



# Equity Valuation: Beiersdorf AG

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Company Name: Beiersdorf AG

Major Stock Exchange: Frankfurt Stock Exchange (Xetra)

Bloomberg / Reuters: BEI GY / BEIG.DE

Industry: Personal Care Products and Self-Adhesives

Recommendation: HOLD

Current Share Price: EUR 91.16 (28<sup>th</sup> Dec 2018)

Target Price: EUR 95.93 (01<sup>st</sup> January 2019)

Valuation Range: EUR 94.40 to 97.84

Potential: +3.6% to +7.3%

# Beiersdorf

## INVESTMENT SUMMARY

| Valuation Metrics            |        |        |
|------------------------------|--------|--------|
|                              | 2018E  | 2019E  |
| EV/SALES                     | 2.63x  | 2.47x  |
| EV/EBITDA                    | 14.00x | 13.28x |
| EV/EBIT                      | 17.06x | 15.38x |
| Cost of Equity               |        | 7.25%  |
| Tax Rate                     |        | 30%    |
| 5-Year Revenue CAGR          |        | 4.86%  |
| Perpetuity Growth Rate       |        | 2.90%  |
| 5-Year EBIT Margin (average) |        | 15.78% |

| Capital Market Data               |                     |
|-----------------------------------|---------------------|
| as of 28/12/2018                  |                     |
| Share Price (EUR)                 | 91.16               |
| 52 Weeks High (EUR)               | 103.25 (07/08/2018) |
| 52 Weeks Low (EUR)                | 85.12 (01/03/2018)  |
| Annualized Volatility             | 2.6%                |
| Shares Issued                     | 252.0               |
| - Bearer Shares (No-Par-Value #m) | 25.2 (10%)          |
| - Held by maxingvest AG (#m)      | 128.5 (51%)         |
| - Shares Outstanding (#m)         | 98.3                |
| Free Float                        | 39%                 |
| Market Cap (EURm)                 | 22,972              |



| Stock Performance |         |          |             |
|-------------------|---------|----------|-------------|
| Closing Price     | BDF     | DAX30    | EuroStoxx50 |
| 1 Week            | (-1.7%) | (-0.7%)  | (-0.5%)     |
| 1 Months          | (-3.6%) | (-6.2%)  | (-5.9%)     |
| 1 Year            | (-6.9%) | (-18.3%) | (-14.8%)    |
| 2 Years           | +13.2%  | (-9.0%)  | (-10.1%)    |

**HOLD:** A hold recommendation for Beiersdorf AG was issued with a target price of EUR 95.93 and a valuation range of EUR 94.40 to 97.84. This reflects a slight upside potential of +3.6% to +7.3%. Restraint is affiliated with a changing managing board but especially to a continuously increasing net cash pile