assets
FAUB	Technical Committee for Business Valuation and Economics (Fachausschuss für Unternehmensbewertung)
FC	Forecast
FCF	Free cash flow
FCFE	Free cash flow to equity
FCFF	Free cash flow to the firm
FDC	Financial distress cost
f L	Financial liabilities
FY	Financial year

GDP	Gross domestic product
GmbH	Gesellschaft mit beschränkter Haftung
HEP	Historical equity premium
HQ	Headquarter
I	Inventories
ICR	Interest coverage ratio
IDW	Institute of Public Auditors in Germany (Institut der Wirtschaftsprüfer)
IEP	Implied equity premium
IMF	International Monetary Fund
Inc	Incorporation
ISIN	International securities identification number
ITS	Interest tax shield
L	Liabilities
l	Leasing liabilities
LT	Long-term
LTM	Last twelve month
Ltd.	Limited
LVMH	Moët Hennessy Louis Vuitton SE
m	million
M&A	Mergers & acquisitions
MDAX	Midcap DAX
Mrkt	Market
MRP	Market risk premium
MSc	Master of Science
MSCI	Morgan Stanley Capital International
n/a	Not available
NCA	Non-current assets
nm	Not meaningful
No.	Number
NOPAT	Net operating profit after taxes
NOPLAT	Net operating profit less adjusted taxes
NWC	Net working capital
OOE	Other operating expenses

OOI	Other operating income
OPEX	Operating expenses
OWC	Other working capital
p.a.	per annum (per year)
P/E	Price/earnings ratio
PGM	Perpetuity growth method
PV	Present value
R&D	Research and development
REP	Required equity premium
ROE	Return on equity
RoW	Rest of the world
SA	Société anonyme
SAS	Société par actions simplifiée
SE	Societas Europaea
SG&A	Selling, general and administrative Expenses
STI	Short-term investments
TV	Terminal Value
TWC	Trade working capital
US	United States
USD	US-Dollar
WACC	Weighted average cost of capital
WC	Working Capital
y-o-y	Year-over-year
YTD	Year to date
YTM	Yield to maturity

PUMA SE

Sporting goods industry	Recommendation: **BUY**
Primary index: MDAX	Current price: € 53,78
Ticker: PUM.DE	Target price: € 64,69
ISIN: DE0006969603	Upside: 20,28%

Company profile

PUMA SE is one of the largest manufacturers in the sporting goods industry. The company has a global presence, both online and with own stores. The company sells products in the footwear, apparel and accessories segments.

Key information

CEO	Arne Freundt
Founded	01/06/1948
HQ	Germany
Employees	> 18.000

Market Data

52 week (€)	41,85/80,02
YTD return	(3,88%)
Mrkt cap	7,92 bn
P/E	22,25
Div yield	1,56%

Share price

Decent FY22, but cautious outlook

Historical performance

In the past, PUMA succeeded in achieving steady revenue growth with a simultaneous improvement in the operating margin. In 2022, the revenue threshold of € 8 bn. was exceeded for the first time in companies' history. In particular, the company is benefiting from the social trend towards a more conscious lifestyle.

Environment

The growth outlook is clouded by macroeconomic factors. A tightening of the procurement situation and persistently high inflation represent a significant risk for PUMA and require a prudent management in the future.

Outlook

Despite the challenges, the sporting goods industry is growing steadily. PUMA has quickly adapted key trends and has therefore been able to take additional market share from competitors. With the focus on sustainability, a continuation of the development is plausible.

Investment recommendation

Regardless of the valuation method chosen, the share is undervalued in the author's opinion and an investment offers potential. Therefore, the recommendation is BUY. The opportunities outweigh the challenges. PUMA is well positioned to succeed even in turbulent times.

Key financials

EURm	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Revenue	8.465	9.227	10.057	10.912	11.785	12.551	13.271	13.932	14.519	15.020	15.424
% y-o-y growth	24,4%	9,0%	9,0%	8,5%	8,0%	6,5%	5,7%	5,0%	4,2%	3,5%	2,7%
EBIT	641	607	687	772	863	951	1.068	1.187	1.305	1.420	1.531
% revenue	7,6%	6,6%	6,8%	7,1%	7,3%	7,6%	8,0%	8,5%	9,0%	9,5%	9,9%
FCFF	178	749	250	305	366	463	560	664	771	880	988
EPS	2,36	2,11	2,51	2,85	3,23	3,58	4,07	4,58	5,08	5,58	6,06
ROE	22,3%	20,4%	21,4%	22,4%	23,3%	24,2%	25,8%	27,5%	29,1%	30,7%	32,3%

1. Introduction

There are various reasons for performing a company valuation. It can serve (potential) investors as a well-founded investment recommendation, provide information on the sources of value creation and serve management as a basis for future strategic orientation, or determine the purchase price to be paid in a transaction. Measuring and managing shareholder value is one of the central tasks of management and therefore fundamental valuation knowledge is of elementary importance for today's managers.

In this thesis, PUMA SE is analyzed and valued using suitable methods. The company is one of the key players in the sporting goods industry and is well known worldwide. The valuation is based on publicly available information and assumptions need to be made that have an impact on the obtained results. It is important to note that they are subjective. There is no standard procedure for the valuation of companies and no objectively "correct" enterprise value exists. The value and price of a company can be different and may vary for various stakeholders (Fernández, 2007).

The thesis consists of seven main chapters. At the beginning, in the literature review the theoretical foundation of valuation methods is presented and their applicability to PUMA is analyzed. In the third chapter, the current macroeconomic environment as well as special characteristics and trends of the sporting goods industry are examined. In chapter four a company overview of PUMA SE is presented. In the fifth chapter the historical financial performance is analyzed and the key assumptions made for the forecasting period are explained. In chapter six, the selected valuation methods for determining a "fair" share price are applied to PUMA. The results are compared with the equity research report published by AlsterResearch AG in chapter seven.

2. Literature review

2.1. Introduction to valuation methodologies

The following chapter provides an overview of the most commonly used valuation methods and evaluates which methods are most suitable for the valuation of PUMA SE. The range of models is broad and often these models are based on different assumptions about fundamentals. The aggregation of similar models into categories is especially critical for a conclusive understanding of obtained valuation results (Damodaran, 2006). No valuation approach is superior to others, and all have their justification, because "there are circumstances in which one approach provides a more reliable result than another" (Fazzini, 2018). In practice, the choice of valuation methodology depends primarily on the circumstances of the industry. Crucial to the choice is the context in which the valuation takes place, the analysts' familiarity with the respective methodology, and the client's acceptance of it (Demirakos et al, 2004). In the literature, there are miscellaneous categorizations, but Damodaran (2006) categorizes valuation techniques into 4 major categories:

1. Intrinsic valuation: The intrinsic value of a company is derived based on its future cash flows, growth potential and risk. In its most common form, the discounted cash flow approach is used, where "the value of an asset is the present value of the expected cash flows on the asset, discounted back at a rate that reflects the riskiness of these cash flows" (Damodaran, 2016).
2. Assets-based valuation[1]: In contrast to intrinsic valuation, asset-based valuation focuses on the existing assets of a company. Accounting estimates or book values serving as starting point. It could be argued that the value of a company corresponds to the sum of the values of the individual assets owned. However, with the assumption that a company is going concern, a different valuation is obtained because future investments are considered in addition to existing ones. This is especially pertinent to growth companies, where these account for a large part of the value. Therefore, this valuation method is often used when a company faces financial distress or has no ongoing concern.
3. Relative valuation: In relative valuation, assets are valued with the input of the market. The first step is to find comparable companies or precedent transactions that are valued by the market. By scaling the market prices to a common variable, standardized values

[1] In other publications of Damodaran part of the category "intrinsic valuation"

are obtained that are comparable. The value of the company is finally determined by putting the prices of the comparable assets in relation to a variable such as revenue or earnings (Suozzo, 2001).

4. Contingent claim valuation: This approach is used when investments contain embedded options. A contingent claim is a derivative instrument that gives its holder a right but not an obligation. Option pricing models (Binomial model or Black-Scholes-Merton) are used to value assets with these features (Schlee and Schlesinger, 1993).

Regardless of the valuation method chosen, the process must be adapted to the company being valued. In addition to external influences (e.g., macroeconomic influences), industry- and company-specific factors must be analyzed and considered as part of the valuation (Pinto et al, 2020).

The above-mentioned categories are presented in detail below. The focus is on the approaches that appear to be most suitable for the valuation of PUMA SE and therefore the asset-based valuation and the contingent claim valuation are not discussed in detail.

2.2. Intrinsic value approach

2.2.1. DCF-models

In practice as well as in academic circles, discounted cash flow valuation still plays a major role, even though other methods have gained importance due to technological developments and new findings (Luehrman, 1997). One reason for the popularity of discounted cash flow valuation models, despite some assumptions to be made, is not only the accuracy of them but also their flexibility (Koller et al, 2015). Fernández (2001) even sees discounted cash flow methods as “the only conceptually correct valuation methods”. It is important to understand the fundamentals of discounted cash flow valuation because all other valuation approaches build on it (Damodaran, 2012). The application of them is based on the fundamental assumption that every asset/company has an intrinsic value (Damodaran, 2006). This value consists in the ability of the asset/company to generate cash flows in the future (Kumar, 2015) and ”not what someone perceives it to be worth” (Damodaran, 2006). The fair market value for an ongoing company therefore corresponds to the present value of the cash flows that can be expected in the future (Larrabee and Voss, 2013):

Equation 1: DCF model

$$V_0 = \frac{E(CF_1)}{(1+r)^1} + \frac{E(CF_2)}{(1+r)^2} + \ldots + \frac{E(CF_n)}{(1+r)^n} = \sum_{t=1}^{t=n} \frac{E(CF_t)}{(1+r)^t}$$

where

$E(CF) = expected\ cash\ flow$ in period t

$r = discount\ rate\ reflecting\ the\ riskiness\ of\ the\ cash\ flow$

$n = Life\ of\ the\ asset$

There are two different DCF approaches: the equity approach, and the firm or entity or enterprise approach. In the equity approach, only the equity stake of the company is valued ("equity value"). In contrast, firm DCF models value the entire company ("enterprise value") and by deducting the net liabilities, the equity value is obtained in a second step (DVFA, 2012). When applied correctly and based on the same assumptions, enterprise and equity discounted cash flow valuation models will yield the same results (Young et al, 1999). They differ only in the cash flows that are taken as the starting point for the valuation and the respective discount rates that are used to discount the cash flows (Fernández, 2002/2007). In most cases, enterprise models are preferable because they do not mix operating performance and capital structure in cash flow and therefore implementation errors occur less frequently (Koller et al, 2015).

2.2.2. Equity DCF-models

2.2.2.1. Dividend discount model (DDM)

Dividend discount models take a strict view and see dividends as the only cash flow for equity holders. After buying a share, an investor expects regular dividend payments during the holding period as well as the price at which the share will be sold in the event of a divestment. The estimated price itself is determined by future dividends:

Equation 2: Basis DDM

$$V_0^{EqV} = \sum_{t=1}^{t=\infty} \frac{E(DPS_t)}{(1+r_E)^t}$$

where

$E(DPS_t) = expected\ dividends\ per\ share\ in\ period\ t$

$r_E = cost\ of\ equity$

In particular, several versions were developed to incorporate different assumptions (e.g., about future growth rates). The simplest variation is the Gordon growth model. However, it can only be applied to mature companies where a stable growth rate is assumed that will last forever and the company pays out what it earns:

Equation 3: Gordon growth model

$$V_0^{EqV} = \frac{E(DPS_1)}{r_E - g}$$

where

$E(DPS_1) = expected\ dividends\ per\ share\ in\ next\ period$

$g = constant\ growth\ rate\ to\ perpetuity = Retention\ ratio^2 * ROE$

The two-stage growth model is slightly more complex, because a different growth rate can be assumed until the steady state is reached. The model can be extended by any number of stages of growth, but the logic does not change:

Equation 4: Two-stage growth model

$$V_0^{EqV} = \sum_{t=1}^{t=n} \frac{E(DPS_t)}{(1+r_E)^t} + \frac{P_n}{(1+r_E)^n} \quad where\ P_n = \frac{E(DPS_n)}{(r_E - g)}$$

Since few assumptions need to be made, dividend discount models are popular among proponents mainly because of their simplicity and intuitive logic. However, valuation results can be misleading because they are too optimistic (dividends > FCFE) or pessimistic (dividends < FCFE) (Damodaran, 2006). As there is no further money available for investments after the payout and growth thus slows down, there is empirical evidence that despite higher dividends there is no increase in the share price as a result[3]. The market reacts to dividend variations rather than absolute values. Especially in practice, dividend discount models are little used because of the limitations mentioned above and the unpredictability of future payout policy (Penman and Sougiannis, 1998). For most companies, the decision of paying dividends is a political one. The model is also rather unsuitable for the valuation of PUMA SE, as dividend payments have been made on an irregular basis and in diverging amounts in recent years.

[2] Retention ratio = (1 – payout ratio)
[3] See Sorensen and Williamson (1985) as well as Miller (1986)

2.2.2.2. Free cash flow to equity (FCFE)

The free cash flow to equity models do not differ significantly from the dividend discount models but are perceived as more significant and relevant. Dividends and share buybacks are the payments actually made to shareholders, whereas free cash flows to equity are available to them. There are two ways to calculate:

Equation 5: Free cash flow to equity

$$FCFE_t = Net\ income_t - NCAPEX_t\ - \Delta\ non - cash\ WC + \ net\ borrowing$$

where

$NCAPEX_t = net\ capital\ expenditures = CAPEX - D\&A$

$Net\ borrowing = new\ debt\ issued - debt\ repayment$

Equation 6: Free cash flow to equity derived from free cash flow to firm

$$FCFE_t = \ FCFF_t - \ I_t * (1 - \ \tau_C) + net\ borrowing$$

where

$I_t = interest\ expenses$

$\tau_C = coporate\ tax\ rate$

The level of capital expenditures and working capital requirements depends on both the industry and the stage of company's life-cycle. High-growth companies usually have high capital expenditures to finance further growth and high working capital requirements. An increase in working capital is a cash outflow and vice versa (Kumar, 2015).

The value of equity equals the present value of future cashflows available to equity-holders:

Equation 7: Equity value

$$V_0^{EqV} = \sum_{t=1}^{t=\infty} \frac{FCFE_t}{(1 + r_E)^t}$$

As with the dividend discount models, both FCFE and FCFF models have different stages to reflect different growth phases. For more information, please refer to chapter **2.3.4. Terminal Value**.

2.2.3. Firm DCF-models

2.2.3.1. Free cash flow to firm (FCFF)

As an alternative to equity valuation, the entire company can be valued. Therefore, the free cash flow to the firm is taken, which "is the sum of the cash flows to all claim holders in the firm, including common stockholders, bondholders, and preferred stockholders" (Damodaran, 2012). It is calculated as follows (Rosenbaum and Pearl, 2020):

Equation 8: Free cash flow to firm

$$FCFF_t = NOPAT_t - NCAPEX_t - \Delta OWC$$

In addition to the tax advantages resulting from debt (tax shield), the expected higher risk, which is reflected in the increased cost of equity and a higher D/E ratio, is also taken into account (Damodaran, 2006). The alternative approach total cash flow to firm (TCFF) is not explained further. Here, the tax advantage is not included in the cost of capital but in the cash flows, which, however, leads to identical results. The value of a firm equals the present value of future cash flows available to all stakeholders (equity- and debt-holders):

Equation 9: Enterprise value

$$V_0^{EV} = \sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1+WACC)^t}$$

The model is more suitable than free cash flow to equity models if the capital structure of the company is expected to change in the future. It is also advantageous for heavily leveraged companies and those who have a negative FCFE (Pinto et al, 2020).

2.2.3.2. Adjusted present value (APV)

Luehrman (1997) sees some advantages in the APV approach, which was first introduced by Myers (1974) to overcome the shortcomings of other conventional methods like WACC. From his point of view adjusted present value is more reliable as it requires fewer restrictive assumptions and is less prone to serious errors. Furthermore, APV is very versatile because it allows dynamic capital structures and therefore is applicable in more cases. The approach also provides additional managerially relevant information, as it breaks down where the value comes from:

Equation 10: Adjusted present value

$$V_0^{EV} = V^U + PV\ (Interest\ tax\ shield) - PV\ (Financial\ distress\ costs)$$

where

$V^U = value\ unlevered\ firm$

In a first step the unlevered firm value is calculated and then the net effect of debt on value is taken into account by considering benefits of debt as well as cost of borrowing. The effect of debt on the value of the firm is explicitly decoupled from the value of the firm's assets and the effect of debt is not reflected in the discount rate as in the WACC method (Damodaran, 2006).

The unlevered value of the firm is calculated by discounting the FCFF at the unlevered cost of equity. In a second step the expected tax benefit needs to be calculated. Because interest is tax deductible, profitable companies can save taxes by increasing debt and paying higher interest, which increases the value of the company (Koller et al, 2015). This is defined as interest tax shield (ITS). There is no consensus in the existing literature on how to calculate the ITS exactly (Fernández, 2007). Fernandez himself (2004) argues that the value of tax benefits should be calculated as the difference between the value of a leveraged firm with savings and the value of the same firm without leverage. This is contrary to standard results in the literature. Among others, Cooper and Nyborg (2006) disagree and represent the dominant opinion. The value of the tax shield is the present value of the interest tax savings, discounted by the cost of debt:

Equation 11: Value of interest tax shield

$$ITS^4 = \frac{\tau_C * D * r_D}{r_D} = \tau_C * D$$

$$ITS^5 = \frac{\tau_C * D * r_D}{(r_U - g)} = \tau_C * D$$

where

$r_D = cost\ of\ debt$

$r_U = cost\ of\ unlevered\ equity$

$D = debt$

[4] Constant amount of debt combined with an expected operating cash flow that is constant in perpetuity
[5] Expected operating cash flow is a growing perpetuity

In a final step, the probability of default, which increases as the leverage ratio rises, and the expected bankruptcy cost must be determined to calculate the expected FDC:

Equation 12: Value of bankruptcy cost

$$E\ (FDC) = \pi_a * FDC$$

where

$\pi_a = probability\ of\ bankruptcy$

$FDC = financial\ distress\ costs$

This is the most difficult part, since neither the probability nor the magnitude of the cost can be estimated directly. Using the observable characteristics of a company or based on bond ratings, the probability of bankruptcy can be estimated indirectly (Altman et al, 1998). There are many studies on the magnitude of the cost, but especially the indirect cost depends strongly on the company and the type of industry. However, a good estimation is important for determining the optimal, value-maximizing capital structure. Only if the benefits are greater than the potential cost, more debt is appropriate (Almeida and Philippon, 2008). Companies should critically reevaluate their debt policy and, if beneficial, increase leverage to increase company value (Graham, 2001). Although most papers focus primarily on the direct cost of bankruptcy, the indirect costs are not negligible and can significantly exceed the direct cost (Branch, 2002). Especially due to the indirect costs (e.g., reputation, loss of key employees), which are not always numerically quantifiable, the bankruptcy cost could in reality exceed the tax benefits (Altman, 1984).

There are arguments for using both the APV or WACC approach and both have their shortcomings. Particularly for larger companies based in industrialized countries, which aim for a relatively constant debt ratio in the long-term, the WACC is to be preferred (Sabal, 2007). For the reasons stated in the literature review, in this thesis the FCFF method is preferred over the other methods, as it appears to be the most appropriate from the author's point of view. When used correctly, the different approaches lead to the same result anyway (Inselbag and Kaufold, 1997).

2.2.4. Discount rate

Expected cash flows in the future do not have the same value today and must therefore be discounted to reflect the time value of money (Luehrman, 1997). Investors must be

compensated for the postponement of consumption and the risk associated with the cash flows regardless of the DCF valuation approach chosen. The discount rate is influenced by external (general economic conditions, yield on alternative investments and industry conditions/outlook) and internal factors (financial risk, operating risk, risk associated with cash flows). They are affected by the market and change over time (Gilbert, 1990). Depending on the selected valuation method, an appropriate discount rate must be chosen (Fernández, 2007):

Figure 1: Discount factor for respective DCF-model

DCF-model	Discount factor
Dividend discount model	Levered cost of equity
Free cash flow to equity	Levered cost of equity
Free cash flow to firm	Weighted average cost of capital
Adjusted present value	Unlevered cost of equity

Source: Koller et al (2015)

2.2.4.1. WACC

The weighted average cost of capital (WACC) is used to discount the FCFF to calculate the enterprise value. The discount factor must take into account that the cash flows are available to all investors of the company in this case. The cost of capital reflects what an investor would expect to earn in an alternative investment with a similar risk profile (Rosenbaum and Pearl, 2020). For Fernandez (2011), "the WACC is neither a cost nor a required return, but a weighted average of a cost and a required return". The WACC has three primary components: k_E (*cost of equity),* $k_D * (1 - t)$ (*after tax cost of debt*) and the company's target capital structure:

Equation 13: Calculation of WACC

$$WACC = \left(r_D * (1 - t)\right) * \frac{D}{D + E} + r_E * \frac{E}{D + E}$$

where

$t = marginal\ tax\ rate$

$D = market\ value\ of\ debt$

$E = market\ value\ of\ equity$

According to Fernández and Bilan (2007), the current effective tax rate should be taken. Following Pinto et al (2020), it is appropriate to use the marginal tax rate because it better

reflects the future cost in raising funds and does not include nonrecurring items. Using the marginal tax rate tends to understate the after-tax operating profit in earlier years, but the after-tax operating profit in later years is more accurate.
Using the book rather than the market values of debt and equity as well as taking the current and not the targeted capital structure is one of the most common errors when applying WACC (Fernández and Bilan, 2007). If there is no specific company guidance regarding the target capital structure, the current capital structure is used as the target one, as long as there have been no extreme fluctuations in the past and the capital structure is within an acceptable range compared to peer companies (Rosenbaum and Pearl, 2020).

In practice, determining the WACC is difficult because an investor's cost of capital cannot be measured directly. The following sub-chapters will therefore go into more detail on the determination of the individual components.

2.2.4.1.1. Cost of equity

Estimating the cost of equity is more convoluted than determining the cost of debt and practitioners are forced to use indirect methods, because company's cost of equity is not readily observable in the market (Bruner et al, 1998). There are different models for determining the cost of equity, but no specific method is universally accepted. In practice, the capital asset pricing model (CAPM) has prevailed, because it "provides an economically grounded and relatively objective procedure" (Pinto et al, 2020). In addition, the cost of equity can also be determined using multi-factor models (e.g., Fama & French 3 factor) or the arbitrage pricing theory (APT) (Koller et al, 2015).

The CAPM is based on the assumption that shareholders demand a risk premium as compensation for taking on systematic risk (associated with the market and non-diversifiable). The level is determined by its beta (β), which measures the covariance between share price and market movements. Conversely, unsystematic, or "specific" risk is linked to a specific company or industry and can be eliminated through diversification. Therefore, investors are not compensated for it (Rosenbaum and Pearl, 2020). The cost of equity is determined by three variables:

Equation 14: Calculation of CAPM

$$r_E = r_f + \beta_L * (r_m - r_f)$$

where

$r_f = risk - free\ rate$

$\beta_L = levered\ beta$

$r_m = expected\ return\ on\ the\ market$

$(r_m - r_f) = market\ risk\ premium$

2.2.4.1.1.1. Risk-free rate

An investment is considered risk-free "when actual returns are always equal to the expected return". It must have no default risk and no reinvestment risk (Damodaran, 1999). In their study, Gupta et al (2023) note that the cost of equity has decoupled from government bond rates, but the prevailing literature suggests that government bonds are preferred to represent a risk-free investment. The following points should be considered in the selection process:

- Not all government securities are risk-free (e.g., US or German bond)
- Currency matter: a risk-free rate is currency specific. The bond should therefore be traded in the same currency in which the company operates
- Time horizon: the risk-free interest rate should correspond in time to cash flows being valued (bond with ten or more years to maturity is appropriate)

2.2.4.1.1.2. Beta

Beta is an indication of the volatility of an asset compared to the market. A beta greater than 1,0 means that the asset has a higher systematic risk and vice versa. Historical betas are drawn substantially from finance sources (e.g., Bloomberg or Thomson Reuters), but these estimations could be imprecise especially as predictors for future returns.

The simplest estimate of beta (unadjusted or "raw" historical) results from regressing asset returns on market returns. Actual values are affected by the choice of the index used to represent the market portfolio, the length of the data period, and the frequency of observations (Pinto et al, 2020):

Equation 15: Levered beta regression model

$$\beta_L = \frac{\sigma\,(R_i R_m)}{\sigma^2{}_m}$$

where

$\sigma\,(R_i R_m) = covariance\ of\ investment\ i\ and\ market\ portolio\ m$

$\sigma^2{}_m = variance\ of\ the\ market\ portfolio\ m$

Raw betas are adjusted because several studies have found that the betas of all companies move to 1,0 over time (Blume, 1975/1979). Because the valuation is forward-looking, an adjustment makes sense and is more accurate:

Equation 16: Beta adjustment

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

Koller et al (2015) recommend the use of an industry peer median instead of historical beta ("bottom-up approach"). In a first step, the betas of the respective peers have to be unlevered and then applied to the company using the median beta and market values of debt and equity:

Equation 17: Unlevered beta[6]

$$\beta_U = \frac{\beta_L}{1 + (1 - t) * \frac{D}{E}}$$

where

$\beta_U = unlevered\ beta$

2.2.4.1.1.3. Market risk premium

For holding a risky asset rather than a risk-free asset, investors expect an incremental return, the so-called market risk premium. It is the difference between the expected return of the market (taking an index as market proxy) and a risk-free asset (Zenner et al, 2008). There are different approaches to estimate the MRP (Damodaran, 2022)[7]:

- Historical equity premium (HEP): historical average excess return of the market over the risk-free interest rate (Berk and DeMarzo, 2016)

[6] Different formulas exist as relationship between βs depends on company's financing strategy (Fernández, 2002)
[7] Fernández (2007) differentiates between four concepts: HEP, IEP, EEP and REP

- Implied equity premium (IEP): forward-looking estimate
- Survey approach: professionals are asked about their expectation

There is no consensus about what amount is appropriate and which method is best. All methods have their strengths and weaknesses[8] and Fernández (2007) suggests that, except for HEP, it is not possible to calculate a single risk premium anyway due to heterogeneous expectations of individuals. According to the FAUB of the IDW, the recommended bandwidth for the market risk premium in Germany, where PUMA SE is headquartered, is between 6,0 and 8,0% (KPMG, 2022).

2.2.4.1.2. Cost of debt

The cost of debt is the rate at which a firm can borrow at currently. It will reflect not only the firm's default risk but also the level of interest rates in the market. There are different ways to determine the cost of debt. If outstanding bonds of the company are actively traded, the YTM on liquid long-term bonds can be taken as the cost of debt. Otherwise, it can be determined based on the credit rating and default spreads. If there are no traded bonds or a credit rating for the company, a synthetic rating can be estimated based on financial characteristics (e.g., interest coverage ratio). To get the pre-tax cost of debt for the firm, the default spread can be added to the risk-free rate. The current cost of debt is obtained by dividing the interest expense by long-term debt (Kumar, 2015).

2.2.5. Terminal value

Due to the fact cash flows cannot be estimated ad infinitum, a terminal value is calculated that reflects the value of the company at that point in time. Typically, the projection period is 3-10 years, but this may depend on the industry and stage of development of the company and the underlying predictability of its financial performance. "The goal is to project FCF to a point in the future when the target's financial performance is deemed to have reached a "steady state" that can serve as the basis for a terminal value calculation" (Rosenbaum and Pearl, 2020).

The terminal value can then be calculated in three ways: assuming liquidation of the company (TV = liquidation value) or assuming the firm as a going concern (exit multiple method (EMM)

[8] See Zenner et al (2008)

or perpetuity growth method (PGM)). PGM assumes a constant growth rate forever, while EMM applies a multiple to, for example, the company's EBITDA (Damodaran, 2016).

Equation 18: DCF valuation with terminal value (PGM)

$$V_0 = \sum_{t=1}^{t=n} \frac{FCF_t}{(1+r)^t} + \frac{TV}{(1+r)^n} \quad where\ TV = \frac{FCF_n * (1+g)}{(r-g)}$$

where

$FCF = free\ cash\ flow$

$TV = terminal\ value$

The terminal value has a significant impact on the enterprise value (with up to 50%-80% of EV) and especially small changes in the stable growth rate have a strong impact. Generally, it should not exceed the overall growth rate of the economy and should be examined as part of a sensitivity analysis (Damodaran, 2012).

2.3. Relative value approach

Relative valuation compares the value of an asset with the values offered by the market for similar or comparable assets. The logic behind the approach is "that companies with higher expected growth and returns on capital should have higher multiples" (Foushee et al, 2012).
To perform a relative valuation, comparable assets must be identified, and, for comparability, market values must be converted to standard values.

According to Lie and Lie (2002), there is no consensus on which multiple works best, but there are several points to consider when applying multiples:

- **Suitable peer group**: Selecting the right peer group is essential for a robust valuation. While traditional analysis is built on the premise that firms in the same sector are comparable, valuation theory would suggest that a comparable firm is similar to the one being analyzed in terms of fundamentals. Assuming that companies in the same industry face similar challenges and have comparable risks, the industry can certainly serve as a starting point for peer group selection, but other factors should also be considered (DVFA, 2012). Even firms from related industries can be compared if the two firms have the same risk, growth rate and profitability. The fact that companies can differ

drastically on these points is neglected when broad industry averages are taken (Goedhart et al, 2005). In addition, it is also crucial that companies compete in the same markets and are therefore exposed to the same macroeconomic forces (Foushee et al, 2012).

- **Type of multiples**: A distinction must be made between equity value multiples (e.g., P/E) and enterprise value multiples (e.g., EV/EBITA[9]). Even though P/E ratio is the most widely recognized trading multiple, practitioners often take multiples based on enterprise value, as these are independent of capital structure, other non-operating items and not influenced by accounting discrepancies (Rosenbaum and Pearl, 2020).
- **Consistency of multiples**: Both the value (numerator) and the standardizing variable (denominator) should be to the same claimholders of the firm.
- **Time variants of the multiples**: There are different prices that can be used in multiples: last four quarters (trailing/historical), most recent financial year (current) and next fiscal year (forward). In addition to Kim and Ritter (1999), Liu et al (2002) have empirically demonstrated that forward-looking multiples are considered to be more accurate predictors of value than historical ones.

A separation can be made between the analysis of comparable companies ("comps") and the analysis of previous transactions ("precedents"), which must be used separately from each other. In the precedents analysis, multiples can be derived on the basis of purchase prices paid in recent M&A transactions. They are generally higher than comps multiples because they already include a control premium and synergies that a strategic buyer can realize after integration. It is difficult to find suitable transactions and particular attention should be paid to the comparability of the companies, the transaction, and the period in which it took place.

Especially in practice relative valuation is widely used. Reasons for this are, among others, the quick and easy applicability, since only a few assumptions have to be made.
In contrast to intrinsic valuation methods, relative valuation is strictly market oriented. Underlying prices are observable because they are paid in the market or in a transaction. Differences in valuation compared to intrinsic approaches arise, because relative valuation is subject to the full range of market imperfections and inefficiencies (DVFA, 2012). Multipliers

[9] According to Koller et al (2015) EBITA (same operating tax rate) or NOPLAT is more appropriate than EBITDA as depreciation is the accounting equivalent to future capital expenditures required to replace assets

should be used in conjunction with other valuation methods. Significant deviations may indicate that key input factors in the intrinsic method are incorrect (Rosenbaum and Pearl, 2020).

In this dissertation, a relative valuation of PUMA SE is performed complementary to the intrinsic valuation due to the aforementioned reasons. For this purpose, the most frequently used multiples P/E, EV/Revenue, EV/EBITDA and EV/EBIT are applied (Fernández, 2001).

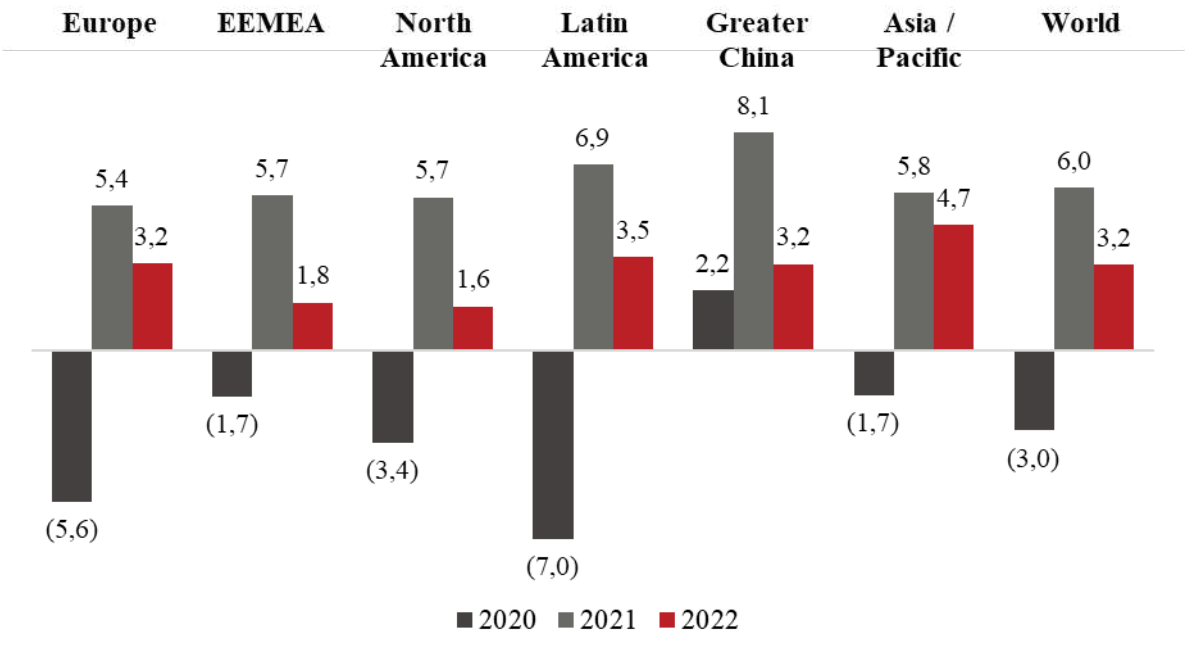
3. Market overview

3.1. Global economy

As an internationally operating group, PUMA is exposed to global macroeconomic factors and the associated risks that affect both supply and demand markets. Economic development influences consumer behavior. Political changes, social movements, and environmental events as well as changes in legal conditions also have an impact.

The operating environment is currently extremely uncertain in geopolitical, macroeconomic, and competitive terms, and 2022 was characterized by operational challenges. Increased geopolitical tensions (Russia's invasion of Ukraine), the global energy crisis, persistent inflation and rising interest rates are leading to uncertain consumer behavior and volatility in demand.

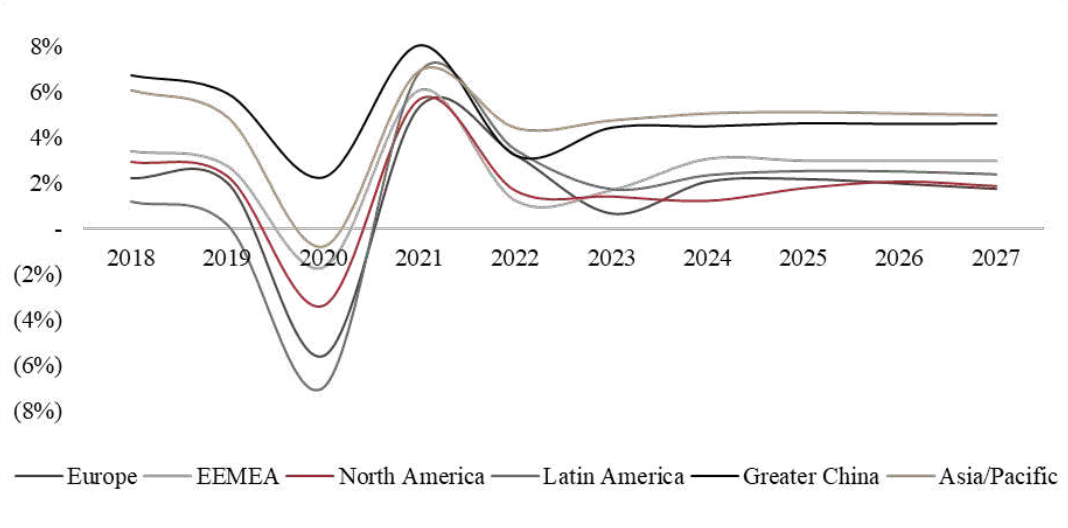
Figure 2: Historical development of real GDP growth by region in %



Source: International Monetary Fund (IMF), as of 09/03/2023

Experts at the Kiel Institute for the World Economy (ifw Kiel) expect global gross domestic product (GDP) to grow by only 2,2% in 2023 (IMF expectation: 2,7%), following growth of 3,2% in 2022 (figure 2). Figure 3 shows the expected GDP growth rates for the regions in which PUMA operates.

Figure 3: Expected development of real GDP growth by region in %



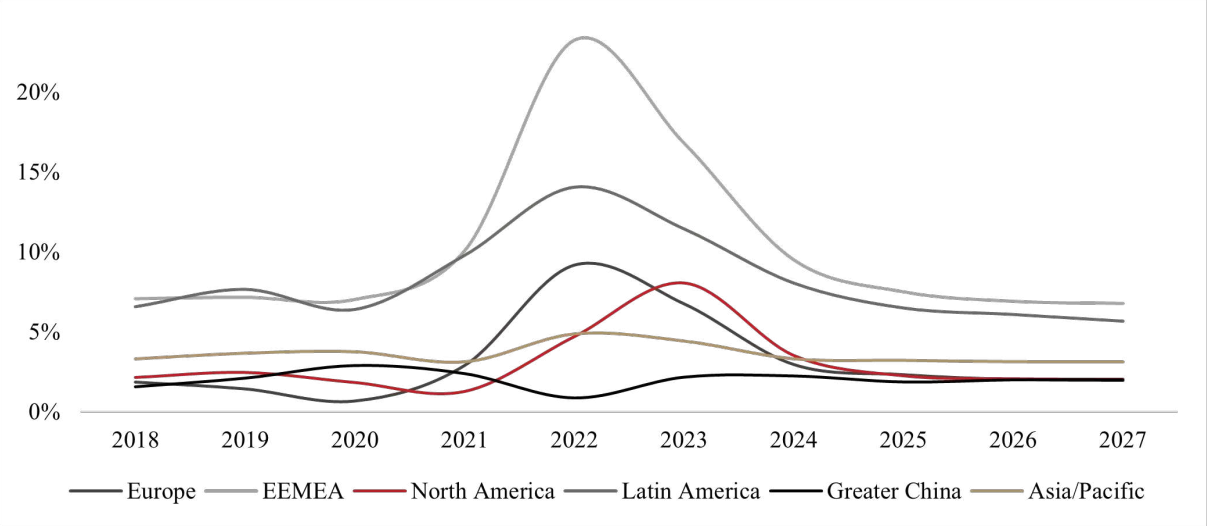
Source: International Monetary Fund (IMF), as of 09/03/2023

The above-mentioned slowing influences dominate, leading to an expected weakening of the global economy. Towards the end of the year in particular, economic momentum slowed noticeably despite weakening supply shortages. The combination of the individual factors increases the risk of recession, particularly in Europe and North America. Lower growth is expected in industrialized countries, as tighter monetary policy combined with the debt problem is putting pressure on the economy. The continuing effects of the COVID-19 pandemic also have an impact. While the situation in Europe and North/Latin America has largely normalized in 2022, Asia still faces major challenges in some areas. In particular, the rapid outbreak in China dampened growth there in 2022, but the recent reopening has paved the way for a faster-than-expected recovery.

During the COVID-19 pandemic, central banks have pursued expansionary monetary policies to support economies. Inflation has risen extremely, particularly due to increased commodity prices and money supply growth. Historically low interest rates have been raised recently to counter inflation. Global central banks took swift and universal action to tighten monetary

policy, which is reflected in higher interest rates. This is slowing investment and consumption due to increased financing costs. Global inflation is expected to fall from 8,8% in 2022 to 6,6% in 2023 and 4,3% in 2024, still above the pre-pandemic (2017-19) level of about 3,5%.

Figure 4: Expected development of inflation rates by region in %



Source: International Monetary Fund (IMF), as of 09/03/2023

The outlook is characterized by uncertainty and companies will continue to face a high degree of insecurity in 2023. Currently, many companies do not expect the situation to worsen and believe that market conditions in the important economies China and the United States will normalize. A stronger boost from pent-up demand in numerous economies or a faster decline in inflation are also possible.

3.2. Sporting goods industry

3.2.1. Key drivers & trends

PUMA SE is one of the major players in the global sportswear industry (also known as sporting goods industry). Although the companies are currently facing various operational challenges, the industry as a whole has grown steadily due to superordinate trends.

Awareness of health and wellness is steadily increasing (further boosted by pandemic) and is accompanied by an increasingly healthy and sustainable lifestyle. Physical activity continues to gain importance for an increasing proportion of the world's population, and sports and fitness activities are being integrated into daily routines. Consumers are specifically looking for products that help them achieve their goals. More and more women are also participating in

sports. According to the U.S. Bureau of Labor Statistics, approximately 20% participated in daily sports activities in 2021 (+ 3% compared to 2018).

In terms of sales structure, the COVID-19 pandemic has significantly accelerated growth in the e-commerce business, particularly in terms of local markets. However, customers are also demanding stationary offerings. Brands are benefiting from the integration of physical retail as well as online distribution channels. This effect has been reinforced by the expansion of digital platforms and membership programs. Companies must succeed in adapting their distribution strategy to the changes in the retail sector.

The worldwide strong interest in major sport events (e.g., in 2022 World Cup in Qatar or Winter Olympics in Beijing) is having a positive impact on global demand.

The growing intersection between everyday life and sports has led to an increased presence of fashionable sportswear and established it as a permanent element in many closets (“athleisure”). Clothing at festive events and in the office has become much more casual over time. In addition, gender-fluid fashion is also gaining more and more traction. The boundaries between men's and women's fashion will continue to blur.

In addition to the growth drivers outlined above, there are also changes in the industry, and adaptation is crucial to a successful future.

Technological improvements, especially in materials management and manufacturing technology, have led to more functional products. The sporting goods industry is generally very trend-dependent, and it is elementary that a company can react quickly to changes. To remain competitive in the future, companies must constantly bring new products and innovations to the market.

The topic of sustainability is of particular importance. Companies are increasingly looking to sustainable production methods and materials to minimize their environmental impact. Faster decarbonization and scaling circular business models will be critical for sporting goods companies to achieve their desired sustainability goals.

Growth in different regions in particular requires agile organizational structures. Many companies will have to update these and introduce new roles. Localization of design, marketing and merchandising will also be necessary to attract new customers. Nearshoring may also play a role here to better respond to rapidly changing consumer demand, address fragile supply chains, or rely more heavily on data analytics and technology.

A sophisticated marketing strategy can help companies to interact closely with customers and retain their loyalty in the long-term. Targeted advertising via social media ads allows brands to track user data, but also strengthens affinity. Sponsorship of teams or influential athletes/artists also represents an important part here. The fact that targeted advertising with individuals is also associated with a great risk can currently be seen in the case of Adidas/Yeezy.

3.2.2. Competitive landscape[10]

The sporting goods industry as a whole can be described as highly competitive and fast-moving. There is always a risk that products will be substituted. Early identification of relevant consumer trends is therefore elementary in order to gain an edge over competitors. Brand image and brand desirability are also of central importance, as they can influence consumer buying behavior not only in favor of the brand, but also to its disadvantage.

Changes in the competitive and retail environment can have a significant impact on corporate success. For example, strategic alliances between competitors or retailers, increased business activities by retailers, or prolonged discount phases in the market can pose a significant risk. In order to maintain market share and secure long-term competitiveness, companies are investing increasingly in R&D, boosting marketing spending, and expanding their sales channels.

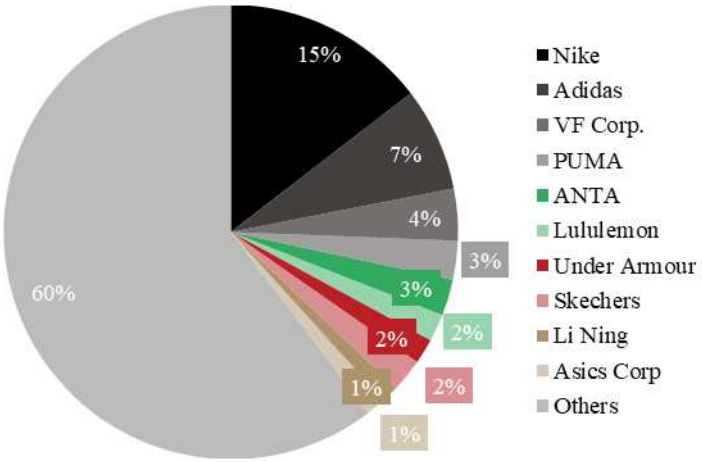
Product differentiation is also elementary for future success. This is achieved, for example, through product features such as quality, performance, reliability or design, or a better price/performance ratio for the consumer.

The market is relatively consolidated[11]. The 10 largest manufacturers together account for about 40% of total sales in the sporting goods industry. Nike is by far the largest player with nearly

[10] Please refer also to Porter five forces analysis in appendix 1
[11] Beside figure 5 and 6 further information can be found in appendix 2

37%[12], followed by Adidas (approx. 19%) and VF Corp (approx. 10%). PUMA's market share is comparatively small at 7%, but the brand has seen steady growth in recent years and strengthened its position in the market.

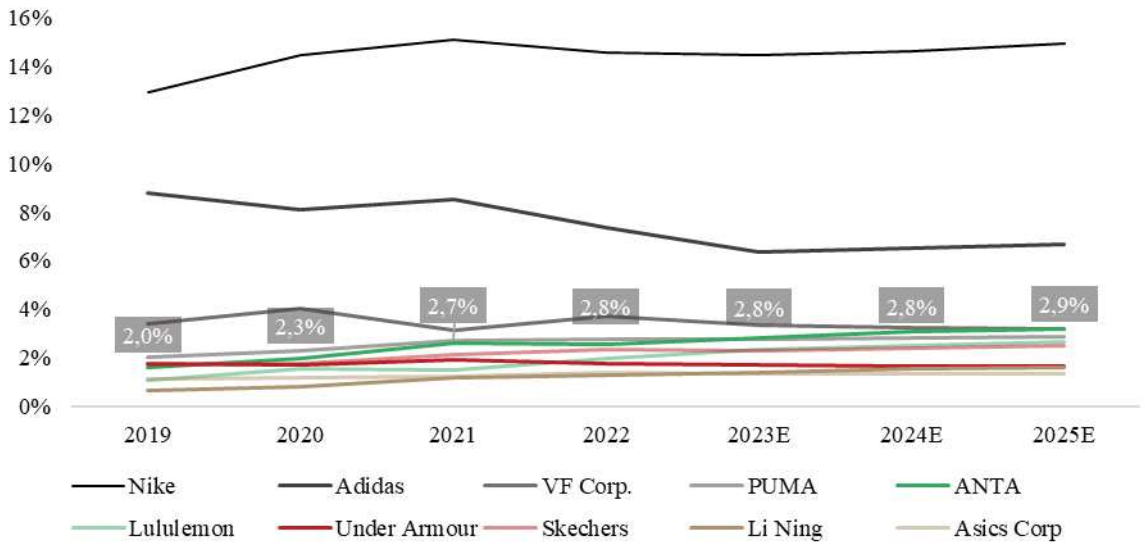
Figure 5: Market share of largest industry players in 2022 in %



Source: Refinitiv Eikon, own analysis

Because PUMA is a leader in lifestyle products and sustainability in particular, its market share is also expected to increase in the future (see figure 6).

Figure 6: Market share of largest industry players over time in %



Source: Refinitiv Eikon, own analysis

[12] In 2022, proportion of revenue generated by the 10 largest industry players

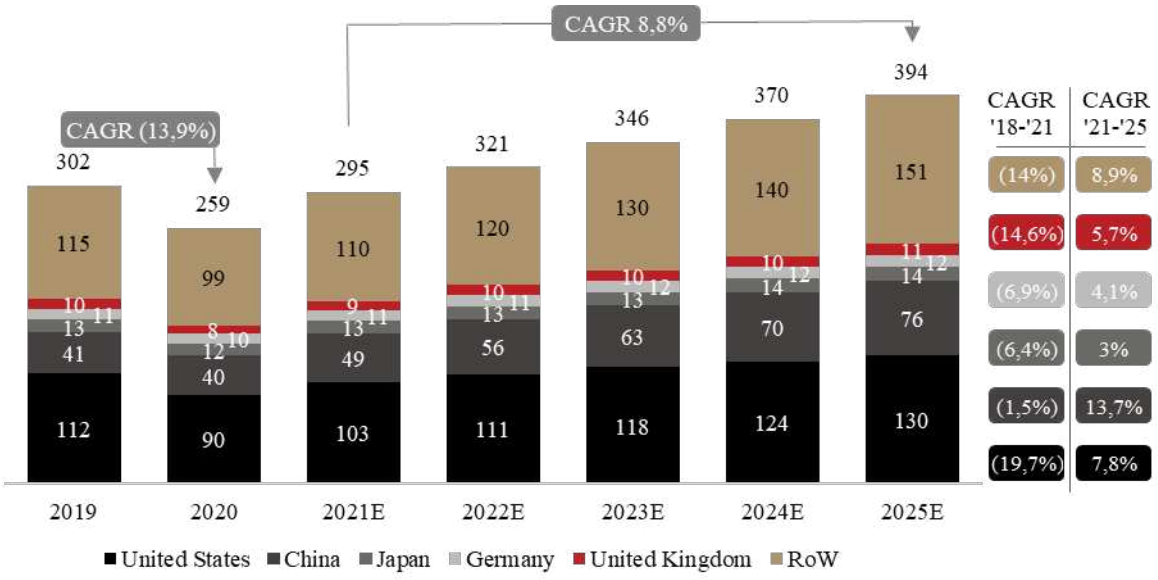
The industry is extremely popular among investors. This is also due to the total return generated in the past, which was significantly better in 2019-2021 with Ø 20% p.a. compared to Ø 4% p.a. for other fashion manufacturers.

3.2.3. Outlook

Despite the operational challenges, the sporting goods industry was able to continue the growth path in FY22. In the first half of 2022, the problematic situation in the freight sector with high freight rates, insufficient capacities and congested ports contributed to only limited product availability. In the second half of the year, inventories increased significantly across the industry, leading to increased sales-promoting activities. However, the industry as a whole, particularly in western countries, benefited from robust consumer spending and built-up demand from the pandemic period.

Provided that the geopolitical environment and the further course of the COVID-19 pandemic do not lead to a renewed negative impact on the macroeconomic environment, the sector is expected to grow in 2023. The trends outlined above remain intact and outweigh a gloomy economic outlook.

Figure 7: Expected development of the sporting goods industry by region



Source: McKinsey & Company: "Sporting Goods 2022"

Asia Pacific is the fastest growing region in the sportswear market, with a higher percentage of young population participating in sports. Increasing appetite for foreign brands, rising

disposable income, and desire for a better lifestyle are expected to drive demand for sportswear there. China, backed by government initiatives to promote active participation in sports, is leading the market in the region and has the potential to overtake the US as the most important market.

4. Company overview[13]

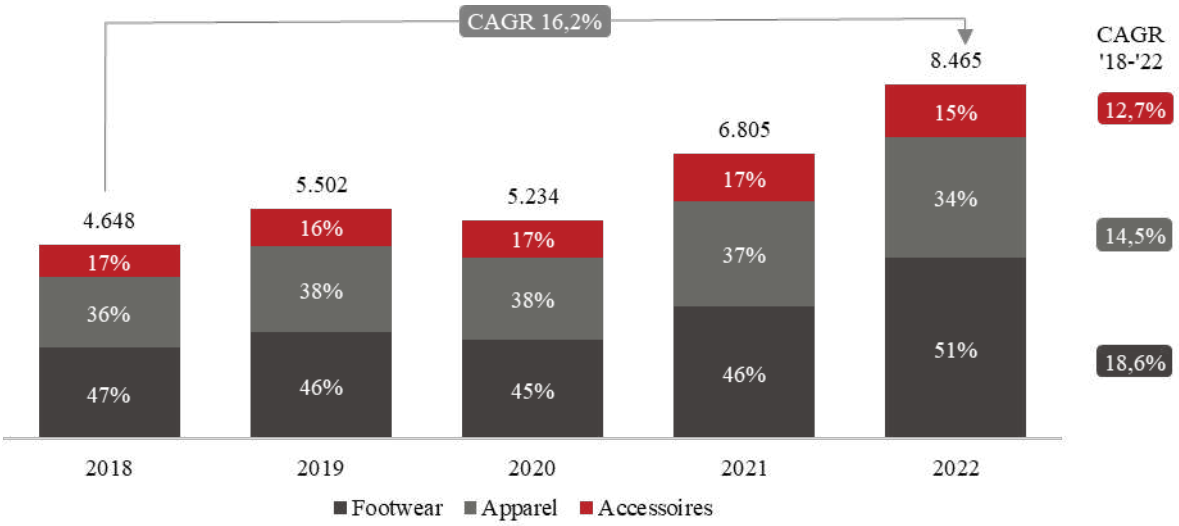
PUMA SE is a global leader in the sporting goods industry headquartered in Herzogenaurach, Germany. The company was founded in 1948 and has been listed on the Frankfurt Stock Exchange since 1986. On September 20, 2021, the company's shares were included in the DAX as part of an index reform. On December 19, 2022, it returned to the MDAX.

4.1. Business segments

PUMA offers a wide range of products:

- **Footwear** for a variety of sports (including running, soccer, golf) and for leisure
- In addition to functional **sportswear**, the company also produces lifestyle clothing suitable for everyday use and for the masses
- **Accessories** of all kinds (backpacks etc.)

Figure 8: Revenue split and historical CAGR by segment

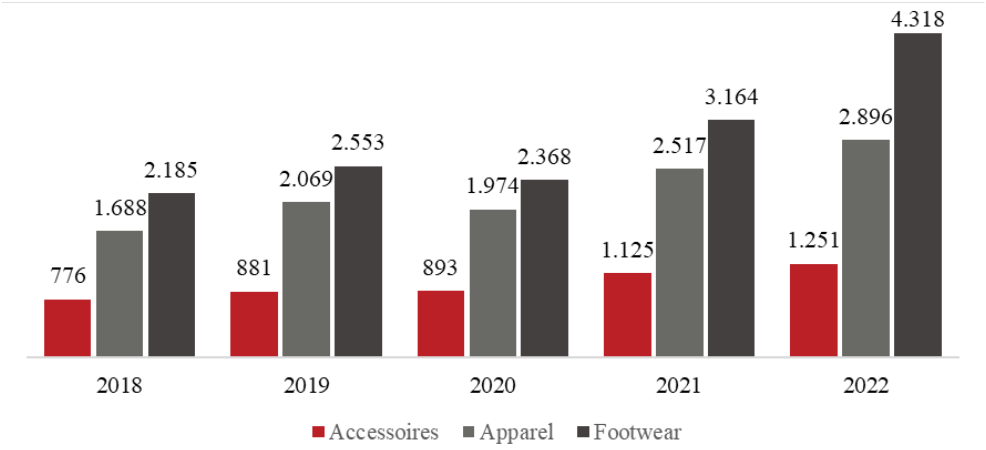


Source: Annual reports PUMA SE

[13] Please refer to appendix 3 for SWOT analysis and appendix 4 for most important milestones in PUMAs history

The company also grants licenses to other companies that sell e.g., watches and sunglasses under the PUMA brand. In addition to design, development and manufacturing, the partners are also responsible for product distribution. Figures 8 and 9 shows the historical development and the contribution of the individual segments to total revenue.

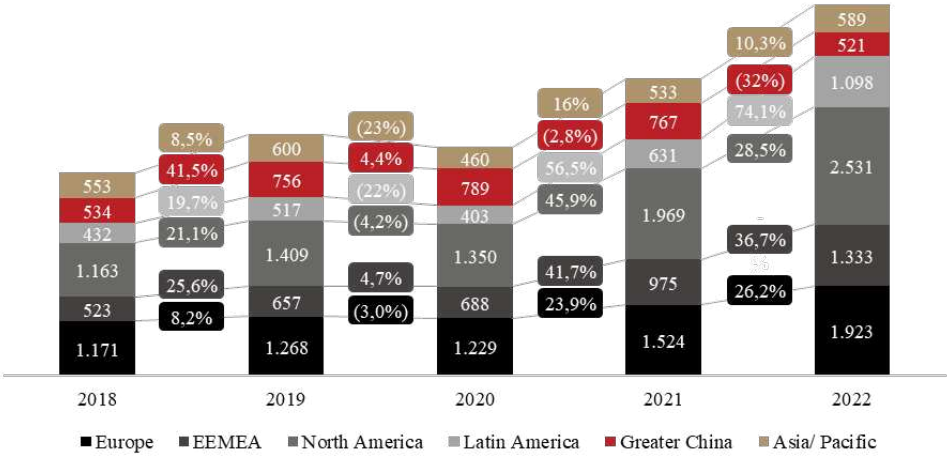
Figure 9: Annual historical revenue by segment



Source: Annual reports PUMA SE

The company currently operates in over 120 countries and has a strong presence especially in North America and Europe. In 2022, over 50% of total revenue was generated in these regions (see figure 10). PUMA is working to grow in emerging markets such as Asia and significantly increase its market share there.

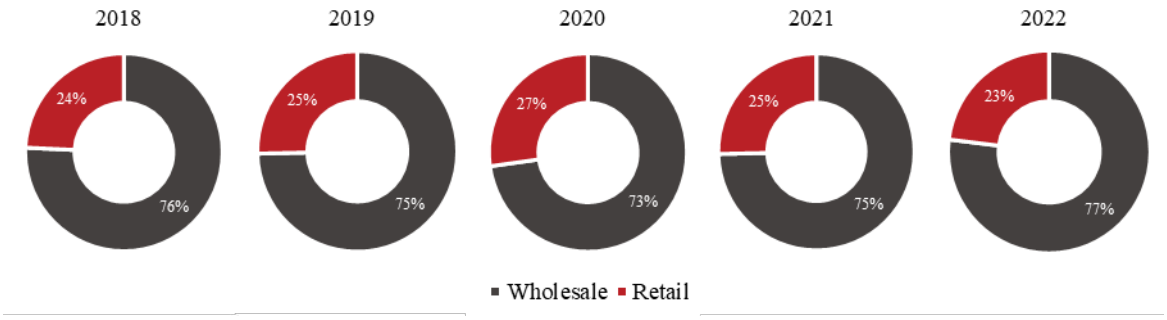
Figure 10: Annual historical revenue by geography



Source: Annual reports PUMA SE

PUMA uses various distribution channels such as the traditional wholesale business with retail partners (“Wholesale business”) and PUMA's own retail and e-commerce business (“Retail business”) in order to reduce dependence on individual distribution channels and to increase margins. In this context, the wholesale business is significantly larger than the retail, accounting for 77% of total revenue (in 2022). In recent years, the wholesale share has continued to rise despite booming online retailing (see also figure 11), because a strong partnership with its key customers is one of PUMA's fundamental philosophies. In times of limited product availability, products are allocated to wholesale partners firstly.

Figure 11: Annual historical revenue by distribution channel



Source: Annual reports PUMA SE

4.2. Corporate strategy

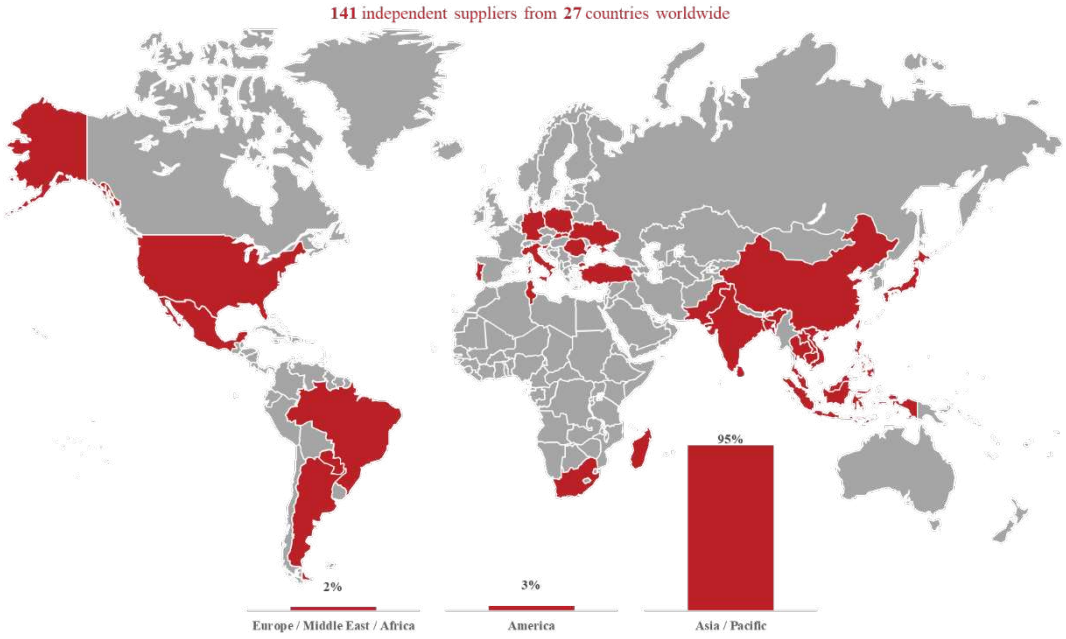
At the core of PUMA's strategic guidance are 8 priorities:

1. Brand desirability (“Brand heat”): principally athletes' successes strengthen brand desirability. Therefore, PUMA works both with legends of sports history, but also seeks to partner with the most relevant brand ambassadors of each generation. Stars from art and culture also play an important role. Occasionally, the company also works with regional personalities for specific target markets
2. Competitive product range compared to other companies
3. Leading product portfolio for women: as more and more women around the world participate in sports and sportswear is a major part of fashionable outfits, a comprehensive product offering for women in all aspects and stages of life is one of PUMA's strategic priorities
4. Improvement of distribution quality: in 2022, a new shopping app was launched in some test markets. Customers will be able to virtually try on selected items before buying them and purchase them with a simplified payment function. In addition, new stores are

constantly being opened and the online store is being rolled out in more and more countries around the world

5. Accelerating procedures and processes within the organization: the basis of the procurement strategy is long-term cooperation with suppliers without creating dependencies. This ensures a stable supply and consistently high product quality. Figure 12 shows PUMA's procurement regions. A dedicated team at PUMA (PUMA International Trading GmbH (PIT)) is responsible for the entire procurement process and creates efficient structures

Figure 12: Sourcing regions in financial year 2022



Source: Annual reports PUMA SE

6. Focus on the North American market through the re-entry into the basketball business; also focus on growth in China/Asia.
7. Local relevance: if necessary, decentralized organization in order to optimally cover individual markets
8. Increased focus on sustainability: sustainability is a key priority at PUMA. For example, RE:SUEDE and RE:JERSEY (circular economy projects) have been launched. These involve testing a chemical recycling process that converts worn polyester clothing into new polyester yarn.

The entire strategic orientation is based on the motto “Forever Faster”. This applies not only to the sports part, but also to PUMA as an agile and fast decision-making organization.

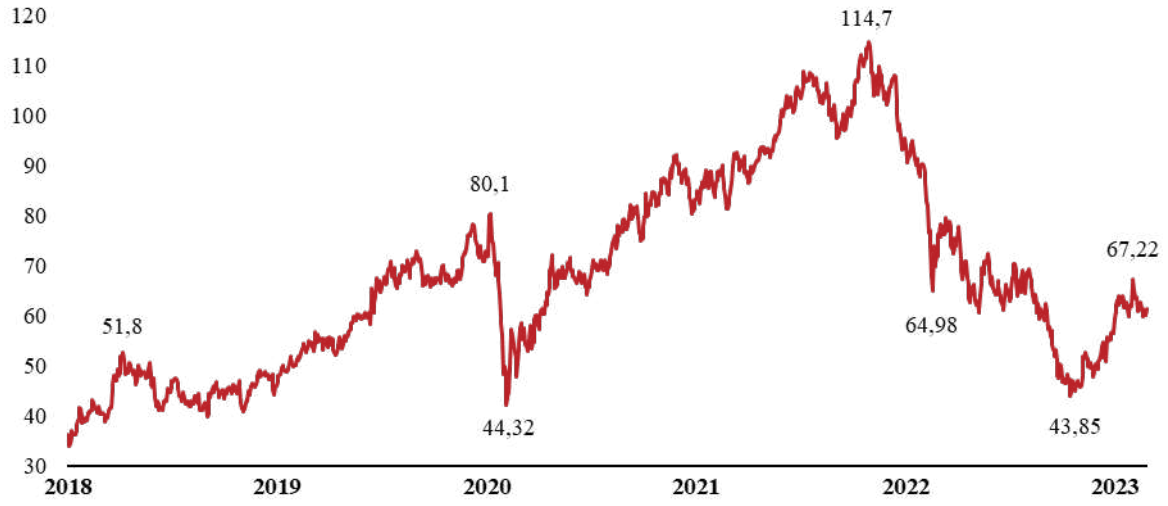
4.3. Historical share price performance

In the quarterly index review, the PUMA share has again been listed in the MDAX stock market index since December 2022. Previously, the PUMA share had been a member of the DAX since September 2021.

After starting 2022 at a price of € 107,50, based on the previous year's mark, PUMA's share price fell to a low of € 43,85 by October 2022. Thereafter, PUMA's share price recovered by the end of the year, rising to € 56,70. This corresponds to a year-on-year decline in the share price of 47,2%. The market capitalization amounted to around € 8,5 billion at the end of 2022 (previous year: € 16,1 billion).

Figure 13 shows the development of PUMA's share price over the last 5 years. The 5-year high was € 114,70 (November 2021), and the 5-year low was € 33,85 (March 2018).

Figure 13: Share price development of PUMA in €

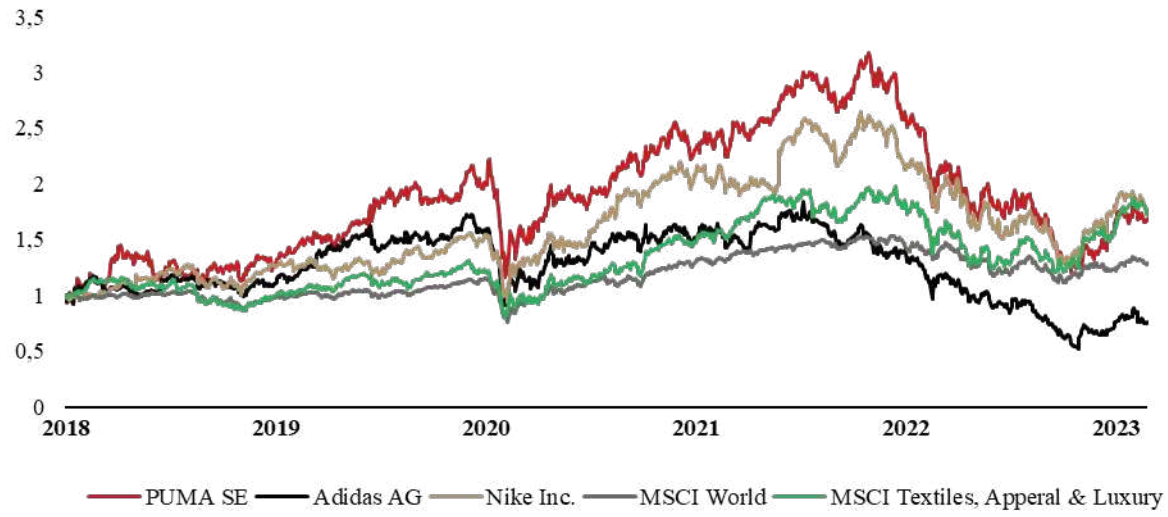


Source: Refinitiv Eikon

Figures 14 and 15 show the comparison with the two largest competitors Nike and Adidas and several indices. PUMA has significantly outperformed Adidas, the MSCI World as well as the MDAX over the last 5 years. The performance is comparable to Nike and the MSCI Textiles,

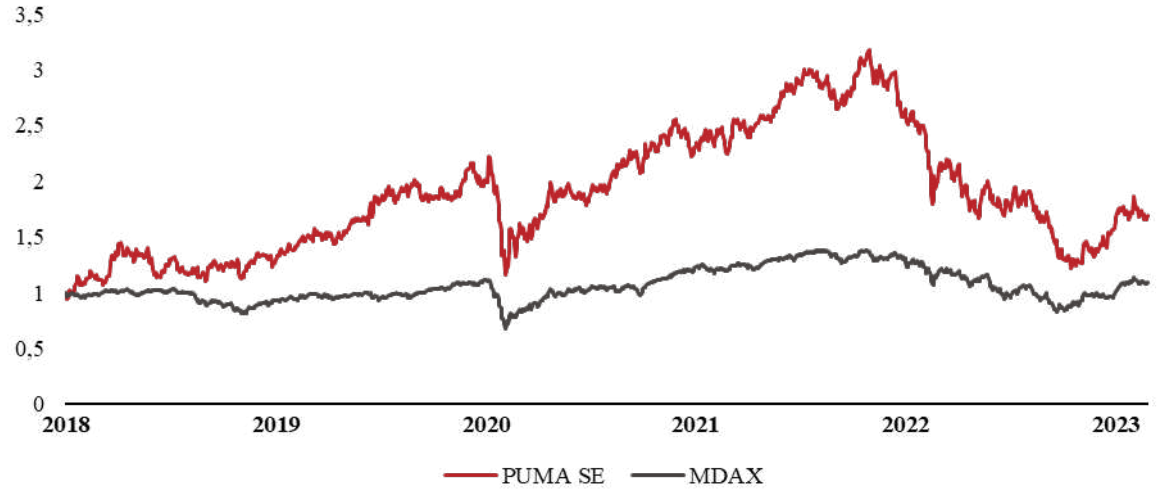
Apparel & Luxury, which performs very well especially due to the luxury manufacturers (e.g., LVMH, Kering).

Figure 14: Share price development of PUMA compared to competitors and indices[1]



[1] *Index: 28/02/2018 = 100; Source: Refinitiv Eikon, own analysis*

Figure 15: Share price development of PUMA compared to MDAX[1]



[1] *Index: 28/02/2018 = 100; Source: Refinitiv Eikon, own analysis*

4.4. Ownership structure

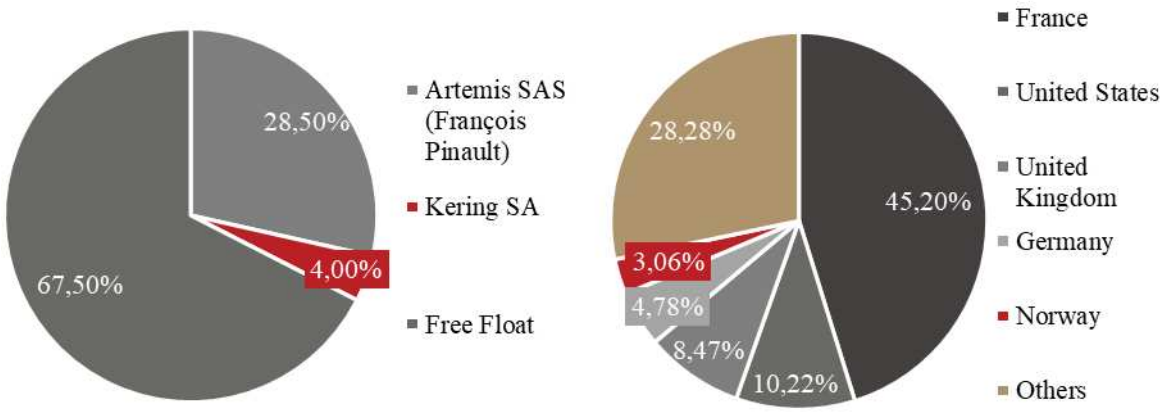
In early 2018, the then French parent company Kering S.A. decided that it would spin off PUMA to its shareholders in order to focus exclusively on its luxury fashion and jewelry brands. The stake was initially reduced by 70% to 16% and currently stands at 4%.

The group deliberately decided against a long-running divestiture, even though there was interest from larger investors.

For the former CEO Björn Gulden, this final solution was the best option because PUMA, as an independent company, could make faster decisions and because the proportion of shares in free float increased. Currently, it amounts to approximately 67,5%.

The French Pinault family, which is also behind Kering, currently holds 28,5% of PUMA through its investment company Artemis SAS.

Figure 16: Current ownership structure and origin of the shareholders



Source: Refinitiv Eikon

5. Financial statements analysis & forecast

The following chapter analyses the historical performance of PUMA and especially outlines the assumptions on which the forecast is built. The forecast is based on the macroeconomic and industry-specific factors described above. To check the plausibility of individual planning assumptions, both analysts' estimates and the respective key figures of comparable competitors were consulted. The length of the forecast period is not generally defined and should reflect the period until PUMA reaches the steady state. It is assumed that this will be the case after ten years.

5.1. Income statement items

5.1.1. Revenue

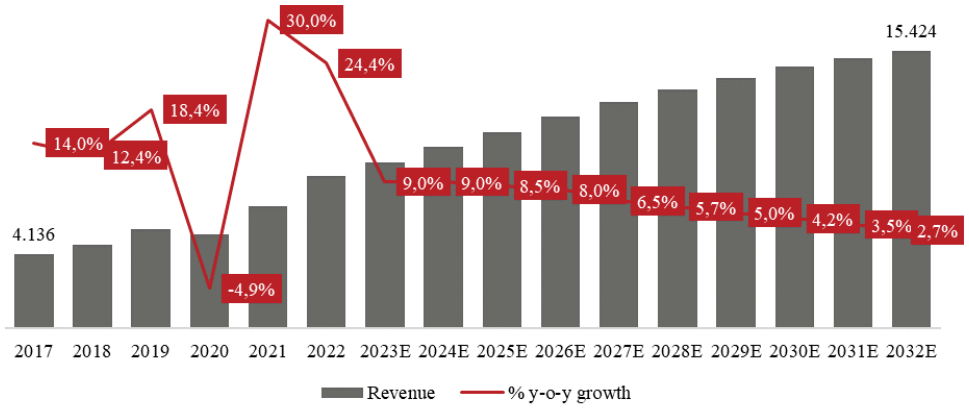
Over the past five years, PUMA's growth has outpaced both the general growth of the sporting goods industry and global GDP growth. With a compound annual growth rate of 12,74%, PUMA has been able to steadily increase its market share and enjoys growing popularity among consumers. As a result, in financial year 2022, revenue exceeded the € 8 bn threshold for the first time in company's history. PUMA is expected to continue its expansion path and to record above-average growth in the future too. The company operates in an absolute growing market due to the social trends outlined above. In particular, gaining further market share and expanding into emerging markets such as Asia or Latin America are expected to drive future revenue growth.

The forecast of revenue is one of the most important items, as most reporting elements (e.g., expenses, balance sheet items) move in relation to revenue. Therefore, this forecast item demands the most effort and the assumptions made have a key impact on the valuation of the company. As for any other items, how granular the forecast can be made depends on the availability of information. Past performance provides insights into trends for the future in most cases. A deviation from previous behavior is only acceptable if adequate reasons can be demonstrated.

PUMA's management anticipates a high single-digit percentage increase in revenue for 2023. In the past, the management’s forecasts have tended to be rather conservative and have been adjusted upwards in the respective financial year. Therefore, revenue growth of 9,0% for 2023 is plausible. For the following years, a slowdown in the growth rate is to be assumed. The relevant analysts' estimates have been used as a benchmark. From the sixth planning year (2028) onwards, the growth rate converges linearly to the state of maturity (see figures 17 and 18).

The long-term growth rate is determined by multiplying the historical (5-year Ø) percentage revenue share per region in which PUMA operates with the respective expected GDP growth in 2027 (longest available FC) (see figure 18). For the entire forecasted period, a CAGR of 5,27% is assumed. Compared to historical performance, analysts’ estimates, and competitors’ expectations this growth rate seems reasonable.

Figure 17: Historical and forecasted revenue, y-o-y growth rate in %



Source: Annual reports PUMA SE, own analysis

Figure 18: Historical and forecasted revenue, determination of long-term growth rate

Revenue																
	Historical					Forecast										CAGR
EURm	2018A	2019A	2020A	2021A	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	'23 - '32
Revenue	4.648	5.502	5.234	6.805	8.465	9.227	10.057	10.912	11.785	12.551	13.271	13.932	14.519	15.020	15.424	5,27%
% y-o-y growth	12,4%	18,4%	-4,9%	30,0%	24,4%	9,0%	9,0%	8,5%	8,0%	6,5%	5,7%	5,0%	4,2%	3,5%	2,7%	12,74%
By segment																
Footwear	2.185	2.553	2.368	3.164	4.318	4.357	4.831	5.330	5.851	6.333	6.804	7.255	7.678	8.064	8.406	6,79%
% y-o-y growth	10,6%	16,8%	-7,2%	33,6%	36,5%	0,9%	10,9%	10,3%	9,8%	8,2%	7,4%	6,6%	5,8%	5,0%	4,2%	
% revenue	47,0%	46,4%	45,2%	46,5%	51,0%	47,2%	48,0%	48,8%	49,6%	50,5%	51,3%	52,1%	52,9%	53,7%	54,5%	
Apparel	1.688	2.069	1.974	2.517	2.896	3.374	3.638	3.904	4.169	4.390	4.590	4.763	4.906	5.016	5.090	4,20%
% y-o-y growth	17,1%	22,6%	-4,6%	27,5%	15,1%	16,5%	7,8%	7,3%	6,8%	5,3%	4,5%	3,8%	3,0%	2,2%	1,5%	
% revenue	36,3%	37,6%	37,7%	37,0%	34,2%	36,6%	36,2%	35,8%	35,4%	35,0%	34,6%	34,2%	33,8%	33,4%	33,0%	
Accessoires	776	881	893	1.125	1.251	1.496	1.589	1.679	1.765	1.828	1.878	1.914	1.935	1.939	1.928	2,57%
% y-o-y growth	7,8%	13,5%	1,3%	26,0%	11,2%	19,6%	6,2%	5,7%	5,1%	3,6%	2,7%	1,9%	1,1%	0,2%	-0,6%	
% revenue	16,7%	16,0%	17,1%	16,5%	14,8%	16,2%	15,8%	15,4%	15,0%	14,6%	14,2%	13,7%	13,3%	12,9%	12,5%	

By geography					
Europe	1.171	1.268	1.229	1.524	1.923
% revenue	25,2%	23,0%	23,5%	22,4%	22,7%
EEMEA	523	657	688	975	1.333
% revenue	11,3%	11,9%	13,1%	14,3%	15,8%
North America	1.163	1.409	1.350	1.969	2.531
% revenue	25,0%	25,6%	25,8%	28,9%	29,9%
Latin America	432	517	403	631	1.098
% revenue	9,3%	9,4%	7,7%	9,3%	13,0%
Greater China	534	756	789	767	521
% revenue	11,5%	13,7%	15,1%	11,3%	6,2%
Asia/ Pacific	553	600	460	533	589
% revenue	11,9%	10,9%	8,8%	7,8%	7,0%

Long-term growth rate			
	% of revenue Ø historical	GDP growth 2027	weighted growth
Europe	24,79%	1,75%	0,43%
EEMEA	14,10%	2,96%	0,42%
North America	28,70%	1,86%	0,53%
Latin America	10,32%	2,40%	0,25%
Greater China	12,25%	4,63%	0,57%
Asia/Pacific	9,84%	5,00%	0,49%
		proj. growth rate 2032	**2,69%**

Source: Annual reports PUMA SE, IMF, own analysis

5.1.2. COGS

In the past, COGS were relatively constant and amounted to approx. 53% of revenue on average. In FY22, COGS were higher than in previous years with 53,9% of revenue. This was attributable to higher procurement prices due to raw material and inbound freight cost increases, an unfavorable regional and distribution channel mix, and increased sales promotion measures

due to the discount-intensive market environment. As a result, there was a decline in gross profit margin from 47,9% in the prior year to 46,1% in 2022.

COGS correlate strongly with revenue and are therefore forecasted as a percentage of revenue. The strained situation on the procurement market is expected to continue for the foreseeable future. This is supplemented by rising wages in Asia, where PUMA produces a majority of its goods. The weakening of the pandemic, which now only has a minor role to play, should have a beneficial effect. A gross profit margin of 46,25% is assumed for the financial year 2023. PUMA will take a number of actions to further improve its gross profit margin again in the future and bring it back to historical levels. A gross profit margin of 48% is assumed for the final planning year 2032. Until then, the margin will improve steadily (see figure 19).

Figure 19: Historical and forecasted COGS

Cost of goods sold																
	Historical					Forecast										CAGR
EURm	2018A	2019A	2020A	2021A	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	'23 - '32
COGS	(2.399)	(2.816)	(2.776)	(3.548)	(4.562)	(4.959)	(5.381)	(5.811)	(6.246)	(6.621)	(6.981)	(7.307)	(7.593)	(7.833)	(8.020)	4,92%
% revenue	(51,61%)	(51,17%)	(53,04%)	(52,13%)	(53,90%)	(53,75%)	(53,50%)	(53,25%)	(53,00%)	(52,75%)	(52,60%)	(52,45%)	(52,30%)	(52,15%)	(52,00%)	
Gross profit	2.249	2.687	2.458	3.258	3.903	4.267	4.677	5.101	5.539	5.930	6.291	6.625	6.925	7.187	7.403	5,66%
% y-o-y growth	15,09%	19,44%	(8,51%)	32,54%	19,80%	9,34%	9,59%	9,08%	8,58%	7,07%	6,07%	5,31%	4,54%	3,78%	3,01%	
Gross profit margin	48,39%	48,83%	46,96%	47,87%	46,10%	46,25%	46,50%	46,75%	47,00%	47,25%	47,40%	47,55%	47,70%	47,85%	48,00%	

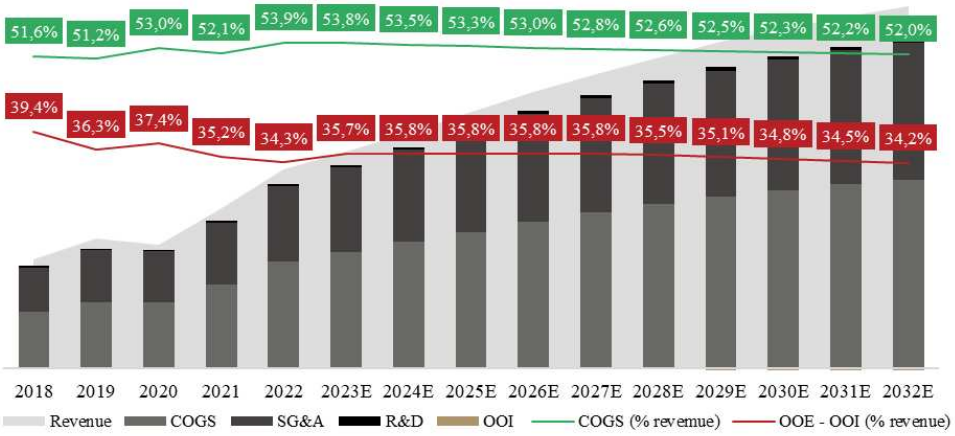
Source: Annual reports PUMA SE, own analysis

5.1.3. EBIT

Within sales and distribution expenses, marketing/retail expenses represent the main part of operating expenses. In addition to advertising and promotional expenses, this item also includes expenses in connection with the company's own retail activities. Other selling expenses include expenses for logistics and other variable selling expenses. The main drivers are marketing expenses in connection with sponsorship of sports teams and celebrities to maintain and increase PUMA's brand awareness.

The absolute increase in 2022 resulted mainly from higher expenses for marketing, a higher number of own retail stores, and higher sales-related distribution and inventory costs. In addition, PUMA continued to face operational inefficiencies, particularly in the supply chain, due to COVID-19. The weaker increase in other operating income and expenses compared to revenue growth reflects the operating leverage achieved. Continued cost control enabled a decrease in the OPEX ratio from 40,1% in the prior year to now 38,9% in 2022.

Figure 20: Historical and forecasted cost structure



Source: Annual reports PUMA SE, own analysis

Based on the historical performance, a slight increase of OPEX is forecasted in 2023 as expected by management. In general, SG&A, R&D and OOI are forecasted as a percentage of revenue based on historical average. It is expected that they are constant in the first forecasted years. To reach steady-state in 2032, they linearly converge to FY22 level, which was the most successful year in the historical period under review. These assumptions are based on the fact that PUMA has succeeded in steadily improving its cost structure in the past, but that the company will be operating in a difficult environment in the coming years.

In the financial years from 2018 to 2022, PUMA was always able to achieve a positive EBIT result. The pandemic year 2020 is conspicuous in this respect, where the EBIT margin of 4% was significantly lower than in other years. However, this is not representative due to numerous restrictions and difficulties. In 2021, the EBIT margin was highest at 8,19%, but declined again to 7,57% in 2022 due to the limiting factors described above.

In the planning period, the EBIT margin is expected to decline at the beginning. A difficult market environment is expected, in particular due to described macroeconomic factors. Based on PUMA's strong momentum, management expects operating profit (EBIT) in the range of € 590 million to € 670 million (2022: € 641 million) for the financial year 2023. The improvement in the EBIT margin in the planning period results from a slight increase in the gross profit margin, for example due to a higher share of own retail sales as a consequence of the disproportionate growth of the e-commerce sales channel.

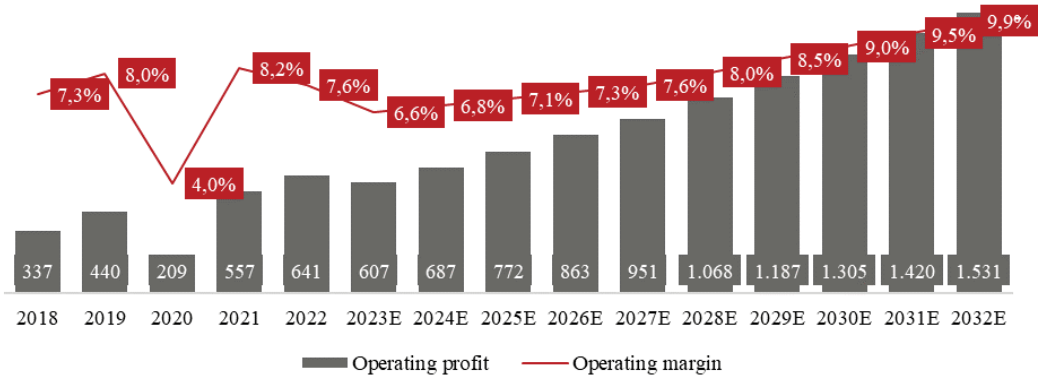
Figure 21: Historical and forecasted EBIT

EBIT																
	Historical					Forecast										CAGR
EURm	2018A	2019A	2020A	2021A	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	'23 - '32
Sales and distribution expenses	(1.524)	(1.821)	(1.794)	(2.207)	(2.677)											
Product management/merchandising	(44)	(53)	(46)	(53)	(71)											
Administrative and general expenses	(328)	(340)	(369)	(405)	(466)											
SG&A	(1.896)	(2.214)	(2.209)	(2.665)	(3.214)	(3.599)	(3.922)	(4.256)	(4.596)	(4.895)	(5.148)	(5.376)	(5.572)	(5.734)	(5.856)	
% revenue	(40,78%)	(40,23%)	(42,20%)	(39,17%)	(37,97%)	(39,00%)	(39,00%)	(39,00%)	(39,00%)	(39,00%)	(38,79%)	(38,59%)	(38,38%)	(38,17%)	(37,97%)	
R&D	(54)	(62)	(57)	(62)	(82)	(107)	(117)	(127)	(137)	(146)	(147)	(148)	(146)	(144)	(140)	
% revenue	(1,16%)	(1,12%)	(1,08%)	(0,91%)	(0,97%)	(1,16%)	(1,16%)	(1,16%)	(1,16%)	(1,16%)	(1,11%)	(1,06%)	(1,01%)	(0,96%)	(0,91%)	
Other operating expenses	(1.950)	(2.276)	(2.265)	(2.727)	(3.296)	(3.706)	(4.039)	(4.383)	(4.733)	(5.041)	(5.296)	(5.523)	(5.719)	(5.877)	(5.996)	
Other operating income	21	4	0	3	0	74	80	87	94	100	106	111	116	120	123	
Royalty and commission income	16	25	16	24	34											
% revenue	0,80%	0,53%	0,32%	0,39%	0,40%	0,49%	0,49%	0,49%	0,49%	0,49%	0,55%	0,61%	0,68%	0,74%	0,80%	
EBITDA	419	687	503	863	999	971	1.078	1.196	1.322	1.439	1.584	1.728	1.869	2.004	2.131	8,17%
% y-o-y growth	33,15%	63,82%	(26,79%)	71,60%	15,81%	(2,83%)	10,95%	11,03%	10,46%	8,87%	10,07%	9,11%	8,16%	7,23%	6,31%	
% revenue	9,02%	12,48%	9,61%	12,68%	11,81%	10,53%	10,71%	10,96%	11,21%	11,46%	11,93%	12,40%	12,87%	13,34%	13,81%	
D&A	(82)	(247)	(294)	(306)	(359)	(364)	(391)	(424)	(458)	(488)	(516)	(542)	(564)	(584)	(600)	
% revenue	(1,77%)	(4,48%)	(5,61%)	(4,49%)	(4,24%)	(3,95%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	(3,89%)	
% fixed assets	(11,21%)	(15,72%)	(17,00%)	(16,22%)	(16,23%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	(16,48%)	
EBIT	337	440	209	557	641	607	687	772	863	951	1.068	1.187	1.305	1.420	1.531	9,70%
% y-o-y growth	37,86%	30,58%	(52,49%)	166,35%	14,97%	(5,27%)	13,14%	12,47%	11,82%	10,13%	12,30%	11,11%	9,96%	8,86%	7,79%	
% revenue	7,25%	8,00%	4,00%	8,19%	7,57%	6,58%	6,83%	7,08%	7,33%	7,58%	8,05%	8,52%	8,99%	9,46%	9,93%	

Source: Annual reports PUMA SE, own analysis

An increasing optimization of the cost structure is assumed throughout the entire planning period, so that the operating profit will slowly rise to 9,93% in 2032. This seems plausible, especially in comparison with major competitors.

Figure 22: Historical and forecasted operating profit and margin



Source: Annual reports PUMA SE, own analysis

5.1.4. Other items

The historical fictitious interest rate on deposits (excess cash) was used to forecast the interest income. Only 2022 was excluded due to material deviation. A simultaneous approach was taken to plan the interest expense. The fictive interest rate on long-term debt of the history was

calculated and then applied to the forecasted debt. Financial income/expenses other than interest were neglected in the forecast due to immateriality.

Figure 23: Historical and forecasted other items

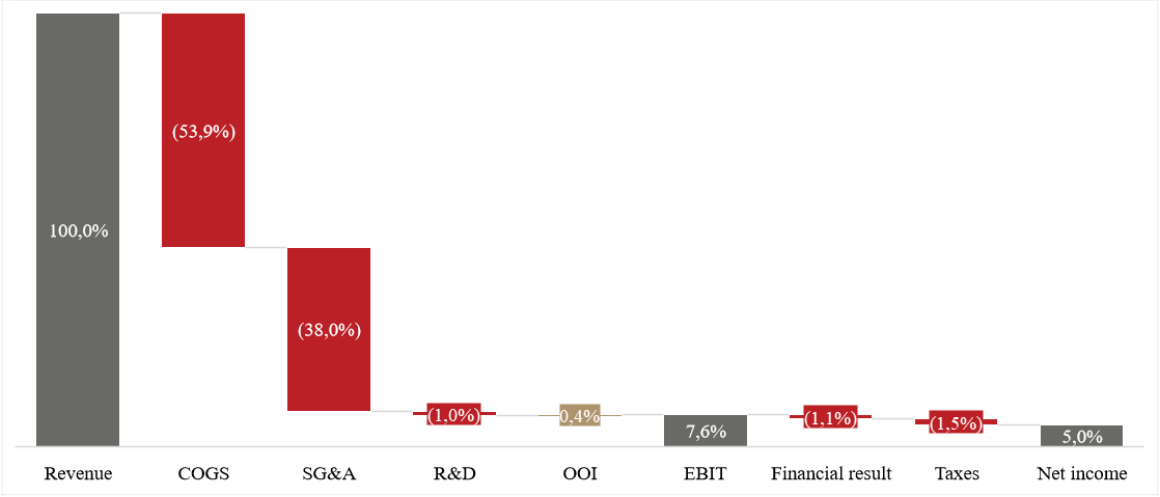
Other items

	Historical					Forecast										CAGR
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**	**'23 - '32**
Financial income	12	26	35	30	79	6	9	10	10	11	12	12	13	13	14	
% fictious interest rate on cash	0,86%	1,39%	1,28%	1,57%	6,97%	1,28%	1,28%	1,28%	1,28%	1,28%	1,28%	1,28%	1,28%	1,28%	1,28%	
Financial expenses	(34)	(49)	(82)	(82)	(168)	(69)	(60)	(65)	(66)	(71)	(76)	(80)	(84)	(87)	(90)	
% fictious interest rate on LT debt	(8,36%)	(5,70%)	(4,67%)	(3,81%)	(4,15%)	(5,34%)	(6,11%)	(4,95%)	(5,25%)	(4,96%)	(5,03%)	(5,06%)	(5,10%)	(5,13%)	(5,17%)	
Financial result	(24)	(23)	(47)	(52)	(89)	(63)	(51)	(55)	(56)	(60)	(64)	(68)	(71)	(74)	(76)	
% revenue	(0,51%)	(0,41%)	(0,90%)	(0,76%)	(1,05%)	(0,69%)	(0,51%)	(0,50%)	(0,48%)	(0,48%)	(0,48%)	(0,49%)	(0,49%)	(0,49%)	(0,50%)	
EBT	313	418	162	506	552	544	635	717	807	891	1.004	1.119	1.234	1.347	1.455	10,35%
% y-o-y growth	35,51%	33,32%	(61,14%)	211,46%	9,14%	(1,47%)	16,85%	12,96%	12,53%	10,31%	12,71%	11,46%	10,28%	9,14%	8,04%	
% revenue	6,74%	7,59%	3,10%	7,43%	6,52%	5,89%	6,32%	6,57%	6,85%	7,10%	7,56%	8,03%	8,50%	8,96%	9,43%	
Taxes	187	262	79	310	353	317	375	427	483	535	610	685	761	836	907	
% tax rate	(26,68%)	(26,00%)	(24,15%)	(25,42%)	(23,09%)	(25,07%)	(25,31%)	(25,55%)	(25,79%)	(26,03%)	(26,26%)	(26,50%)	(26,74%)	(26,98%)	(27,22%)	

Source: Annual reports PUMA SE, own analysis

As shown in the literature review in chapter 2.3.3.1, there is a lack of consensus among academics and also practitioners about the tax rate to be used for valuation purposes. In principle, PUMA SE and its German subsidiaries are subject to corporate income tax plus solidarity surcharge and trade tax. This results in a weighted blended tax rate of 27,22%. Since the foreign subsidiaries are subject to other tax rates and, in addition, other tax effects (in FY22 previously unrecognized tax losses, tax credits or temporary differences) also change the theoretical tax expense, the theoretical and effective tax rate differ. In this thesis, a conservative approach is followed and a gradual increase to the marginal tax rate is modeled starting from the 5-year historical average effective tax rate.

Figure 24: Net income bridge for financial year 2022, in % of revenue



Source: Annual reports PUMA SE, own analysis

Figure 24 shows the net income bridge for the financial year 2022. Assuming dividends from investments in affiliated companies at the previous year's level, PUMA's management expects earnings to be at the previous year's level in 2023.

5.2. Balance sheet items

Figure 25 shows the development of the different balance sheet items. Due to positive annual net incomes, which exceed dividend payments, shareholders' equity increases during the forecasted period. Non-current liabilities slightly decrease due to repayment of LT debt. Non-current assets increase in particular due to rising fixed assets. A detailed overview of the individual positions is presented in the following.

Figure 25: Overview of balance sheet items

Source: Annual reports PUMA SE, own analysis

5.2.1. Fixed assets, D&A and CAPEX

Fixed assets are stated at historical cost minus accumulated depreciation. The depreciation period is based on the expected useful life of the asset. Depreciation is calculated using the straight-line method. The useful life is based on the type of asset. A useful life of between ten and fifty years is applied for buildings and between three and ten years for movable assets. For property and similar rights, the useful life is also between three and ten years. In accordance with literature opinions (including Rosenbaum and Pearl, 2020, and Koller et at, 2015), fixed assets should be forecasted as a function of revenue. The FA/revenue ratio is usually stable over long periods of time and therefore this method is well suited for forecasting. Future D&A is

planned based on the average of the past three years (D&A ratio in FY2018 and FY2019 was comparatively low) as a percentage of fixed assets. This results in annual depreciation of 16,5% of fixed assets or 3,9% of revenue. CAPEX can subsequently be calculated using the following formula:

Equation 19: Calculation of CAPEX

$$CAPEX_t = FA_t - FA_{t-1} + D\&A_t$$

where

$CAPEX_t = Capital\ expenditure\ at\ time\ t$

$FA_t = Fixed\ assets\ at\ time\ t$

The approach described above will only be applied from the financial year 2024 onwards. For the year 2023, PUMA's management has planned investments in fixed assets in the amount of approx. € 330 million. The majority of these investments will be made in infrastructure in order to create the operational prerequisites for the planned long-term growth. The investments mainly relate to investments in the company's own distribution and logistics centers, investments in administrative buildings and investments in the expansion and modernization of the company's own retail stores. The closing balance of fixed assets for 2023 is calculated as follows:

Equation 20: Calculation of fixed assets in 2023

$$FA_{2023} = FA_{2022} - D\&A_{2023} + CAPEX_{2023}$$

From 2024 onwards, fixed assets grow at the same rate as revenue.

Figure 26: Historical and forecasted fixed assets, D&A and CAPEX

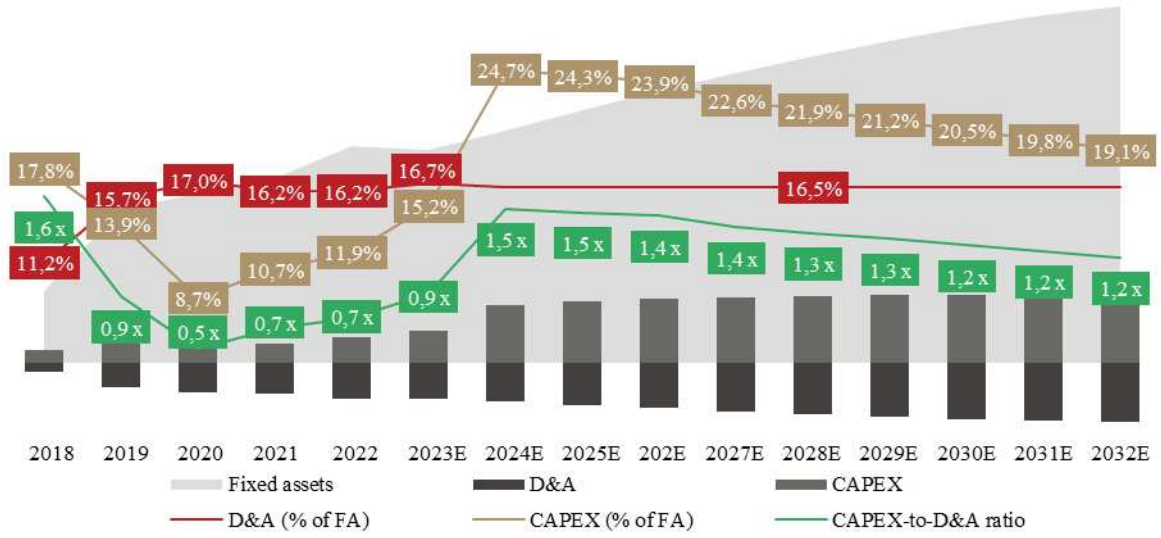
Fixed assets

	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Opening balance	690	733	1.568	1.728	1.885	2.210	2.176	2.372	2.573	2.779	2.960	3.129	3.285	3.424	3.542
- D&A	(82)	(247)	(294)	(306)	(359)	(364)	(391)	(424)	(458)	(488)	(516)	(542)	(564)	(584)	(600)
% revenue	*(1,8%)*	*(4,5%)*	*(5,6%)*	*(4,5%)*	*(4,2%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*	*(3,9%)*
% fixed assets	*(11,2%)*	*(15,7%)*	*(17,0%)*	*(16,2%)*	*(16,2%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*	*(16,5%)*
+ CAPEX	130	218	151	202	264	330	587	626	664	669	686	697	703	702	695
% revenue	*2,8%*	*4,0%*	*2,9%*	*3,0%*	*3,1%*	*3,6%*	*5,8%*	*5,7%*	*5,6%*	*5,3%*	*5,2%*	*5,0%*	*4,8%*	*4,7%*	*4,5%*
% fixed assets	*17,8%*	*13,9%*	*8,7%*	*10,7%*	*11,9%*	*15,2%*	*24,7%*	*24,3%*	*23,9%*	*22,6%*	*21,9%*	*21,2%*	*20,5%*	*19,8%*	*19,1%*
+/- Others	(5)	864	302	260	420										
Closing balance	733	1.568	1.728	1.885	2.210	2.176	2.372	2.573	2.779	2.960	3.129	3.285	3.424	3.542	3.637
% revenue	*16%*	*29%*	*33%*	*28%*	*26%*	*24%*	*24%*	*24%*	*24%*	*24%*	*24%*	*24%*	*24%*	*24%*	*24%*
CAPEX-to-D&A-ratio	1,6x	0,9x	0,5x	0,7x	0,7x	0,9x	1,5x	1,5x	1,4x	1,4x	1,3x	1,3x	1,2x	1,2x	1,2x

Source: Annual reports PUMA SE, own analysis

Following Matthews (2014), the valuation technique of forecasting a CAPEX-to-D&A ratio equal to 1 at the end of the explicit period is abandoned. If CAPEX were equal to D&A, net fixed assets would remain constant, leading to the unrealistic assumption of infinite capital efficiency growth. Due to unchanged depreciation and amortization, the CAPEX-to-D&A ratio decreases in the forecasted period because revenue growth slows down and capital expenditures decrease as a result. The development of D&A and CAPEX is shown in figures 26 and 27.

Figure 27: Expected development of D&A and CAPEX



Source: Annual reports PUMA SE, own analysis

5.2.2. Working capital

Working capital is calculated based on total current assets minus total current liabilities. Cash and cash equivalents and the positive and negative fair values of derivative financial instruments are not included in WC but in net debt. Current financial and leasing liabilities are also not included in working capital (Eichner and Dischler, 2020).

For the forecast of the trade working capital (accounts receivable, inventories and accounts payable), the cash conversion cycle was used (see equation 20). The cash conversion cycle (CCC) – also called the cash cycle – is a key figure that indicates how many days it takes a company to convert cash spent on inventories back into cash by selling its products. The shorter a company's CCC, the less time the money is tied up in AR and inventories. CCC is the sum of Days sales outstanding (DSO) and days inventory outstanding (DIO) minus days payable outstanding (DPO):

Equation 21: Calculation of DSO, DIO, DPO and CCC

$$DSO_t = \frac{(\frac{AR_t + AR_{t-1}}{2})}{revenue_t} * 365 \qquad DIO_t = \frac{(\frac{I_t + I_{t-1}}{2})}{COGS_t} * 365 \qquad DPO_t = \frac{(\frac{AP_t + AP_{t-1}}{2})}{COGS} * 365$$

$$CCC = DSO + DIO - DPO$$

where

$D\#O = Days\ \#\ outstanding \qquad CCC = Cash\ Conversion\ Cycle$

$AR = Accounts\ receivable \qquad I = Inventories \qquad AP = Accounts\ payable$

DSO indicates the average number of days PUMA takes to collect payment from the customer. A high number can lead to cash flow problems, as it is an indicator that the company is facing delays in receiving payments. Conversely, a low number indicates good receivables management.

DIO measures the effectiveness of inventory management and is used to determine how long it takes to convert existing inventory into revenue/cash. A short DIO means that inventory is converted into cash more quickly, while a high DIO indicates poor inventory liquidity.

DPO is the average number of days it takes a company to pay its invoices and obligations. A high DPO value indicates long payment terms with suppliers. This allows the company to defer payments and use the available cash for short-term investments and to increase their working capital and free cash flow. However, it can also be a sign of liquidity shortages and insolvency.

Figure 28: Historical and forecasted trade working capital

Trade working capital historical and forecast

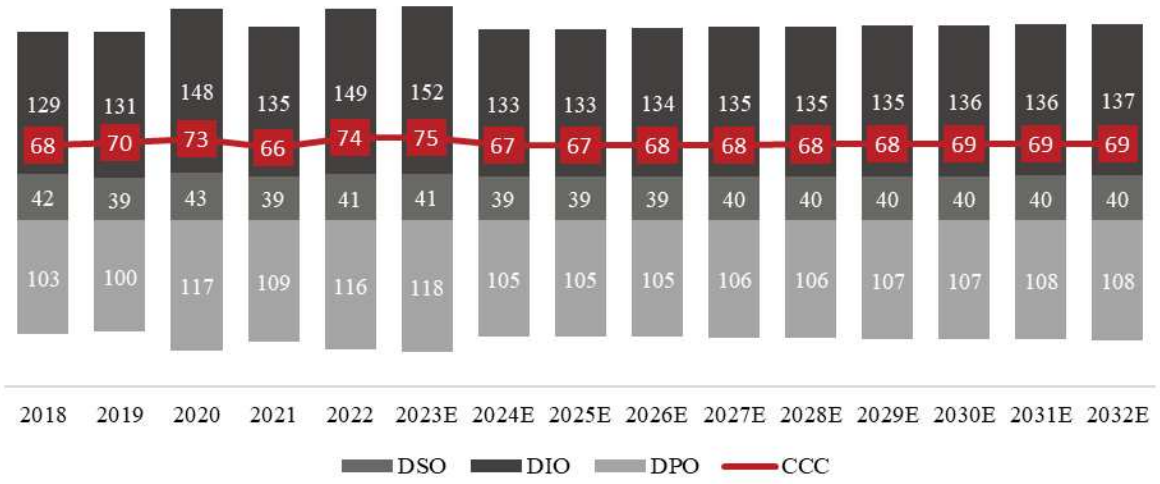
	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Accounts receivable	554	612	621	848	1.065	1.030	1.123	1.218	1.316	1.401	1.482	1.556	1.621	1.677	1.722
DSO	*42*	*39*	*43*	*39*	*41*	*41*	*39*	*39*	*39*	*40*	*40*	*40*	*40*	*40*	*40*
Inventory	915	1.110	1.138	1.492	2.245	1.882	2.042	2.206	2.371	2.513	2.650	2.773	2.882	2.973	3.044
DIO	*129*	*131*	*148*	*135*	*149*	*152*	*133*	*133*	*134*	*135*	*135*	*135*	*136*	*136*	*137*
Accounts payable	705	844	942	1.176	1.735	1.484	1.610	1.738	1.869	1.981	2.088	2.186	2.272	2.343	2.399
DPO	*103*	*100*	*117*	*109*	*116*	*109*	*105*	*105*	*105*	*106*	*106*	*107*	*107*	*108*	*108*
TWC	763	878	818	1.164	1.575	1.429	1.556	1.686	1.818	1.934	2.043	2.143	2.232	2.307	2.367
Δ TWC		115	(61)	346	411	(146)	127	130	132	116	109	100	89	75	60

Source: Annual reports PUMA SE, own analysis

In 2022, trade working capital was built up in particular through higher inventories. Due to the challenging situation in the procurement market, product availability was prioritized and products were procured earlier, which led to a negative impact on working capital (increase)

and cash flow. Trade receivables increased as a result of the strong growth in turnover. On the liabilities side, trade payables increased in connection with the rise in inventories. However, the level was relatively constant throughout the entire historical period considered (see figure 29), which is why the forecast is based on the historical 5 years.

Figure 29: Expected development of CCC



Source: Annual reports PUMA SE, own analysis

The majority of the OWC items (other CA (tax refund claims), income + deferred taxes, accrued expenses, other CL (customer bonus and warranty provisions)) were forecasted based on the average historical percentage of revenue, as they normally also grow as revenue increases. Only prepaid expenses were forecasted constantly for simplification reasons and are equal to the value from 2022.

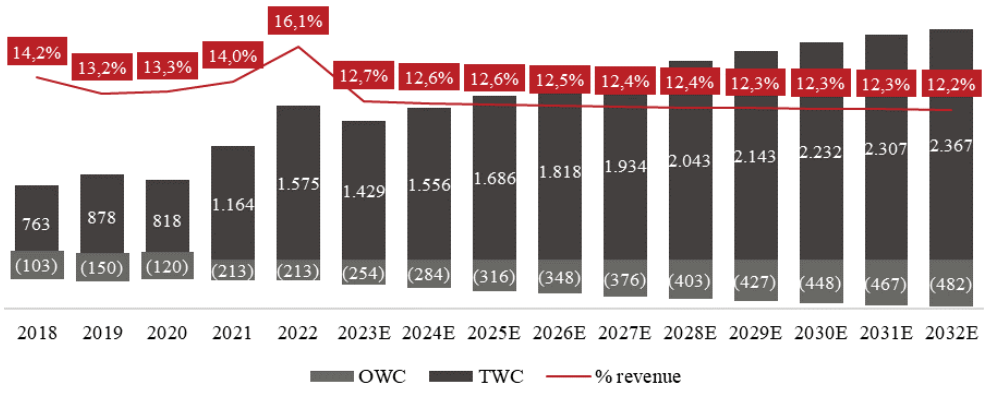
Figure 31 provides a breakdown of the OWC compared to the TWC and the percentage relative to revenue.

Figure 30: Historical and forecasted other working capital

Working Capital	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
TWC	763	878	818	1.164	1.575	1.429	1.556	1.686	1.818	1.934	2.043	2.143	2.232	2.307	2.367
Other receivables	99	102	95	149	204	192	209	227	245	261	276	289	302	312	320
% revenue	*2,1%*	*1,8%*	*1,8%*	*2,2%*	*2,4%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*	*2,1%*
Prepaid expenses	50	63	50	90	86	86	86	86	86	86	86	86	86	86	86
Deferred tax assets	208	238	278	280	295	400	436	473	511	544	576	604	630	651	669
% revenue	*4,5%*	*4,3%*	*5,3%*	*4,1%*	*3,5%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*	*4,3%*
Accrued expenses	(143)	(161)	(139)	(190)	(230)	(261)	(285)	(309)	(334)	(356)	(376)	(395)	(411)	(426)	(437)
% revenue	*(3,1%)*	*(2,9%)*	*(2,7%)*	*(2,8%)*	*(2,7%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*	*(2,8%)*
Income taxes	(68)	(89)	(89)	(86)	(87)	(130)	(142)	(154)	(167)	(177)	(188)	(197)	(205)	(212)	(218)
% revenue	*(1,5%)*	*(1,6%)*	*(1,7%)*	*(1,3%)*	*(1,0%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*	*(1,4%)*
Other current liabilities	(201)	(250)	(274)	(407)	(439)	(466)	(508)	(551)	(596)	(634)	(671)	(704)	(734)	(759)	(780)
% revenue	*(4,3%)*	*(4,5%)*	*(5,2%)*	*(6,0%)*	*(5,2%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*	*(5,1%)*
Deferred tax liabilities	(48)	(53)	(41)	(49)	(42)	(73)	(80)	(87)	(94)	(100)	(106)	(111)	(116)	(120)	(123)
% revenue	*(1,0%)*	*(1,0%)*	*(0,8%)*	*(0,7%)*	*(0,5%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*	*(0,8%)*
OWC	(103)	(150)	(120)	(213)	(213)	(254)	(284)	(316)	(348)	(376)	(403)	(427)	(448)	(467)	(482)
WC	660	728	697	951	1.362	1.175	1.271	1.370	1.470	1.558	1.641	1.716	1.783	1.840	1.885
% revenue	*14,2%*	*13,2%*	*13,3%*	*14,0%*	*16,1%*	*12,7%*	*12,6%*	*12,6%*	*12,5%*	*12,4%*	*12,4%*	*12,3%*	*12,3%*	*12,3%*	*12,2%*
Δ WC		68	(30)	254	411	(187)	96	99	100	87	83	76	67	57	45

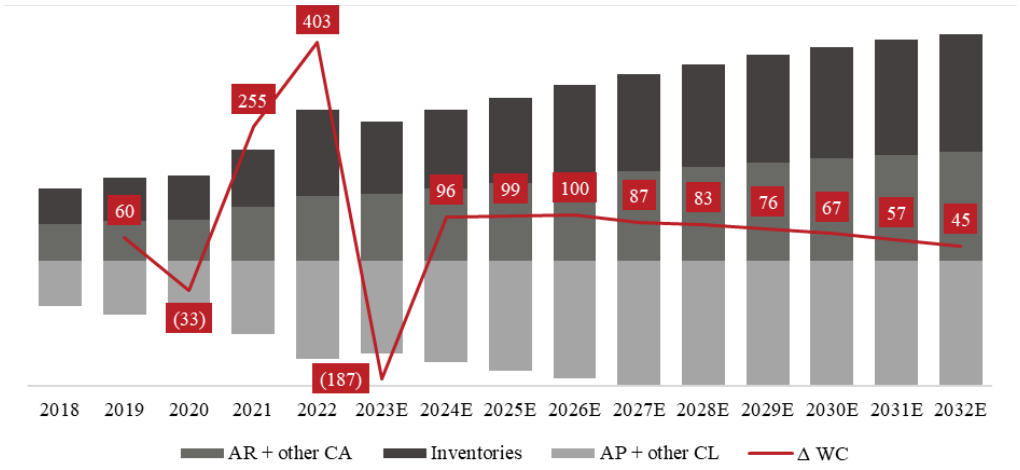
Source: Annual reports PUMA SE, own analysis

Figure 31: Breakdown of TWC and OWC



Source: Annual reports PUMA SE, own analysis

Figure 32: Expected development of WC



Source: Annual reports PUMA SE, own analysis

5.2.3. Shareholders' equity

The items common stock, treasury stock and other equity were considered as constants in the forecast and correspond to the values from 2022. Retained earnings EOP are calculated as the sum of retained earning BOP and net income of the respective financial year minus dividend payments.

Figure 33: Historical and forecasted shareholders' equity

Shareholders' equity

		Forecast									
EURm	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Retained earnings BOP		2.587	2.781	3.081	3.325	3.575	3.794	4.000	4.188	4.356	4.498
Consolidated net income (less: minority interest)		317	375	427	483	535	610	685	761	836	907
Dividend payments		(123)	(76)	(182)	(234)	(317)	(404)	(497)	(594)	(693)	(792)
Retained earnings EOP	2.587	2.781	3.081	3.325	3.575	3.794	4.000	4.188	4.356	4.498	4.613
Common stock	151	151	151	151	151	151	151	151	151	151	151
Treasury stock	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)
Other equity	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)
Shareholders' equity	**2.472**	**2.666**	**2.965**	**3.210**	**3.460**	**3.678**	**3.884**	**4.073**	**4.240**	**4.383**	**4.498**

Source: Annual reports PUMA SE, own analysis

PUMA's dividend policy envisages a payout of 25-35% of the consolidated net income. In both 2021 and 2022, the payout ratio was at the upper end of the dividend policy with 34,7% and 34,8% respectively. As a result of the strong negative impact of the COVID-19 pandemic, it was decided at the Annual General Meeting in 2020 to suspend the dividend payment for 2019.

Figure 34: Historical and forecasted dividend payments

Dividend

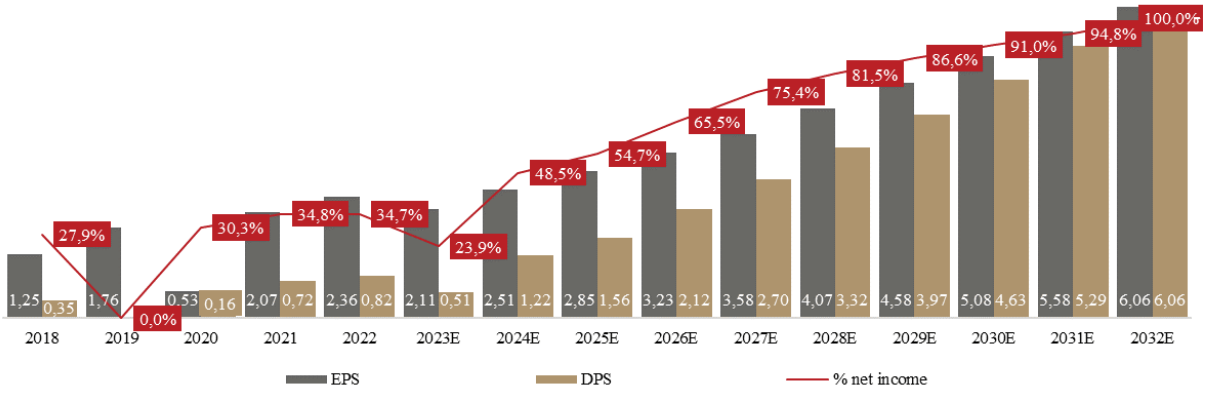
	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Consolidated net income (less: minority interest)	187	262	79	310	353	317	375	427	483	535	610	685	761	836	907
# of shares outstanding (million)	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149
EPS (in €)	1,25	1,76	0,53	2,07	2,36	2,12	2,51	2,86	3,23	3,58	4,08	4,58	5,09	5,59	6,07
DPS (in €)	0,35	-	0,16	0,72	0,82	0,51	1,22	1,56	2,12	2,70	3,32	3,97	4,64	5,30	6,07
% net income	27,9%	0,0%	30,3%	34,8%	34,7%	23,9%	48,5%	54,7%	65,5%	75,4%	81,5%	86,6%	91,0%	94,8%	100,0%

Source: Annual reports PUMA SE, own analysis

A constant net debt-to-equity ratio is assumed throughout the forecast period. It is assumed that the payout ratio grows steadily so that no excess cash is built up and the ratio is maintained.

The development of earnings per share and dividends per share is shown in figure 35. If PUMA is able to meet the predicted growth expectations, the dividend payments can be increased continuously. This would strengthen the attractiveness of the company and appeal to a large number of additional investors.

Figure 35: Expected development of EPS and DPS



Source: Annual reports PUMA SE, own analysis

5.2.4. Net debt

The following figure shows the individual net debt positions:

Figure 36: Historical and forecasted net debt

Net debt

	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Excess cash	371	408	551	621	294	524	622	589	627	661	692	721	747	769	787
Short-term investment	39	31	29	30	22	22	22	22	22	22	22	22	22	22	22
Derivative assets	73	45	24	123	116	116	116	116	116	116	116	116	116	116	116
Long-term investments	62	70	56	58	56	56	56	56	56	56	56	56	56	56	56
Other non-current assets	12	21	9	16	11	11	11	11	11	11	11	11	11	11	11
Long-term debt	(181)	(764)	(929)	(1.165)	(1.296)	(1.133)	(1.222)	(1.244)	(1.338)	(1.420)	(1.498)	(1.569)	(1.632)	(1.686)	(1.729)
Current financial/lease liabilities	(57)	(181)	(302)	(263)	(300)	(293)	(310)	(328)	(346)	(363)	(378)	(391)	(404)	(414)	(423)
Derivative liabilities	(21)	(34)	(127)	(42)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)
Minority interest	(19)	(47)	(42)	(65)	(67)	(67)	(67)	(67)	(67)	(67)	(67)	(67)	(67)	(67)	(67)
Other liabilities	(61)	(82)	(78)	(71)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)
Net cash (debt)	**218**	**(533)**	**(808)**	**(758)**	**(1.270)**	**(870)**	**(879)**	**(951)**	**(1.025)**	**(1.090)**	**(1.151)**	**(1.207)**	**(1.257)**	**(1.299)**	**(1.333)**

Source: Annual reports PUMA SE, own analysis

Cash and cash equivalents are linked to the cashflow statement. Therefore, no forecast of this position is necessary. Part of net debt is only excess cash, meaning cash that is not required to finance current operations. A regular cash requirement of 2% of revenue is assumed in this thesis.

As an international concern with revenue in various countries, PUMA is also exposed to currency risks. Therefore, PUMA holds currency-related derivative financial instruments to minimize any risks. The positive and negative fair values of derivative financial instruments are part of net debt (derivative assets/liabilities). For simplicity, it is assumed that the values do not change and therefore the 2022 values are adopted.

The long-term investments relate to the 5,32% share in Borussia Dortmund GmbH & Co. Kommanditgesellschaft auf Aktien (BVB) with its registered office in Dortmund, Germany. Due to the low fluctuations, the value from 2022 is also used throughout the forecast horizon.

Other non-current assets, which mainly comprise rent deposits, are also considered to be constant.

The long-term debt is comprised of lease liabilities and debt. PUMA rents and leases offices, warehouses, facilities, technical equipment and machinery, motor vehicles and sales premises for its own retail business. The lease agreements concluded generally have a term of one to fifteen years. Some contracts include renewal options as well as price adjustment clauses. The resulting lease liabilities are of a short-term or long-term nature. Like the balance sheet item fixed assets (recognized carrying amounts of the rights of use), the lease liabilities grow in line with revenue. The debt is composed of issued certificate of indebtedness and a credit line. The promissory notes are repaid as planned and only the currently used credit line remains in place. No new debt will be taken on beyond this.

The non-controlling interests relate to companies in the North American market in which the same shareholder holds minority interests. There is a profit-sharing arrangement in favor of the non-controlling shareholder that differs from the equity interest. In contrast, PUMA receives increased royalty payments. The minority interest does not change in the planning period. This is due to the assumption that all net income attributable to the minority shareholder (planned on the basis of the share of revenue generated in North America) will be distributed directly to the minority shareholder as a dividend.

6. Valuation

6.1. Discounted cash flow

6.1.1. Discount rate

The WACC is used to discount the FCFF. As shown in chapter 2.2.4.1, the cost of equity, the cost of debt and the current capital structure based on market values are required for WACC calculation. All of the following data was extracted from the specified sources on 23/03/2023.

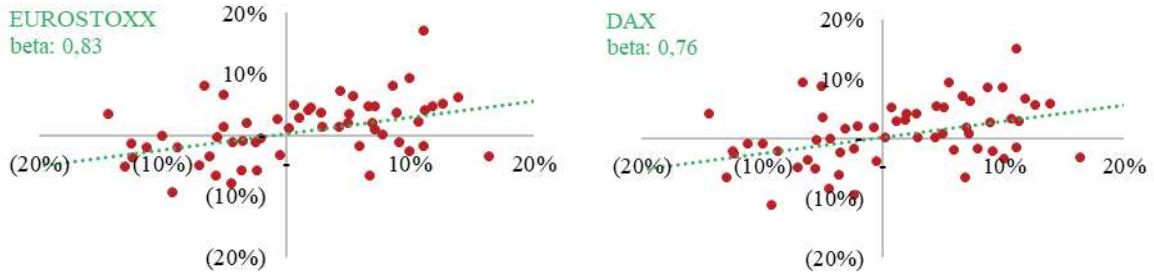
The cost of equity was determined using the CAPM and is based on the following input factors: risk-free rate, beta, and market risk premium.

The yield of the most recent German federal bond with an agreed maturity of 10 years was used as the risk-free rate (2,285%). There are various reasons for selecting the AAA-rated German federal bond as a substitute for the risk-free interest rate. Besides the currency equivalence (traded in euro), it has a high liquidity, and the maturity corresponds to the explicit forecast period. The yield was taken from the website of the German Bundesbank.

As shown in chapter 2.2.4.1.1.2, there are various ways to determine beta. There is no consensus on which method is the most appropriate. Therefore, the cost of equity and the WACC were calculated both based on PUMA's historical beta (5-year monthly) and using a peer group.

The historical beta was derived from the volatility of the share price in relation to the volatility of the market. It was calculated using a linear least squares regression line based on monthly returns over the last five years (30/04/18 to 23/03/23). The EUROSTOXX600 was chosen over the DAX40 as the market index, because in the opinion of the author it better reflects the market portfolio. Despite that, both can be taken as they are liquid and traded in the same currency as the company's future FCFF.

Figure 37: Beta regression



Source: Refinitiv Eikon, own analysis

Many practitioners consider the bottom-up approach to be more accurate. The 5-year monthly beta, the capital structure, and the tax rate of the peer companies[14] were drawn from Refinitiv Eikon. The beta was unlevered in a first step and then applied to PUMA according to company's capital structure. In addition, Blume's drift adjustment was applied to account for mean reversion (see equation 16).

[14] Same as for relative valuation

Figure 38: Calculation of beta using bottom-up approach

Unlevered beta from comparable companies

Company	Ticker	Levered Beta	Debt (m)	% Debt	EqV (m)	% Equity	Tax Rate	Unlevered Beta
Nike Inc	NKE	1,11	9.431	4,61%	195.078	95,39%	12%	1,06
Adidas AG	ADS	0,81	6.912	19,64%	28.283	80,36%	25%	0,68
PVH Corp	PVH	2,10	2.244	30,72%	5.061	69,28%	6%	1,48
ANTA Sports Products Ltd	2020	1,08	2.864	6,77%	39.429	93,23%	27%	1,03
Skechers USA Inc	SKX	1,32	339	4,56%	7.103	95,44%	22%	1,27
Under Armour Inc	UAA	1,64	674	13,88%	4.182	86,12%	22%	1,46
Li Ning Co Ltd	2331	1,31	245	1,21%	20.080	98,79%	24%	1,30
Asics Corp	7936	1,84	829	14,53%	4.873	85,47%	30%	1,65
Deckers Outdoor Corp	DECK	0,93	-	0,00%	11.937	100,00%	20%	0,93
Median		**1,31**	**828,70**	**0,07**	**11.937**	**0,93**	**21,90%**	**1,21**

Relever beta

	Ticker	Unlevered Beta	Net Debt	% Debt	MV EqV	% Equity	Tax Rate	Levered Beta	Adjusted
Capital structure PUMA SE	PUM	1,21	1.283	13,74%	8.050	86,26%	27,22%	1,35	1,23

Historical beta

	Levered Beta	Adjusted
PUMA SE / EUROSTOXX600	0,83	0,89

Source: Refinitiv Eikon, own analysis

Due to the divergence of both approaches, the average of the two methods was chosen as the final WACC (see figure 41).

The selection of the market risk premium is based on the recommendation of the Technical Committee for Business Valuation and Economics (FAUB) of the Institute of Public Auditors in Germany (IDW). The recommended range for the market risk premium in Germany is between 6,0 and 8,0%, which is why 7,0% is chosen.

As PUMA has not issued bonds that are actively traded, the cost of debt was determined based on PUMA's rated debt. The rating for the promissory notes assigned by Egan-James is BBB+. A rating is assigned to the company with Damodaran's Moody's/S&P default spread table (see figure 39). The risk-free interest rate is then added to the spread. Therefore, PUMA's pre-tax cost of debt is 4,29%.

Figure 39: Spread conversion table

Debt rating and spread	
Rating is	Spread is
D2/D	20,00%
C2/C	17,50%
Ca2/CC	15,78%
Caa/CCC	11,57%
B3/B-	7,37%
B2/B	5,26%
B1/B+	4,55%
Ba2/BB	3,13%
Ba1/BB+	2,42%
Baa2/BBB	2,00%
A3/A-	1,62%
A2/A	1,42%
A1/A+	1,23%
Aa2/AA	0,85%
Aaa/AAA	0,69%

Source: https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm

As stated in the literature review, the market values of equity and debt should be used to determine the capital structure. The market value of equity was calculated based on the share price of 23/03/2023 (€ 53,78) multiplied by the outstanding shares (149,7 million). PUMA's debt consists of promissory notes (not traded), a revolving credit facility and lease liabilities. In the consolidated financial statement, already the fair value (present values taking into account a risk-adjusted discount rate) of the lease liabilities is reported. For this reason, it is assumed that the book value is a suitable proxy for the market value. To obtain the market value of the promissory notes, the zero coupon bond pricing formula was applied.

Figure 40: Calculation of the market value of PUMA's debt

Calculation market value of debt	
Today	05/04/2023
Promissory notes	
Face value installment 1 (EURm)	125,00
Maturity installment 1	16.12.2023
Years to maturity	0,70
Cost of debt	4,29%
Market value installment 1 (EURm)	121,39
Face value installment 2 (EURm)	70,00
Maturity installment 2	14.01.2025
Years to maturity	1,78
Cost of debt	4,29%
Market value installment 2 (EURm)	64,96

Source: Refinitiv Eikon, own analysis

Using all parameters presented above, the following discount rate is obtained:

Figure 41: WACC calculation

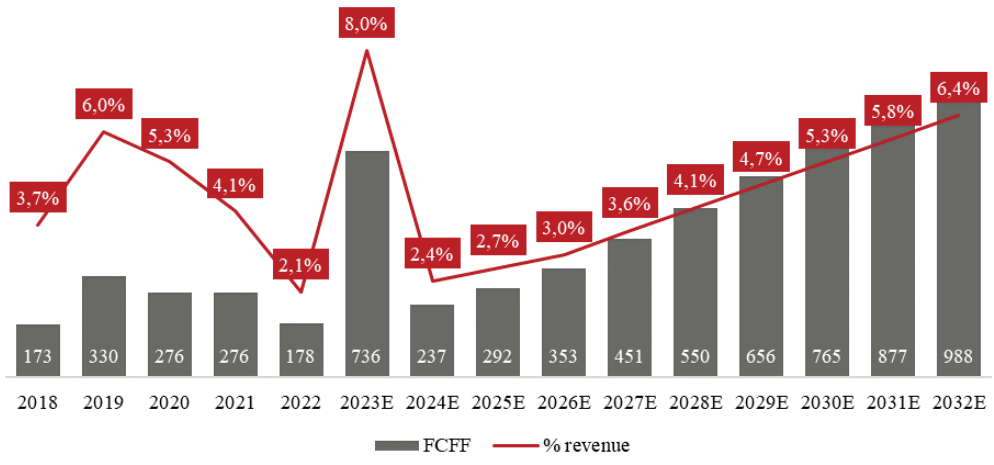
WACC calculation	
Cost of equity (comprabale companies)	10,90%
Cost of equity (historical beta)	8,49%
Pre-tax cost of debt	4,29%
WACC (comparable companies)	9,83%
WACC (historical beta)	7,76%
average	8,80%

Source: Own analysis

6.1.2. Discounted FCFF and terminal value

Figure 43 shows the calculation of FCFF. Cashflows increase over the projection period and account for an increasingly large share of revenue. At the end of the explicit forecasting period, the historical high is exceeded for the first time (see figure 42).

Figure 42: Expected development of FCFF



Source: Own analysis

The FCFF are discounted with the WACC (8,80%) to 01/01/2023. The mid-year convention is used to consider that the FCF are generated throughout the year and not only at the end of a year. To calculate the terminal value, an EBITDA multiple of 9,3x (2022 EV/EBITDA multiple of PUMA) or a perpetual growth rate of 2,69% (see chapter 5.1.1.) is applied. Depending on the method, this results in a present value of TV of EURm 8.554 (EMM) or EURm 7.157

(PGM), which corresponds to 69% or 65% of the total enterprise value. The reconciliation from EV to EqV for the calculation of the implied share price can be found in the following chapter.

Figure 43: DCF calculations

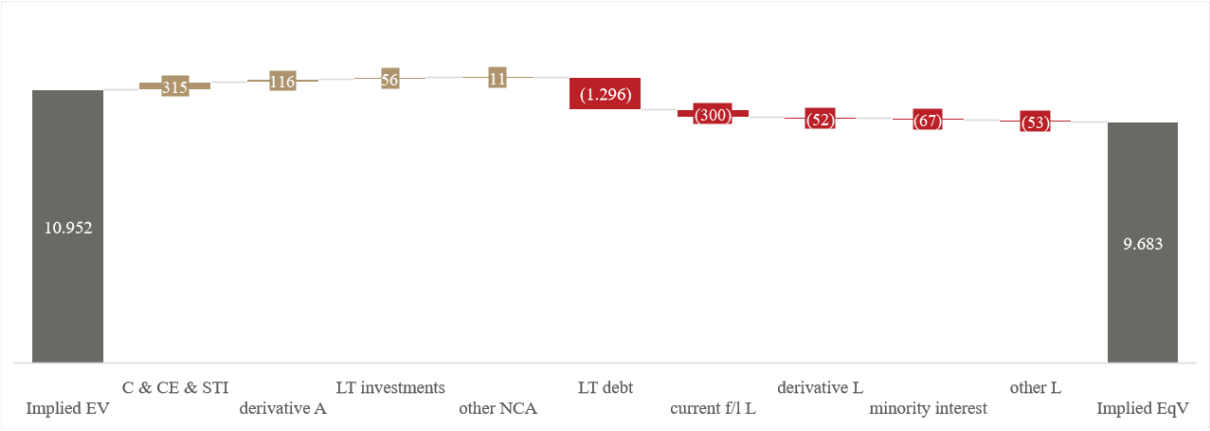
DCF										
					Forecast					
	2023E	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
EBIT	607	687	772	863	951	1.068	1.187	1.305	1.420	1.531
Taxes	(152)	(174)	(197)	(223)	(247)	(280)	(314)	(349)	(383)	(417)
Net operating profit after taxes (NOPAT):	**455**	**513**	**575**	**641**	**703**	**787**	**872**	**956**	**1.037**	**1.114**
+ D&A	364	391	424	458	488	516	542	564	584	600
- Capital expenditures	(330)	(587)	(626)	(664)	(669)	(686)	(697)	(703)	(702)	(695)
Δ Working capital	260	(67)	(68)	(69)	(60)	(57)	(52)	(46)	(39)	(31)
Free cashflow to firm	**749**	**250**	**305**	**366**	**463**	**560**	**664**	**771**	**880**	**988**
% growth		(66,59%)	21,84%	19,82%	26,53%	21,14%	18,53%	16,14%	14,09%	12,28%
Discounting Period	1	2	3	4	5	6	7	8	9	10
Discount rate	8,79%									
Discount factor (mid-year convention)	0,96	0,88	0,81	0,74	0,68	0,63	0,58	0,53	0,49	0,45
Present Value of FCFF	719	221	247	272	317	352	384	410	430	444
	EMM		**PGM**							
EBITDA Multiple / Growth rate	9,3 x		2,69%							
Terminal Value (TV)	19.869		16.624							
Present Value of TV	8.554		7.157							
Implied EV	**12.349**		**10.952**							

Source: Own analysis

6.1.3. From EV to EqV

The equity bridge (see figure 44) shows the reconciliation from enterprise value (EV) to equity value (EqV). While EV measures the total value of the operating business, EqV reflects the value to equity shareholders. There is no consensus on which items belong to net cash/debt and should therefore be added or deducted. This is often a major point of negotiation in transactions.

Figure 44: Equity bridge



Source: Own analysis

After adding non-operating assets as well as cash and cash equivalents, and deducting financial liabilities and other interest-bearing liabilities, the EqV is divided by the number of outstanding shares to obtain the implied share price.

Figure 45: Implied share price

	EMM	PGM
EBITDA Multiple / Growth rate	9,3 x	2,69%
Terminal Value (TV)	19.869	16.624
Present Value of TV	8.554	7.157
Implied EV	**12.349**	**10.952**
% of Implied EV from TV	69%	65%
+ Excess Cash + STI	315	315
+ Derivative assets	116	116
+ Long-term investments	56	56
+ Other non-current assets	11	11
- Long-term debt	(1.296)	(1.296)
- Current financial/lease liabilities	(300)	(300)
- Derivative liabilities	(52)	(52)
- Minority interest	(67)	(67)
- Other liabilities	(53)	(53)
Implied EqV	**11.079**	**9.683**
# shares outstanding	149,68	149,68
Current share price	53,78	53,78
Implied share price	74,02	64,69
Premium/(Discount) to Current	37,64%	20,28%

Source: Own analysis

6.1.4. Sensitivity analysis

Both the discount factor and the assumed exit multiple/perpetuity growth rate have a significant influence on the enterprise value and thus on the implied share price. Therefore, these two factors were assumed to change within the scope of a sensitivity analysis. The resulting range of share prices is shown in figure 46.

Figure 46: Sensitivity analysis

Terminal EV/EBITDA multiple	Weighted average cost of capital (WACC):								
	7,79%	8,04%	8,29%	8,54%	**8,79%**	9,04%	9,29%	9,54%	9,79%
	74,04	72,45	70,89	69,37	67,89	66,44	65,03	63,65	62,30
	75,72	74,09	72,50	70,94	69,42	67,94	66,49	65,08	63,70
	77,40	75,73	74,10	72,51	70,96	69,44	67,96	66,51	65,10
	79,08	77,37	75,71	74,08	72,49	70,94	69,42	67,94	66,50
	80,76	79,02	77,31	75,65	74,02	72,43	70,88	69,37	67,89
	82,44	80,66	78,92	77,21	75,55	73,93	72,35	70,80	69,29
	84,12	82,30	80,52	78,78	77,08	75,43	73,81	72,23	70,69
	85,81	83,94	82,12	80,35	78,62	76,93	75,27	73,66	72,09
	87,49	85,58	83,73	81,92	80,15	78,42	76,74	75,09	73,49

Perpetuity growth rate	Weighted average cost of capital (WACC):								
	7,79%	8,04%	8,29%	8,54%	**8,79%**	9,04%	9,29%	9,54%	9,79%
	70,02	66,52	63,30	60,32	57,56	54,99	52,60	50,37	48,29
	72,37	68,64	65,22	62,06	59,14	56,44	53,93	51,59	49,41
	74,93	70,94	67,30	63,94	60,85	58,00	55,35	52,89	50,60
	77,73	73,45	69,55	65,98	62,70	59,67	56,87	54,28	51,87
	80,81	76,19	72,01	68,19	64,69	61,47	58,51	55,77	53,24
	84,20	79,21	74,69	70,59	66,85	63,43	60,28	57,38	54,70
	87,96	82,53	77,64	73,22	69,21	65,55	62,19	59,11	56,27
	92,15	86,21	80,89	76,11	71,79	67,86	64,27	60,99	57,97
	96,85	90,31	84,50	79,30	74,61	70,38	66,53	63,02	59,80

Source: Own analysis

6.1.5. Scenario analysis

Various cases were included in a scenario analysis. The underlying input factors can be found in appendix 9. The individual cases are basically subject to the following considerations:

- Steady case: status quo from 2022 remains in place
- Base case: scenario presented in the thesis
- Conservative case: lower revenue growth and worsening of margins compared to base case
- Optimistic case: higher revenue growth and additional improvement in margins compared to the base case

Figures 47 and 48 show the different revenue, operating profits, and implied share prices by scenario:

Figure 47: Scenario analysis

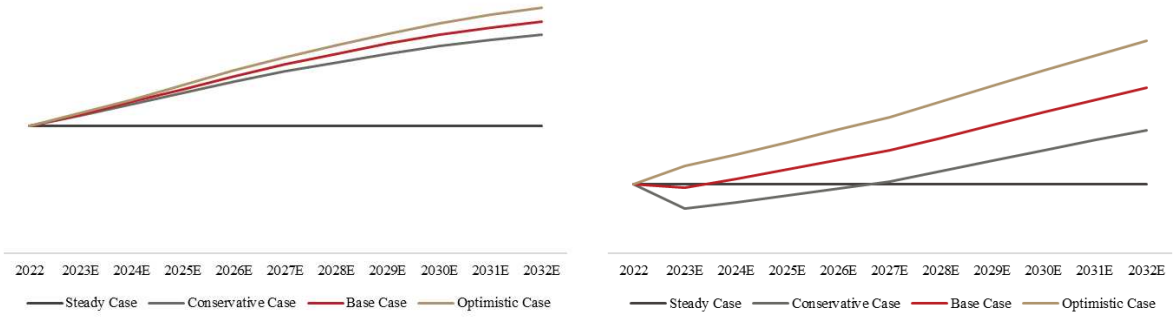
Revenue		Financial Year									
		2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Business Case	Steady Case	8.465	8.465	8.465	8.465	8.465	8.465	8.465	8.465	8.465	8.465
	Conservative Case	9.151	9.892	10.649	11.415	12.083	12.707	13.276	13.780	14.208	14.552
	Base Case	9.227	10.057	10.912	11.785	12.551	13.271	13.932	14.519	15.020	15.424
	Optimistic Case	9.303	10.224	11.180	12.164	13.034	13.856	14.615	15.292	15.873	16.342

EBIT		Financial Year									
		2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Business Case	Steady Case	641	641	641	641	641	641	641	641	641	641
	Conservative Case	411	469	532	599	664	758	854	951	1.047	1.141
	Base Case	607	687	772	863	951	1.068	1.187	1.305	1.420	1.531
	Optimistic Case	806	911	1.024	1.145	1.259	1.404	1.549	1.693	1.832	1.963

DCF results		Multiple		Perpetuity growth	
		Implied price	Potential	Implied price	Potential
Business Case	Steady Case	41,98	(21,93%)	38,15	(29,05%)
	Conservative Case	54,58	1,29%	43,69	(18,76%)
	Base Case	74,02	37,64%	64,69	20,28%
	Optimistic Case	95,35	77,29%	87,69	63,05%

Source: Own analysis

Figure 48: Revenue and EBIT by scenario



Source: Own analysis

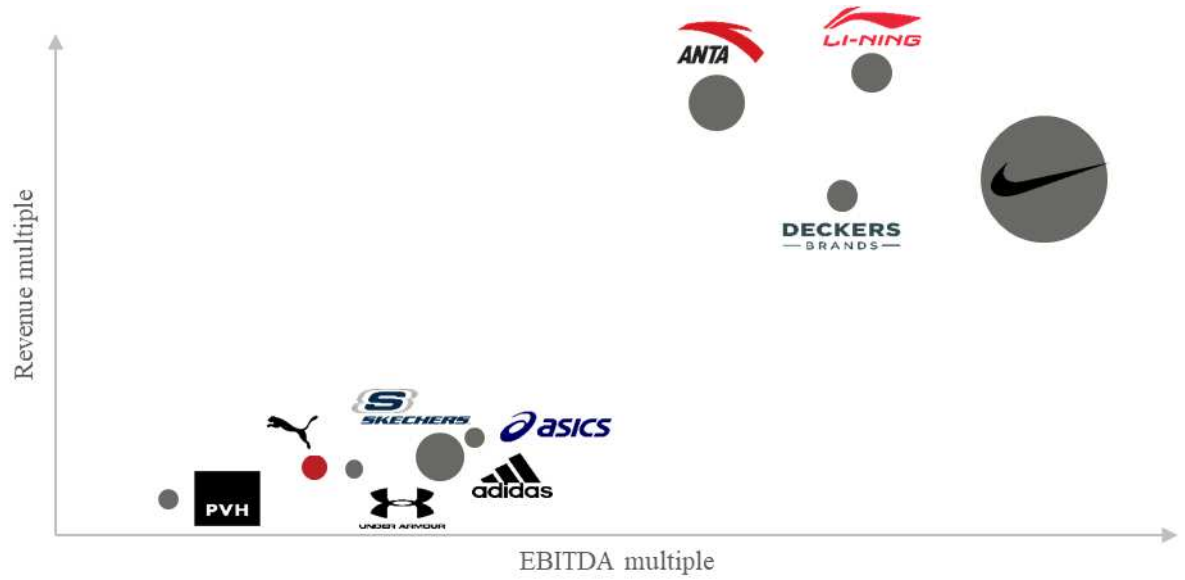
6.2. Relative valuation

6.2.1. Valuation based on comparable companies

In order to identify suitable comparable companies for the comparable company valuation, a shortlist of public companies from the same industry as PUMA was drawn (see appendix 10). Players with different business models, geographical focus, size, profitability, and growth characteristics were then excluded. The four most used multiples have then been used for the valuation. SmartEstimate from Refinitiv was used for the forecasted figures. SmartEstimate does not average the analysts' estimates, but weights them according to past forecast accuracy.

As already described in the literature review, each multiplier has advantages but also shortcomings. Therefore, several multiples with complementary strengths were used. Multiples are also affected by different factors and can change over time. The following factors can affect multiples: accounting standards, timing of consideration, business objective of the company, relevant investor groups, future growth rate perspective and especially the size of the company. Figure 49 shows that in most cases the valuation increases with increasing size.

Figure 49: Evaluation of peer group



Source: Refinitiv Eikon, own analysis

Figure 50 shows the results of the relative valuation using comparable companies.

Figure 50: Valuation results comparable companies

Relative valuation using comps

USD							Revenue (m)			EBITDA (m)			EBIT (m)			EPS		
Company	Ticker	Share price	# shares outstanding (m)	EqV (m)	Net Cash/(Debt) (m)	EV (m)	2022	2023E	2024E	2022	2023E	2024E	2022	2023E	2024E	2022	2023E	2024E
Nike Inc	NKE	122,60	1.591,2	195.078	3.567	191.511	46.710	50.925	54.755	7.515	6.800	8.242	6.675	5.975	7.491	3,75	3,23	4,07
Adidas AG	ADS	154,55	183,0	28.283	(5.521)	33.804	24.379	22.545	24.589	2.214	983	2.516	725	-462	1.166	1,35	-2,72	4,02
PVH Corp	PVH	74,64	67,8	5.061	(1.130)	6.190	9.155	8.920	9.162	1.297	1.118	1.122	984	808	806	10,15	8,33	8,94
ANTA Sports Products Ltd	2020	14,20	2.777,5	39.429	1.277	38.153	7.868	9.188	10.657	2.302	2.487	2.917	1.647	2.011	2.398	0,40	0,51	0,62
Skechers USA Inc	SKX	45,33	156,7	7.103	276	6.827	7.445	8.024	8.933	700	783	959	547	676	857	2,38	3,00	3,77
Under Armour Inc	UAA	8,98	465,7	4.182	337	3.845	5.727	5.868	6.103	565	445	530	424	306	375	0,68	0,54	0,60
Li Ning Co Ltd	2331	7,76	2.587,3	20.080	853	19.227	3.784	4.415	5.191	959	1.095	1.307	717	858	1.065	0,23	0,27	0,33
Asics Corp	7936	26,60	183,2	4.873	(552)	5.425	3.705	3.963	4.188	385	438	489	260	302	345	0,83	1,00	1,17
Deckers Outdoor Corp	DECK	443,49	26,9	11.937	844	11.093	3.150	3.547	4.240	607	638	752	565	633	691	16,26	18,53	24,82
Maximum		443,49		195.078		191.511	46.710	50.925	54.755	7.515	6.800	8.242	6.675	5.975	7.491	16,26	18,53	24,82
75th Percentile		122,60		28.283		33.804	9.155	9.188	10.657	2.214	1.118	2.516	984	858	1.166	3,75	3,23	4,07
Median		**45,33**		**11.937**		**11.093**	**7.445**	**8.024**	**8.933**	**959**	**983**	**1.122**	**717**	**676**	**857**	**1,35**	**1,00**	**3,77**
25th Percentile		14,20		5.061		6.190	3.784	4.415	5.191	607	638	752	547	306	691	0,68	0,51	0,62
Minimum		7,76		4.182		3.845	3.150	3.547	4.188	385	438	489	260	-462	345	0,23	-2,72	0,33
PUMA SE	**PUM**	**53,78**	**149,7**	**8.050**	**(1.270)**	**9.319**	**8.465**	**9.227**	**10.057**	**999**	**971**	**1.078**	**641**	**607**	**687**	**2,36**	**2,11**	**2,51**

Company		EV/Revenue			EV/EBITDA			EV/EBIT			P/E		
		2022	2023E	2024E	2022	2023E	2024E	2022	2023E	2024E	2022	2023E	2024E
Nike Inc	NKE	4,1 x	3,8 x	3,5 x	25,5 x	28,2 x	23,2 x	28,7 x	32,1 x	25,6 x	32,7 x	38,0 x	30,1 x
Adidas AG	ADS	1,4 x	1,5 x	1,4 x	15,3 x	34,4 x	13,4 x	46,7 x	nm	29,0 x	nm	nm	38,4 x
PVH Corp	PVH	0,7 x	0,7 x	0,7 x	4,8 x	5,5 x	5,5 x	6,3 x	7,7 x	7,7 x	7,4 x	9,0 x	8,3 x
ANTA Sports Products Ltd	2020	4,8 x	4,2 x	3,6 x	16,6 x	15,3 x	13,1 x	23,2 x	19,0 x	15,9 x	35,5 x	27,8 x	22,9 x
Skechers USA Inc	SKX	0,9 x	0,9 x	0,8 x	9,7 x	8,7 x	7,1 x	12,5 x	10,1 x	8,0 x	19,0 x	15,1 x	12,0 x
Under Armour Inc	UAA	0,7 x	0,7 x	0,6 x	6,8 x	8,6 x	7,3 x	9,1 x	12,6 x	10,2 x	13,2 x	16,6 x	15,0 x
Li Ning Co Ltd	2331	5,1 x	4,4 x	3,7 x	20,0 x	17,6 x	14,7 x	26,8 x	22,4 x	18,1 x	33,7 x	28,7 x	23,5 x
Asics Corp	7936	1,5 x	1,4 x	1,3 x	14,1 x	12,4 x	11,1 x	20,9 x	18,0 x	15,7 x	32,0 x	26,6 x	22,7 x
Deckers Outdoor Corp	DECK	3,5 x	3,1 x	2,6 x	18,3 x	17,4 x	14,7 x	19,6 x	17,5 x	16,1 x	27,3 x	23,9 x	17,9 x
Maximum		5,1 x	4,4 x	3,7 x	25,5 x	34,4 x	23,2 x	46,7 x	32,1 x	29,0 x	35,5 x	38,0 x	38,4 x
75th Percentile		4,1 x	3,8 x	3,5 x	18,3 x	17,6 x	14,7 x	26,8 x	19,8 x	18,1 x	33,0 x	28,1 x	23,5 x
Median		**1,5 x**	**1,5 x**	**1,4 x**	**15,3 x**	**15,3 x**	**13,1 x**	**20,9 x**	**17,7 x**	**15,9 x**	**29,7 x**	**25,3 x**	**22,7 x**
25th Percentile		0,9 x	0,9 x	0,8 x	9,7 x	8,7 x	7,3 x	12,5 x	11,9 x	10,2 x	17,6 x	16,2 x	15,0 x
Minimum		0,7 x	0,7 x	0,6 x	4,8 x	5,5 x	5,5 x	6,3 x	7,7 x	7,7 x	7,4 x	9,0 x	8,3 x
PUMA SE	**PUM**	**1,1 x**	**1,0 x**	**0,9 x**	**9,3 x**	**9,6 x**	**8,6 x**	**14,5 x**	**15,4 x**	**13,6 x**	**22,8 x**	**25,4 x**	**21,4 x**
Implied EV		12.396	13.835	13.826	15.262	14.898	14.094	13.368	10.765	10.924			
Net cash/(debt)		(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)	(1.270)			
Implied EqV		11.126	12.565	12.557	13.993	13.629	12.824	12.098	9.496	9.654			
Implied share price		**74,33**	**83,95**	**83,89**	**93,48**	**91,05**	**85,68**	**80,83**	**63,44**	**64,50**	**70,03**	**53,44**	**57,03**
Premium/(discount) to current		**38,22%**	**56,09%**	**55,99%**	**73,83%**	**69,31%**	**59,31%**	**50,29%**	**17,96%**	**19,93%**	**30,22%**	**-0,64%**	**6,05%**

Source: Refinitiv Eikon, own analysis

6.2.2. Valuation based on precedent transactions

For the precedent transaction valuation, a list of past transactions was extracted from Mergermarket. Figure 51 shows the comparable transactions with the multiples derived from the EV paid. When looking at the multiples paid, it is noticeable that the pre-covid multiples paid are relatively similar to the ones being currently paid. Therefore, the results are justifiable and can be used as support alongside the other methods. During COVID-19, multiples were significantly higher. On the one hand, the sporting goods industry experienced an absolute boom, and on the other hand, the transactions executed were also significantly larger (looking at EV), which often results in higher multiples.

Figure 51: Valuation results precedent transactions

Precedent transactions									
Announced date	**Target company**	**Target description**	**Target HQ**	**Bidder company**	**Bidder HQ**	**EV EURm**	**EV / Revenue**	**EV / EBITDA**	**EV / EBIT**
23.12.2022	NICE FOOTWEAR	Manufacturing of sport and outdoor footwear		PFH		28	0,9x	9,0x	15,3x
17.11.2022	Clarks	Manufacturing of shoes				504	n/a	n/a	n/a
12.09.2022	CCC GROUP	Manufacturing of shoes and accessories		ultrō		1.521	0,8x	11,3x	n/a
18.02.2022	LEXINGTON	Manufacturing of home textiles and apparel				16	0,5x	5,8x	n/a
26.02.2021	BIRKENSTOCK	Manufacturing of footwear		CATTERTON		3.785	5,2x	21,8x	26,3x
23.02.2021	STONE ISLAND	Manufacturing of sportswear (e.g., Stone Island)		MONCLER		1.150	4,8x	16,9x	n/a
17.02.2021	zalando	Online retail of apparel and shoes		KINNEVIK		24.702	3,1x	42,5x	67,3x
01.10.2019	NN7 NO NATIONALITY	Manufacturing of clothes		Litorina		67	2,2x	16,3x	18,3x
29.07.2019	Kappahl	Retail of clothes		MELLBY GÅRD		193	0,4x	4,7x	7,3x
07.12.2018	AMER SPORTS	Manufacturing of sporting equipment		ANTA		5.609	2,1x	23,6x	33,3x
16.05.2018	Atlantic STARS	Manufacturing of premium shoes		Alcedo sgr		19	1,4x	9,0x	9,6x
26.03.2018	FINISH LINE	Retail of apparel, accessories, and athletic footwear		JD		377	0,3x	7,6x	52,5x
Maximum						24.702	5,2x	42,5x	67,3x
75th Percentile						2.087	2,7x	19,3x	38,1x
Median						**440**	**1,4x**	**11,3x**	**22,3x**
25th Percentile						57	0,7x	8,3x	13,9x
Minimum						16	0,3x	4,7x	7,3x

	Revenue	EBITDA	EBIT
PUMA SE	**8.465**	**999**	**641**
Implied EV	11.993	11.313	14.264
Net cash/(debt)	(1.270)	(1.270)	(1.270)
Implied EqV	10.723	10.043	12.994
Implied share price	**71,64**	**67,10**	**86,81**
Premium/(discount) to current	**33,21%**	**24,76%**	**61,42%**

Source: Refinitiv Eikon, own analysis

6.2.3. Valuation summary

Regardless of the valuation method chosen, in the opinion of the author PUMA is currently undervalued and a purchase of the share offers upward potential. Both the intrinsic DCF valuation and the relative valuation suggest this. Therefore, the recommendation is BUY. This is also in line with the opinion of leading analysts (see appendix 12). The 23 analysts that cover PUMA in total give a recommendation of 5x Strong Buy, 13x Buy and 5x Hold.

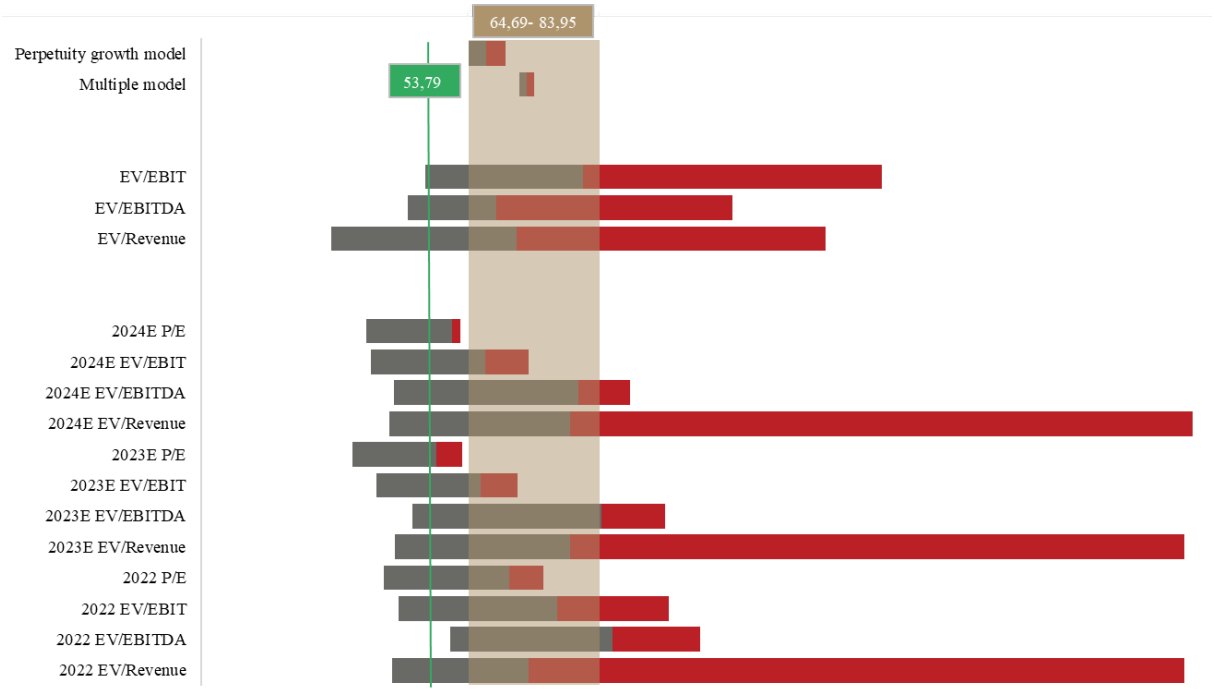
Figure 52: Overview of valuation using different methods

Closing Price PUMA:	53,78						Implied share price					
	Maximum	75th Percentile	Median	25th Percentile	Minimum	PUMA	Minimum	25th Percentile	Median	75th Percentile	Maximum	Upside/downside Median
Comparable Companies:												
2022 EV/Revenue	5,1 x	4,1 x	1,5 x	0,9 x	0,7 x	8.465	29,49	43,38	74,33	223,39	278,88	38,22%
2022 EV/EBITDA	25,5 x	18,3 x	15,3 x	9,7 x	4,8 x	999	23,39	56,60	93,48	113,50	161,67	73,83%
2022 EV/EBIT	46,7 x	26,8 x	20,9 x	12,5 x	6,3 x	641	18,46	44,96	80,83	106,34	191,20	50,29%
2022 P/E	35,5 x	33,0 x	29,7 x	17,6 x	7,4 x	2	17,36	41,52	70,03	77,81	83,79	30,22%
2023E EV/Revenue	4,4 x	3,8 x	1,5 x	0,9 x	0,7 x	9.227	31,91	43,96	83,95	223,34	259,97	56,09%
2023E EV/EBITDA	34,4 x	17,6 x	15,3 x	8,7 x	5,5 x	971	27,44	48,12	91,05	105,44	214,58	69,31%
2023E EV/EBIT	32,1 x	19,8 x	17,7 x	11,9 x	7,7 x	607	22,56	39,92	63,44	71,92	121,46	17,96%
2023E P/E	38,0 x	28,1 x	25,3 x	16,2 x	9,0 x	2	18,95	34,37	53,44	59,35	80,27	(0,64%)
2024E EV/Revenue	3,7 x	3,5 x	1,4 x	0,8 x	0,6 x	10.057	33,85	42,87	83,89	226,53	240,39	55,99%
2024E EV/EBITDA	23,2 x	14,7 x	13,1 x	7,3 x	5,5 x	1.078	31,24	43,76	85,68	97,42	158,79	59,31%
2024E EV/EBIT	29,0 x	18,1 x	15,9 x	10,2 x	7,7 x	687	26,74	38,50	64,50	74,33	124,50	19,93%
2024E P/E	38,4 x	23,5 x	22,7 x	15,0 x	8,3 x	3	20,94	37,55	57,03	59,00	96,45	6,05%
Precedent Transactions:												
EV/Revenue	5,2 x	2,7 x	1,4 x	0,7 x	0,3 x	8.465,10	5,91	29,61	71,64	141,86	284,55	33,21%
EV/EBITDA	42,5 x	19,3 x	11,3 x	8,3 x	4,7 x	999,40	23,04	46,93	67,10	120,64	275,15	24,76%
EV/EBIT	67,3 x	38,1 x	22,3 x	13,9 x	7,3 x	640,60	22,58	50,92	86,81	154,61	279,58	61,42%
Discounted Cash Flow Analysis:												
Multiple model							67,96	72,35	74,02	75,71	80,52	37,64%
Perpetuity growth model							55,35	60,85	64,69	69,21	77,64	20,28%
Median share price									74,02	37,64%		
25th Percentile									64,69	20,28%		
75th Percentile									83,95	56,09%		

Source: Refinitiv Eikon, own analysis

The DCF valuation is rather in the lower region compared to the relative valuation (see football field chart) but is in an acceptable range. Overall, the price spread is between € 64,49 (potential of 20,28%) and € 83,95 (potential of 56,09%).

Figure 53: Football field chart

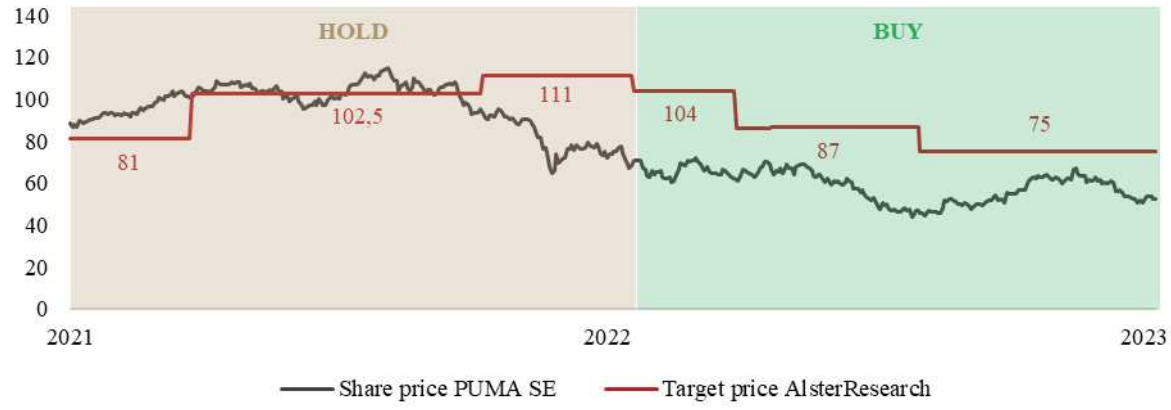


Source: Refinitiv Eikon, own analysis

7. Comparison to Investment banking report (AlsterResearch AG)

The valuation results of this thesis were compared with the latest equity report issued by the research company AlsterResearch. The report was published on 02/03/2023 and also values the company as of 01/01/2023. The recommendation is also BUY, in line with this thesis. The target share price of € 75,00 is in the range (near to median) determined in this thesis. Figure 54 shows the development of the target price and recommendations of the house.

Figure 54: Overview of AlsterResearch target prices and recommendations



Source: AlsterResearch, Refinitiv Eikon, own analysis

AlsterResearch has also chosen a DCF model for the valuation of PUMA and discounted the FCFF with the WACC. The respective input factors and deviations are shown in figure 55.

Figure 55: Comparison of key assumptions

Comparison of key assumptions		
	AlsterResearch	**Thesis**
Valuation date	01/01/2023	01/01/2023
Method	DCF	DCF
End of explicit period	2030	2032
Key assumptions		
Adjusted unlevered beta	1,19	
Relevered beta	1,35	1,35
Risk-free rate	2,0%	2,3%
MRP	6,0%	7,0%
Cost of equity	10,1%	10,90%/8,49%
Pre-tax cost of debt	6,0%	4,3%
Tax rate (target)	30,0%	27,2%
Target D/E	0,2	0,3
WACC	9,1%	8,8%
CAGR revenue	4,5%	5,3%
EBIT margin end	11,0%	9,9%
Perpetuity growth rate	2,0%	2,7%
PV FCFF	4.617	3.795
PV TV	6.820	7.157
Adjustement mid-year	513	
% of EV	57,1%	65%
EV	11.950	10.952
Net cash/(debt)	(747)	(1.270)
# of shares	149,7	149,68
EqV	11.203	9.683
Implied share price	74,86	64,69
Upseide/downsied compared to 23/03/2023	39,20%	20,28%
Recommandation	BUY	BUY

Source: AlsterResearch, Refinitiv Eikon, own analysis

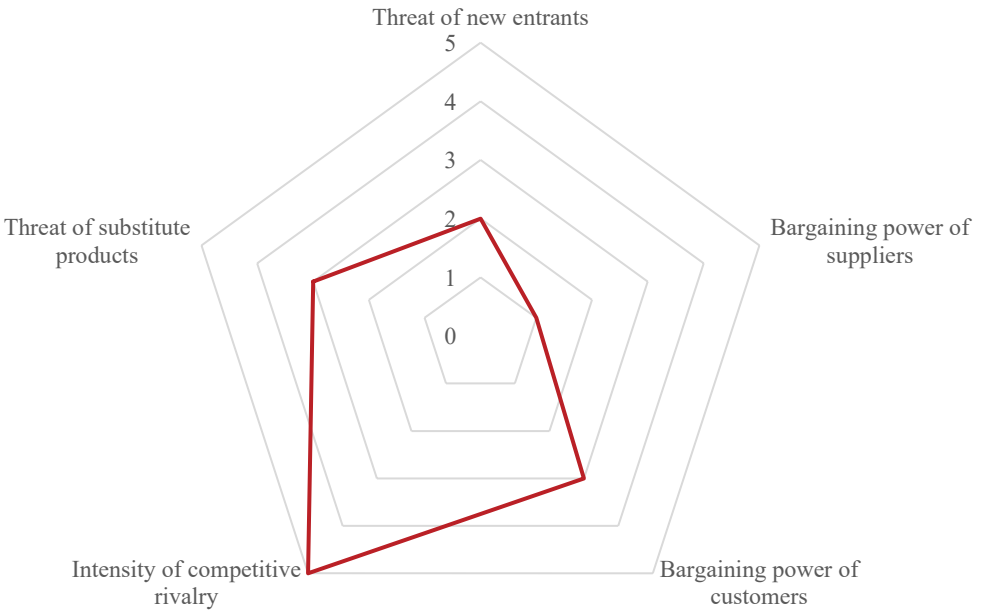
Essentially, the following differences can be noted, which are responsible for the discrepancy:

- In the thesis, a higher revenue growth is assumed, but the EBIT margin is lower; as a result, the (PV) FCFF in the explicit period is lower in the thesis
- A higher perpetuity growth rate is used in the thesis, which is why the (PV) TV is higher
- In addition, there are differences in the input factors for the WACC. The WACC applied in the thesis is lower.

Overall, however, the assumptions move in a similar direction and the projected share prices are not so far apart.

Appendices

Appendix 1: Porter's Five Forces



	Sporting goods industry
Threat of new entrants	**Low** The barrier to entry the market is rather low, as theoretically anyone with capital and expertise can enter. However, establishing a brand is more difficult because there are already many well-known brands with broad und strong product portfolios. These have significant competitive advantages and new entries do not pose a significant threat to their market shares.
Bargaining power of suppliers	**Very Low** The market power of suppliers is relatively low because they are often small, the market is highly fragmented and due to the lack of forward integration. The products offered are relatively standardized. Therefore, Puma could find new suppliers without much cost and problems. Many of the suppliers are dependent on sales and therefore PUMA dictates the way of working (great emphasis is placed on sustainability and ethical fairness). PUMA's own Group Sourcing Team (PSG) is constantly working to improve the value chain (e.g., long-term relationships, high quality standards). In 2021, PUMA SE worked with over 134 independent suppliers in 27 countries worldwide. 95% of the products are sourced from Asia (mainly Vietnam, China, Cambodia, Bangladesh).

Bargaining power of customers	**Moderate** There are different reasons why customers buy products of a certain brand (e.g., price, brand image, quality). Digitalization in particular has made it easier for customers to compare prices and products from different suppliers. Satisfied customers are the cornerstone for future growth because the probability of a brand change is low. PUMA as a brand is well-established and popular among customers especially due to the advanced technology and sustainability of their products.
Intensity of competitive rivalry	**Very high** The competitive intensity in the sporting goods industry is very high and brands need to differentiate themselves through targeted marketing and product advantages. Almost all of PUMA's comparable competitors operate in the same markets, even if there are regional differences. Above all, PUMA has to compete against the two biggest players, Nike, and Adidas. PUMA has primarily used its brand recognition and commitment to sustainability as differentiating factors to stand out and has maintained its strong position in the market in recent years.
Threat of substitute products	**Moderate** Through past investments in R&D, PUMA has been able to develop proprietary technologies that have led to improved functionality. This has allowed them to differentiate themselves from competitors and customers prefer PUMA branded products over others. Brand testimonials and sponsorships are also important here, as they are associated with the brand by customers. The biggest problem for well-known brands is counterfeiting, as appearance and style can be easily copied. Many see the products as a status symbol and (un-)knowingly buy fakes. Continuous development of products in the future is the way to success.

Appendix 2: Competitive Landscape

Competitors revenue & y-o-y growth

USDbn	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	CAGR 2023E-27E
Nike	39	37	45	47	50	54	59	63	70	7,00%
% y-o-y growth		*(4,4%)*	*19,1%*	*4,9%*	*7,1%*	*8,3%*	*8,5%*	*7,3%*	*11,3%*	
Adidas	26	21	25	24	22	24	26	29	32	7,59%
		(20,6%)	*19,5%*	*(5,7%)*	*(6,8%)*	*8,9%*	*9,3%*	*9,2%*	*10,9%*	
VF Corp.	10	10	9	12	12	12	13	14	14	4,47%
		2,2%	*(11,9%)*	*28,2%*	*(2,0%)*	*2,9%*	*5,7%*	*7,2%*	*6,8%*	
PUMA	6	6	8	9	10	10	11	12	13	6,33%
		(3,1%)	*34,9%*	*10,6%*	*7,0%*	*9,2%*	*8,7%*	*9,0%*	*5,0%*	
ANTA	5	5	8	8	10	11	13	15		8,68%
		4,8%	*48,6%*	*8,2%*	*16,9%*	*17,0%*	*10,6%*	*17,1%*		
Lululemon	3	4	4	6	8	9	10	12	14	10,96%
		21,0%	*10,6%*	*42,1%*	*28,4%*	*14,2%*	*13,8%*	*13,5%*	*14,1%*	
Under Armour	5	4	6	6	6	6	6	7	7	3,50%
		(15,1%)	*27,0%*	*0,8%*	*2,6%*	*3,9%*	*5,2%*	*3,6%*	*4,9%*	
Skechers	5	5	6	7	8	9	10	10		5,31%
		(11,9%)	*37,3%*	*18,0%*	*7,2%*	*11,1%*	*10,7%*	*5,3%*		
Li Ning	2	2	3	4	5	6	6	7		7,42%
		4,4%	*67,0%*	*16,1%*	*19,5%*	*19,5%*	*7,5%*	*11,3%*		
Asics Corp	3	3	4	4	5	5	5	5		2,01%
		(11,2%)	*19,5%*	*19,9%*	*6,6%*	*5,7%*	*5,8%*	*(1,2%)*		

Sporting goods industry - market share of 10 largest players

	2019	2020	2021	2022	2023E	2024E	2025E
Nike	36,8%	38,1%	37,7%	36,7%	37,2%	36,9%	36,8%
Adidas	24,9%	21,4%	21,2%	18,6%	16,4%	16,4%	16,5%
VF Corp.	9,7%	10,7%	7,8%	9,3%	8,6%	8,1%	7,9%
PUMA	5,8%	6,1%	6,8%	7,0%	7,1%	7,1%	7,1%
ANTA	4,6%	5,2%	6,5%	6,5%	7,2%	7,7%	7,8%
Lululemon	3,1%	4,1%	3,7%	4,9%	6,0%	6,3%	6,5%
Under Armour	5,0%	4,6%	4,8%	4,5%	4,4%	4,2%	4,0%
Skechers	4,9%	4,7%	5,3%	5,8%	5,9%	6,0%	6,1%
Li Ning	1,9%	2,1%	3,0%	3,2%	3,6%	4,0%	3,9%
Asics Corp	3,3%	3,1%	3,1%	3,5%	3,5%	3,4%	3,3%
% of global sportswear market	35,2%	37,9%	40,0%	39,7%	38,8%	39,7%	40,5%

Appendix 3: SWOT analysis

Strengths

Brand recognition: known worldwide and linked to a long company history

Innovation leader: high investment in R&D, resulting in innovative products and technologies that are better than competing products

Product portfolio: wide range of products

Focus on sustainability: PUMA takes a pioneering role

Sponsorship/testimonials: collaboration with many well-known personalities

Targeted marketing/e-commerce: targeted advertising and own D2C shop

Weaknesses

Dependence on specific products: heavy reliance on athletic footwear lines; in the past difficulty driving growth in other categories

Geographical diversification: less strongly represented in certain countries

Distribution channels: reliant on a few major retailers and online marketplaces

Financing future strategies: less market share than the two biggest players, Nike and Adidas, thus fewer opportunities

Supplier concentrations 96% of products are manufactured in Asia

Opportunities

Growth opportunities: in Asia and other emerging markets

Rising demand for sustainable products: strong commitment to sustainability

Growing interest in fitness and lifestyle: PUMA can benefit from the increasing demand

Products for women: the market is growing strongly and Puma is the leader

Threats

Strong competition: rivals with strong market presence and market power

Economic uncertainty: Fear of recession/inflation can have a negative impact on sales

Rapid changes: sporting goods industry is characterized by rapid changes in trends and technologies, which increases the risk of losses due to outdated products

Counterfeit Products: cause great financial damage; products visually easy to imitate

Rising costs and declining profitability: rising input costs e.g., for raw material or transportation; cannot be passed on 1:1 to the customer due to price sensitivity

Appendix 4: Milestones in company history

Beginnings

The brothers Rudolf and Adolf Dassler founded their first shoe factory (“Gebrüder Dassler Schuhfabrik”) in their hometown of Herzogenaurach in 1919, laying the foundation for the world capital of sports footwear and two of the most successful sporting goods manufacturers in the world. Initially, there are many other smaller shoe factories, but they gradually close. Early on, successful athletes compete with the brothers' products and quickly achieve national and international breakthroughs. In 1948, the brothers split up due to personal differences and Rudolf founded the “Sportschuhfabrik Rudolf Dassler (RUDA)”, which is renamed to PUMA a few months later.

1950-1959

PUMA causes a sensation with its innovations such as the world's first screw-in cleat shoe and is worn by many soccer personalities (Franz Beckenbauer). From the beginning PUMA focuses on design and innovation. The form strip, originally intended to stabilize the foot in the shoe, becomes a signature from now on and can be seen on almost all of the brand's shoes. The rise of mass media brings the brand worldwide recognition.

1960-1979

The products are extremely popular with both footballers and track and field athletes. Existing records are broken in PUMA shoes and medals are won at the Olympic Games. In the wake of the increasing number of (female) athletes and teams, PUMA enters the sports textile market. The iconic logo is introduced in 1968 and has barely changed since then. There are many athletes who are inseparably linked with the brand, giving it additional fame (e.g., Johan Cruyff, who was the only player to wear a PUMA jersey at the 1974 World Cup, despite Adidas being the team outfitter).

1980-1999

Armin Dassler, PUMA CEO and son of company founder Rudolf, takes PUMA public in 1986. The company runs into financial difficulties in the 1990s and is taken over by the French Kering Group in 1993. Jochen Zeitz, at the time the youngest CEO of a listed company in Germany at the age of 30, initiates the turnaround and succeeds in developing PUMA from a low-price to a respected brand for sports lifestyle and sustainably establishing it as one of the three leading brands in the sporting goods industry.

2000-now

PUMA creates high visibility in various sports and is very present in motorsports, athletics and soccer. Long-term partnerships are established with exceptional athletes and teams (e.g., Usain Bolt, Borussia Dortmund). In 2012, PUMA takes over its Dutch licensee Dobotex (now stichd), which has been active in designing, developing, producing and distributing PUMA socks, fanwear, swimwear and bodywear since 1997. PUMA is constantly designing new products and is known for its collaboration with designers, artists and athletes (e.g., Rihanna, Jay-Z). The company is especially committed to sustainability and wants to make the fashion industry more ecological.

Appendix 5: Standardized income statement (historical and forecasted)

PUMA SE - Income statement

	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Revenue	**4.648**	**5.502**	**5.234**	**6.805**	**8.465**	**9.227**	**10.057**	**10.912**	**11.785**	**12.551**	**13.271**	**13.932**	**14.519**	**15.020**	**15.424**
Cost of goods sold	(2.399)	(2.816)	(2.776)	(3.548)	(4.562)	(4.959)	(5.381)	(5.811)	(6.246)	(6.621)	(6.981)	(7.307)	(7.593)	(7.833)	(8.020)
Gross profit	**2.249**	**2.687**	**2.458**	**3.258**	**3.903**	**4.267**	**4.677**	**5.101**	**5.539**	**5.930**	**6.291**	**6.625**	**6.925**	**7.187**	**7.403**
Sales and distribution expenses	(1.524)	(1.821)	(1.794)	(2.207)	(2.677)										
Product management/merchandising	(44)	(53)	(46)	(53)	(71)										
Administrative and general expenses	(328)	(340)	(369)	(405)	(466)										
SG&A	(1.896)	(2.214)	(2.209)	(2.665)	(3.214)	(3.599)	(3.922)	(4.256)	(4.596)	(4.895)	(5.148)	(5.376)	(5.572)	(5.734)	(5.856)
R&D	(54)	(62)	(57)	(62)	(82)	(107)	(117)	(127)	(137)	(146)	(147)	(148)	(146)	(144)	(140)
Other operating expenses	(1.950)	(2.276)	(2.265)	(2.727)	(3.296)	(3.706)	(4.039)	(4.383)	(4.733)	(5.041)	(5.296)	(5.523)	(5.719)	(5.877)	(5.996)
thereof personnel expenses	(554)	(634)	(579)	(704)	(836)										
thereof scheduled depreciation	(82)	(247)	(276)	(287)	(333)										
thereof impairment expenses	(1)	-	(18)	(19)	(26)										
Other operating income	21	4	0	3	0	45	49	53	58	61	73	85	98	111	123
Royalty and commission income	16	25	16	24	34										
EBITDA	**419**	**687**	**503**	**863**	**999**	**971**	**1.078**	**1.196**	**1.322**	**1.439**	**1.584**	**1.728**	**1.869**	**2.004**	**2.131**
Depreciation	(82)	(247)	(276)	(287)	(333)	(364)	(391)	(424)	(458)	(488)	(516)	(542)	(564)	(584)	(600)
Amortisation of goodwill and intangible assets	(1)	-	(18)	(19)	(26)										
EBIT	**337**	**440**	**209**	**557**	**641**	**607**	**687**	**772**	**863**	**951**	**1.068**	**1.187**	**1.305**	**1.420**	**1.531**
Results from associated companies	(2)	-	-	-	-										
Interest income	4	7	8	12	32										
Income from currency-conversion differences, net	-	10	-	-	-										
Others	8	9	27	18	47										
Financial income	12	26	35	30	79	6	9	10	10	11	12	12	13	13	14
Interest expense	(15)	(14)	(14)	(13)	(15)	(69)	(60)	(65)	(66)	(71)	(76)	(80)	(84)	(87)	(90)
Interest expense – Leasing liability	(1)	(30)	(29)	(32)	(39)										
Interest accrued on liabilities from acquisitions	-	(0)	-	-	-										
Valuation of pension plans	(1)	(1)	(1)	(1)	(1)										
Expenses from currency-conversion differences, net	(14)	-	(4)	(9)	(2)										
Others	(4)	(4)	(35)	(28)	(112)										
Financial expenses	(34)	(49)	(82)	(82)	(168)	(69)	(60)	(65)	(66)	(71)	(76)	(80)	(84)	(87)	(90)
Financial result	(24)	(23)	(47)	(52)	(89)	(63)	(51)	(55)	(56)	(60)	(64)	(68)	(71)	(74)	(76)
EBT	**313**	**418**	**162**	**506**	**552**	**544**	**635**	**717**	**807**	**891**	**1.004**	**1.119**	**1.234**	**1.347**	**1.455**
Taxes	(84)	(109)	(39)	(129)	(127)	(136)	(161)	(183)	(208)	(232)	(264)	(297)	(330)	(363)	(396)
Consolidated net income	**230**	**309**	**123**	**377**	**424**	**407**	**474**	**534**	**599**	**659**	**740**	**822**	**904**	**983**	**1.059**
thereof minority interest	(42)	(47)	(44)	(67)	(71)	(91)	(99)	(107)	(116)	(123)	(131)	(137)	(143)	(148)	(152)
% revenue North America	3,65%	3,31%	3,28%	3,41%	2,80%	3,29%	3,29%	3,29%	3,29%	3,29%	3,29%	3,29%	3,29%	3,29%	3,29%
	187	262	79	310	353	317	375	427	483	535	610	685	761	836	907
Weighted average shares outstanding	149,47	149,52	149,56	149,59	149,68	149,68	149,68	149,68	149,68	149,68	149,68	149,68	149,68	149,68	149,68
Earnings per share (€)	1,25	1,76	0,53	2,07	2,36	2,11	2,51	2,85	3,23	3,58	4,07	4,58	5,08	5,58	6,06
Gross Dividend	52,30	-	23,90	107,70	122,74	75,74	182,16	233,61	316,74	403,58	496,61	593,60	692,85	792,44	907,08
% net income	27,9%	0,0%	30,3%	34,8%	34,7%	23,9%	48,5%	54,7%	65,5%	75,4%	81,5%	86,6%	91,0%	94,8%	100,0%
Dividend per share	0,35	-	0,16	0,72	0,82	0,51	1,22	1,56	2,12	2,70	3,32	3,97	4,63	5,29	6,06

Appendix 6: Standardized balance sheet (historical and forecasted) I

PUMA SE - Balance sheet

	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Cash and cash equivalents	464	518	656	758	463	708	823	807	863	912	958	1.000	1.038	1.070	1.096
Short term investments	39	31	29	30	22	22	22	22	22	22	22	22	22	22	22
Cash and short term investments	502	550	685	788	485	730	844	829	885	934	979	1.022	1.059	1.091	1.117
Accounts receivable - trade, gross	591	649	683	907	1.123										
Provision for doubtful accounts	(38)	(37)	(62)	(59)	(58)										
Accounts receivable	554	612	621	848	1.065	1.030	1.123	1.218	1.316	1.401	1.482	1.556	1.621	1.677	1.722
Income tax receivables	34	34	21	38	54										
Other receivables	66	67	74	111	150										
Other receivables	99	102	95	149	204	192	209	227	245	261	276	289	302	312	320
Finished goods	669	825	771	901	1.603										
Raw materials	18	19	15	30	47										
Other	228	267	352	561	596										
Inventories	915	1.110	1.138	1.492	2.245	1.882	2.042	2.206	2.371	2.513	2.650	2.773	2.882	2.973	3.044
Prepaid expenses	50	63	50	90	86	86	86	86	86	86	86	86	86	86	86
Derivative assets	73	45	24	123	116	116	116	116	116	116	116	116	116	116	116
Current assets	**2.193**	**2.481**	**2.613**	**3.490**	**4.201**	**4.036**	**4.421**	**4.682**	**5.018**	**5.311**	**5.589**	**5.842**	**6.066**	**6.256**	**6.406**
	-	0,458	0,508	0,499	0,503	1.071	1.167	1.266	1.367	1.456	1.540	1.616	1.685	1.743	1.790
Land and buildings, including buildings on third-party land	121	118	132	122	121										
Technical equipment and machinery	21	10	8	126	134										
Other equipment, factory and office equipment	138	175	155	183	263										
Assets under construction	15	92	112	42	75										
Property, plant and equipment	295	395	407	472	592										
Land and buildings – Retail stores	-	420	355	383	431										
Land and buildings – Warehouses & Offices	-	282	464	506	613										
Others (Technical equipment & machines and motor vehicles)	-	18	58	52	67										
Leases	-	719	878	941	1.111	1.071	1.167	1.266	1.367	1.456	1.540	1.616	1.685	1.743	1.790
% fixed assets	-	*46%*	*51%*	*50%*	*50%*	*49%*	*49%*	*49%*	*49%*	*49%*	*49%*	*49%*	*49%*	*49%*	*49%*
Goodwill	246	250	241	245	243										
Intangible assets	192	205	202	227	264										
Fixed assets	733	1.568	1.728	1.885	2.210	2.176	2.372	2.573	2.779	2.960	3.129	3.285	3.424	3.542	3.637
Long term investments	62	70	56	58	56	56	56	56	56	56	56	56	56	56	56
Deferred tax assets	208	238	278	280	295	400	436	473	511	544	576	604	630	651	669
Other non-current assets	12	21	9	16	11	11	11	11	11	11	11	11	11	11	11
Other non-current assets	220	258	287	296	306	411	447	485	522	556	587	616	641	663	680
Non-current assets	**1.015**	**1.897**	**2.071**	**2.239**	**2.572**	**2.643**	**2.875**	**3.114**	**3.357**	**3.571**	**3.772**	**3.957**	**4.121**	**4.260**	**4.373**
Total assets	**3.208**	**4.378**	**4.684**	**5.728**	**6.773**	**6.679**	**7.296**	**7.795**	**8.376**	**8.882**	**9.361**	**9.799**	**10.187**	**10.516**	**10.779**

Appendix 6: Standardized balance sheet (historical and forecasted) II

Accounts payable	705	844	942	1.176	1.735	1.484	1.610	1.738	1.869	1.981	2.088	2.186	2.272	2.343	2.399
Accrued expenses	42	40	51	54	83										
Accrued payroll	101	121	89	136	147										
Accrued expenses	143	161	139	190	230	261	285	309	334	356	376	395	411	426	437
Current lease liabilities	1	145	157	172	200	193	211	229	247	263	278	292	304	315	323
% leases	n/a	20,1%	17,8%	18,3%	18,0%	18,1%	18,1%	18,1%	18,1%	18,1%	18,1%	18,1%	18,1%	18,1%	18,1%
Current financial liabilities	56	37	146	91	100	100	100	100	100	100	100	100	100	100	100
Current financial/lease liabilities	57	181	302	263	300	293	310	328	346	363	378	391	404	414	423
Income taxes	68	89	89	86	87	130	142	154	167	177	188	197	205	212	218
Other current liabilities	161	215	238	359	389										
Other current provisions	40	35	35	48	50										
Other current liabilities	201	250	274	407	439	466	508	551	596	634	671	704	734	759	780
Derivative liabilities	21	34	127	42	52	52	52	52	52	52	52	52	52	52	52
Other curret liabilities	290	373	490	535	579	649	703	758	815	864	911	953	991	1.024	1.050
Current liabilities	**1.196**	**1.559**	**1.873**	**2.164**	**2.843**	**2.687**	**2.908**	**3.134**	**3.364**	**3.563**	**3.753**	**3.926**	**4.078**	**4.207**	**4.309**
Non-current lease liabilities	-	601	775	851	1.030	993	1.082	1.174	1.268	1.350	1.428	1.499	1.562	1.616	1.659
% leases	n/a	84%	88%	90%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Long term debt	181	164	154	314	265	140	140	70	70	70	70	70	70	70	70
Long term debt	181	764	929	1.165	1.296	1.133	1.222	1.244	1.338	1.420	1.498	1.569	1.632	1.686	1.729
Deferred tax liabilities	48	53	41	49	42	73	80	87	94	100	106	111	116	120	123
Minority interest	19	47	42	65	67	67	67	67	67	67	67	67	67	67	67
Reserves	26	43	39	38	30										
Pension benefits - underfunded	29	34	38	32	22										
Other long term liabilities	6	4	1	2	1										
Other liabilities	61	82	78	71	53	53	53	53	53	53	53	53	53	53	53
Non-current liabilities	**309**	**946**	**1.089**	**1.351**	**1.458**	**1.327**	**1.423**	**1.451**	**1.552**	**1.641**	**1.724**	**1.800**	**1.868**	**1.926**	**1.973**
Common stock	39	151	151	151	151	151	151	151	151	151	151	151	151	151	151
Retained earnings (accumulated deficit)	1.885	1.984	2.047	2.332	2.587	2.781	3.081	3.325	3.575	3.794	4.000	4.188	4.356	4.498	4.613
Treasury stock	(29)	(28)	(27)	(27)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)	(24)
Translation adjustment	(226)	(224)	(360)	(321)	(257)										
Other equity	0	(0)	-	0	-										
Other comprehensive income	34	(9)	(88)	78	14										
Other equity	(191)	(233)	(448)	(242)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)	(243)
Shareholders' equity	**1.703**	**1.874**	**1.722**	**2.213**	**2.472**	**2.666**	**2.965**	**3.210**	**3.460**	**3.678**	**3.884**	**4.073**	**4.240**	**4.383**	**4.498**
Total liabilities and shareholders' equity	**3.208**	**4.378**	**4.684**	**5.728**	**6.773**	**6.679**	**7.296**	**7.795**	**8.375**	**8.882**	**9.361**	**9.799**	**10.187**	**10.516**	**10.779**

Appendix 7: Standardized cash flow statement (historical and forecasted)

PUMA SE - Cash flow

	Historical					Forecast									
EURm	**2018A**	**2019A**	**2020A**	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Earnings before taxes (EBT)	**313**	**418**	**162**	**506**	**552**	**544**	**635**	**717**	**807**	**891**	**1.004**	**1.119**	**1.234**	**1.347**	**1.455**
+ Depreciation and impairmant	82	247	294	306	359	364	391	424	458	488	516	542	564	584	600
+ Financial result	8	33	43	43	22	63	51	55	56	60	64	68	71	74	76
Non-cash items	(5)	8	24	(33)	(14)										
Gross Cash flow	**399**	**705**	**523**	**821**	**919**	**971**	**1.078**	**1.196**	**1.322**	**1.439**	**1.584**	**1.728**	**1.869**	**2.004**	**2.131**
Δ Receivables and other current assets	(61)	(70)	(50)	(283)	(209)	47	(110)	(113)	(116)	(101)	(95)	(87)	(78)	(66)	(53)
Δ Inventories	(123)	(189)	(110)	(304)	(747)	363	(160)	(163)	(165)	(142)	(137)	(124)	(109)	(91)	(71)
Δ Payables and other current liabilities	146	214	148	373	613	(149)	203	208	211	183	175	159	140	118	94
Δ Working capital	(38)	(45)	(12)	(214)	(343)	260	(67)	(68)	(69)	(60)	(57)	(52)	(46)	(39)	(31)
Net cash from operational business activ	**360**	**661**	**511**	**607**	**576**	**1.232**	**1.011**	**1.128**	**1.252**	**1.379**	**1.526**	**1.676**	**1.823**	**1.965**	**2.100**
- Taxes paid (including deferred taxes)	(82)	(112)	(89)	(147)	(157)	(210)	(190)	(214)	(239)	(259)	(289)	(320)	(351)	(381)	(410)
Cash from operating activities	**279**	**549**	**421**	**460**	**418**	**1.022**	**821**	**915**	**1.013**	**1.120**	**1.237**	**1.356**	**1.472**	**1.584**	**1.689**
Δ Fixed assets						**(34)**	**196**	**202**	**206**	**181**	**170**	**156**	**138**	**118**	**95**
- Depreciation and impairmant						**(364)**	**(391)**	**(424)**	**(458)**	**(488)**	**(516)**	**(542)**	**(564)**	**(584)**	**(600)**
Capital expenditures	(130)	(218)	(151)	(202)	(264)	(330)	(587)	(626)	(664)	(669)	(686)	(697)	(703)	(702)	(695)
Sale of fixed assets	25	1	2	18	1										
Other investing cash flow	(0)	(1)	4	0	22										
Cash from investing activities	**(105)**	**(219)**	**(146)**	**(184)**	**(241)**	**(330)**	**(587)**	**(626)**	**(664)**	**(669)**	**(686)**	**(697)**	**(703)**	**(702)**	**(695)**
Free cashflow	**173**	**330**	**276**	**276**	**178**	**692**	**234**	**289**	**349**	**451**	**552**	**659**	**769**	**882**	**995**
Dividend payments	(187)	(52)	-	(24)	(108)	(123)	(76)	(182)	(234)	(317)	(404)	(497)	(594)	(693)	(792)
Δ Debt	127	(158)	(41)	(48)	(242)	(170)	107	40	112	98	93	85	75	64	52
Interest income/payment	(13)	(44)	(43)	(44)	(54)	(63)	(51)	(55)	(56)	(60)	(64)	(68)	(71)	(74)	(76)
Dividends paid to non-controlling interest	(56)	(19)	(46)	(48)	(73)	(91)	(99)	(107)	(116)	(123)	(131)	(137)	(143)	(148)	(152)
Other financing cash flow	(68)	(62)	(89)	(92)	(127)	(154)	(150)	(162)	(172)	(184)	(195)	(205)	(214)	(222)	(228)
Exchange rate-related changes in cash and c	4	(3)	(9)	(11)	4										
Cash from financing activities	**(124)**	**(276)**	**(138)**	**(174)**	**(472)**	**(446)**	**(119)**	**(304)**	**(293)**	**(402)**	**(506)**	**(616)**	**(732)**	**(850)**	**(969)**
Cashflow	**49**	**55**	**138**	**102**	**(294)**	**245**	**115**	**(16)**	**56**	**49**	**46**	**42**	**38**	**32**	**26**
Δ Cash and CE	49	54	138	102	(294)	245	115	(16)	56	49	46	42	38	32	26
Check	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok

Appendix 8: PUMA SE ratio analysis

Liquidity ratios

	Historical						Forecast									
	2018A	2019A	2020A	2021A	2022A	5y Ø	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Quick ratio (QR)	1,07	0,88	0,79	0,92	0,69	0,87	0,80	0,82	0,79	0,79	0,79	0,78	0,78	0,78	0,78	0,78
Current ratio (CR)	1,83	1,59	1,40	1,61	1,48	1,58	1,50	1,52	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49
Interest Coverage ratio (ICR)	22,33	10,10	4,82	12,55	11,91	12,34	8,77	11,35	11,83	13,00	13,31	14,08	14,84	15,58	16,30	17,01

Efficiency ratios

	Historical						Forecast									
	2018A	2019A	2020A	2021A	2022A	5y Ø	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Asset turnover (TAT)	1,53	1,45	1,16	1,31	1,35	1,36	1,37	1,44	1,45	1,46	1,45	1,45	1,45	1,45	1,45	1,45
Fixed asset turnover (FAT)	12,69	4,78	3,18	3,77	4,13	5,71	4,21	4,42	4,41	4,40	4,37	4,36	4,34	4,33	4,31	4,30
Inventory turnover	2,83	2,78	2,47	2,70	2,44	2,64	2,40	2,74	2,74	2,73	2,71	2,70	2,69	2,69	2,68	2,67
Accounts receivable turnover	7,53	8,05	7,32	7,95	7,47	7,67	7,41	7,88	7,86	7,84	7,79	7,76	7,73	7,71	7,68	7,65
Days inventories outstanding (DIO)	129	131	148	135	149	139	152	133	133	134	135	135	135	136	136	137
Days sales outstanding (DSO)	42	39	43	39	41	41	41	39	39	39	40	40	40	40	40	40
Days payables outstanding (DPO)	103	100	117	109	116	109	118	105	105	105	106	106	107	107	108	108
Cash conversion cycle (CCC)	68	70	73	66	74	70	75	67	67	68	68	68	68	69	69	69

Solvency ratios

	Historical						Forecast									
	2018A	2019A	2020A	2021A	2022A	5y Ø	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Total assets to equity	1,88	2,34	2,72	2,59	2,74	2,45	2,51	2,46	2,43	2,42	2,41	2,41	2,41	2,40	2,40	2,40
Debt to equity	0,11	0,41	0,54	0,53	0,52	0,42	0,52	0,52	0,52	0,52	0,52	0,52	0,52	0,52	0,52	0,52
Net debt to equity	0,13	(0,28)	(0,47)	(0,34)	(0,51)	(0,30)	(0,33)	(0,30)	(0,30)	(0,30)	(0,30)	(0,30)	(0,30)	(0,30)	(0,30)	(0,30)
% LT debt to total capital	9,50%	28,47%	34,50%	33,83%	33,79%	28,02%	29,31%	28,73%	27,52%	27,50%	27,50%	27,49%	27,48%	27,48%	27,48%	27,48%
Debt to EBITDA	(0,43)	(1,11)	(1,85)	(1,35)	(1,30)	(1,21)	(1,17)	(1,13)	(1,04)	(1,01)	(0,99)	(0,95)	(0,91)	(0,87)	(0,84)	(0,81)
Net debt to EBITDA	(0,52)	0,78	1,61	0,88	1,27	0,80	0,90	0,82	0,80	0,78	0,76	0,73	0,70	0,67	0,65	0,63

Profitability ratios

	Historical						Forecast									
	2018A	2019A	2020A	2021A	2022A	5y Ø	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EBITDA margin	9,02%	12,48%	9,61%	12,68%	11,81%	11,12%	10,53%	10,71%	10,96%	11,21%	11,46%	11,93%	12,40%	12,87%	13,34%	13,81%
EBIT margin	7,25%	8,00%	4,00%	8,19%	7,57%	7,00%	6,58%	6,83%	7,08%	7,33%	7,58%	8,05%	8,52%	8,99%	9,46%	9,93%
Effective tax rate	(26,68%)	(26,00%)	(24,15%)	(25,42%)	(23,09%)	(25,07%)	(25,07%)	(25,31%)	(25,55%)	(25,79%)	(26,03%)	(26,26%)	(26,50%)	(26,74%)	(26,98%)	(27,22%)
Net margin	4,03%	4,77%	1,51%	4,55%	4,17%	3,81%	3,43%	3,73%	3,91%	4,10%	4,27%	4,59%	4,92%	5,24%	5,56%	5,88%
Pretax return on equity (ROE)	18,39%	22,29%	9,42%	22,84%	22,32%	19,05%	20,39%	21,42%	22,35%	23,34%	24,21%	25,84%	27,47%	29,10%	30,72%	32,34%
Pretax return on assets (ROA)	9,77%	9,54%	3,46%	8,82%	8,15%	7,95%	8,14%	8,71%	9,20%	9,64%	10,03%	10,72%	11,42%	12,11%	12,80%	13,50%
Return on invested capital (ROIC)	12,22%	12,97%	4,44%	12,03%	11,53%	10,64%	10,46%	11,51%	11,98%	12,56%	12,92%	13,71%	14,49%	15,26%	16,01%	16,75%

Appendix 9: Financial model assumptions I

PUMA SE - Assumptions

Switches			**Conservative**	**Base LT**	**Optimistic**
Business Case	Base Case	Revenue	90,0%	2,7%	110,0%
		Gross profit	(1,0%)	48,0%	1,0%
		SG&A	(1,0%)	(38,0%)	1,0%
		R&D	105,0%	(0,9%)	95,0%
		OOI	95,0%	0,8%	105,0%
		CAPEX	95,0%	(3,6%)	105,0%
		Interest rate	95,0%	(5,3%)	105,0%
		Interest income	95,0%	1,3%	105,0%

PUMA SE - Input

	1	2	3	4	5	6	7	8	9	10
	2023E	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Revenue	**9,0%**	**9,0%**	**8,5%**	**8,0%**	**6,5%**	**5,7%**	**5,0%**	**4,2%**	**3,5%**	**2,7%**
% y-o-y growth										
Steady Case	-	-	-	-	-	-	-	-	-	-
Conservative Case	8,1%	8,1%	7,7%	7,2%	5,9%	5,2%	4,5%	3,8%	3,1%	2,4%
Base Case	9,0%	9,0%	8,5%	8,0%	6,5%	5,7%	5,0%	4,2%	3,5%	2,7%
Optimistic Case	9,9%	9,9%	9,4%	8,8%	7,2%	6,3%	5,5%	4,6%	3,8%	3,0%
Gross Profit	**46,3%**	**46,5%**	**46,8%**	**47,0%**	**47,3%**	**47,4%**	**47,6%**	**47,7%**	**47,9%**	**48,0%**
% revenue										
Steady Case	46,1%	46,1%	46,1%	46,1%	46,1%	46,1%	46,1%	46,1%	46,1%	46,1%
Conservative Case	45,3%	45,5%	45,8%	46,0%	46,3%	46,4%	46,6%	46,7%	46,9%	47,0%
Base Case	46,3%	46,5%	46,8%	47,0%	47,3%	47,4%	47,6%	47,7%	47,9%	48,0%
Optimistic Case	47,3%	47,5%	47,8%	48,0%	48,3%	48,4%	48,6%	48,7%	48,9%	49,0%
SG&A	**(39,0%)**	**(39,0%)**	**(39,0%)**	**(39,0%)**	**(39,0%)**	**(38,8%)**	**(38,6%)**	**(38,4%)**	**(38,2%)**	**(38,0%)**
% revenue										
Steady Case	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)
Conservative Case	(40,0%)	(40,0%)	(40,0%)	(40,0%)	(40,0%)	(39,8%)	(39,6%)	(39,4%)	(39,2%)	(39,0%)
Base Case	(39,0%)	(39,0%)	(39,0%)	(39,0%)	(39,0%)	(38,8%)	(38,6%)	(38,4%)	(38,2%)	(38,0%)
Optimistic Case	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(38,0%)	(37,8%)	(37,6%)	(37,4%)	(37,2%)	(37,0%)

Appendix 9: Financial model assumptions II

R&D	**(1,2%)**	**(1,2%)**	**(1,2%)**	**(1,2%)**	**(1,2%)**	**(1,1%)**	**(1,1%)**	**(1,0%)**	**(1,0%)**	**(0,9%)**
% revenue										
Steady Case	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)
Conservative Case	(1,2%)	(1,2%)	(1,2%)	(1,2%)	(1,2%)	(1,2%)	(1,1%)	(1,1%)	(1,0%)	(1,0%)
Base Case	(1,2%)	(1,2%)	(1,2%)	(1,2%)	(1,2%)	(1,1%)	(1,1%)	(1,0%)	(1,0%)	(0,9%)
Optimistic Case	(1,1%)	(1,1%)	(1,1%)	(1,1%)	(1,1%)	(1,1%)	(1,0%)	(1,0%)	(0,9%)	(0,9%)
OOI/Royalty and commission in	**0,5%**	**0,5%**	**0,5%**	**0,5%**	**0,5%**	**0,6%**	**0,6%**	**0,7%**	**0,7%**	**0,8%**
% revenue										
Steady Case	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%
Conservative Case	0,5%	0,5%	0,5%	0,5%	0,5%	0,5%	0,6%	0,6%	0,7%	0,8%
Base Case	0,5%	0,5%	0,5%	0,5%	0,5%	0,6%	0,6%	0,7%	0,7%	0,8%
Optimistic Case	0,5%	0,5%	0,5%	0,5%	0,5%	0,6%	0,6%	0,7%	0,8%	0,8%
D&A	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**	**(16,5%)**
% fixed assets										
Steady Case	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)	(16,2%)
Conservative Case	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)
Base Case	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)
Optimistic Case	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)	(16,5%)
CAPEX	**(3,6%)**									
% revenue										
Steady Case	(3,1%)									
Conservative Case	(3,4%)									
Base Case	(3,6%)									
Optimistic Case	(3,8%)									
Interest expenses	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**	**(5,3%)**
% revenue										
Steady Case	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)	(4,2%)
Conservative Case	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)	(5,1%)
Base Case	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)	(5,3%)
Optimistic Case	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)	(5,6%)
Interest income	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**	**1,3%**
% revenue										
Steady Case	7,0%	7,0%	7,0%	7,0%	7,0%	7,0%	7,0%	7,0%	7,0%	7,0%
Conservative Case	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%
Base Case	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%
Optimistic Case	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%	1,3%

Appendix 10: Selection of comparable companies

Comparable companies

No.	Company	Ticker	HQ	Size		Capital structure	Profitability	Growth rate	included (yes = x)	Reasons for inclusion
				Market Cap (03/23) in bn	Revenue (LTM) in bn	Net debt to total capital	EBIT Margin	Estimation		
	PUMA SE	**PUM**	**DEU**	**9,62**	**8,43**	**21,44%**	**8,42%**	**15,32%**		
1	LVMH Moet Hennessy Louis Vuitton SE	MC	FRA	411,55	83,38	-	26,54%	6,07%		
2	Nike Inc	NKE	USA	183,03	49,11	0,00%	14,29%	7,17%	x	main competitor
3	Rajesh Exports Ltd	RAJESHEXPO	IND	2,48	38,55	-	0,45%	-		
4	Adidas AG	ADS	DEU	26,01	23,43	29,53%	9,61%	2,26%	x	main competitor and similiar profitability
5	Compagnie Financiere Richemont SA	CFR	CHE	78,68	20,87	-	17,65%	4,76%		
6	Hermes International SCA	RMS	FRA	186,76	12,15	-	40,48%	11,86%		
7	VF Corp	VFC	USA	9,40	11,70	60,09%	14,01%	-1,98%		
8	Lao Feng Xiang Co Ltd	600612	CHN	2,90	9,08	2,03%	5,42%	-2,16%		
9	Yue Yuen Industrial (Holdings) Ltd	551	HKG	2,44	9,06	-	1,72%	5,92%		
10	PVH Corp	PVH	USA	5,04	8,97	25,29%	10,96%	-2,64%	x	similiar capital structure and profitability
11	Pou Chen Corp	9904	TWN	3,26	8,81	17,38%	1,03%	6,95%		
13	ANTA Sports Products Ltd	2020	CHN	35,62	7,96	-	22,29%	0,39%	x	similiar business and size
14	Swatch Group AG	UHR	CHE	17,30	7,88	-	15,44%	10,62%		
15	Lululemon Athletica Inc	LULU	CAN	39,31	7,47	0,00%	21,97%	28,51%		
16	Skechers USA Inc	SKX	USA	6,81	7,44	0,00%	7,34%	7,55%	x	similiar business and profitability
17	Ralph Lauren Corp	RL	USA	7,85	6,43	0,00%	13,24%	2,42%		
18	HanesBrands Inc	HBI	USA	1,92	6,23	85,05%	9,29%	-2,18%		
19	Levi Strauss & Co	LEVI	USA	1,70	6,17	17,10%	11,95%	2,35%		
20	Under Armour Inc	UAA	USA	4,06	5,81	0,00%	12,40%	2,47%	x	similiar business and size
21	Titan Company Ltd	TITAN	IND	25,79	4,74	-	10,35%	23,60%		
22	Texhong International Group Ltd	2678	HKG	0,79	4,09	-	13,63%	-		
23	Shenzhou International Group Holdings Ltd	2313	CHN	16,52	3,95	-	15,81%	2,74%		
24	Li Ning Co Ltd	2331	CHN	22,34	3,79	-	22,43%	5,31%	x	similiar business and historical growth
25	Pandora A/S	PNDORA	DNK	8,67	3,72	46,05%	25,71%	0,16%		
26	Asics Corp	7936	JPN	4,59	3,63	23,17%	7,02%	3,47%	x	similiar business, capital structure and profitability
27	Hugo Boss AG	BOSS	DEU	4,80	3,59	35,96%	9,85%	28,01%		
28	Deckers Outdoor Corp	DECK	USA	10,55	3,57	0,00%	18,05%	12,58%	x	similiar business and estimated growth
29	Crocs Inc	CROX	USA	7,56	3,55	67,85%	24,63%	12,57%		
30	Columbia Sportswear Co	COLM	USA	5,47	3,46	0,00%	12,40%	4,02%		

Source: Refinitiv Eikon, own analysis

Appendix 11: Overview peers comparable companies' analysis

Adidas AG is a German-based (HQ in Herzogenaurach) manufacturer of sports and lifestyle products and was founded in 1949 by Adolf Dassler. The company is one of the best known and most popular sportswear brands in the world. Products include footwear, apparel and accessories (such as bags and balls). A wide variety of sports are covered. The company has a global presence with more than 2,500 company-owned retail stores, mono-brand franchises, shop-in-shops, joint ventures with retail partners and co-branded stores, and an e-commerce channel available to customers in more than 50 countries. The company is known for its innovative technologies such as Boost or Primeknit and has worked with some of the most famous fashion designers and artists in the past to create exclusive collaborations. Like all manufacturers, Adidas is increasingly concerned with the issue of sustainability.

Nike Inc. was founded in 1964 with headquarters in Beaverton, Oregon (US) and is the largest sporting goods manufacturer in the world. In addition to Nike, the products are also sold under the brands Jordan and Converse. Similar to the other brands, they try to stand out with innovative products (Nike Air, Flyknit and Dri-FIT) or exclusive collaborations with artists and athletes. Inseparably associated with the company is its slogan "Just Do It".

PVH Corp. is a US clothing company founded in 1881 with headquarters in New York City. Its globally known brands include Tommy Hilfiger and Calvin Klein. The company offers a wide range of products such as branded sportswear (casual wear), denim clothing, functional clothing, underwear, swimwear, footwear and accessories for men, women and children. In addition to its own production, the company licenses its own brands worldwide for a range of product categories.

ANTA Sports Products Ltd. is one of the most famous and popular sportswear brands in China and was founded in1991 in Jinjiang. FILA is also one of the brands. The geographical focus is currently on the Asian market, but ANTA is also trying to expand its business into other markets through partnerships. In addition to the Chinese Basketball League and other sports leagues in China, it has entered into a partnership with the NBA and some NBA players.

Skechers USA Inc. markets lifestyle, performance and work footwear for men, women and children under the Skechers brand. In addition to wholesale, products are also sold directly to

customers. Since its founding in 1992 (HQ in Manhattan Beach, California), the company has grown to become one of the largest footwear companies in the world.

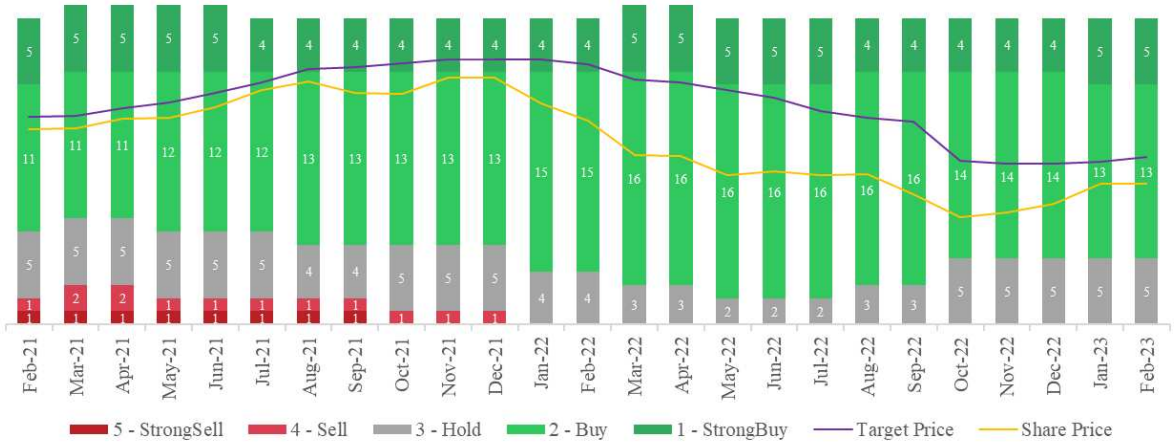
Under Armour Inc. offers a wide range of products for different sports like basketball, running, training and outdoor. Especially in the field of American football, athletics and boxing, the company sponsors many events and has thus been able to significantly increase its international profile since its founding (1996 in Baltimore, Maryland).

Li Ning Co Ltd. was founded in 1989 by the former Olympic gymnastics champion of the same name, Li Ning, and is headquartered in Beijing, China. In addition, products are sold under the brands Double Happiness (table tennis), AIGLE (outdoor sports) and Lotto (sports fashion). Li Ning has made a name for itself through innovative marketing strategies such as the opening of high-tech stores and the use of social media marketing, thereby gaining recognition beyond the country's borders.

Asics Corp. is a Japan-based company known mainly for its sports products in the field of running and triathlon. One knows Asics beyond that in particular from the sports tennis as well as volleyball. Outdoor products are sold under the brand HAGLÖFS.

Deckers Outdoor Corp. designs, markets and distributes footwear, apparel and accessories engineered for both everyday recreational use and high-performance activities. The brand portfolio includes the UGG, HOKA, Teva and Sanuk brands. The brands primarily offer footwear for outdoor activities.

Appendix 12: Recommendations from analysts



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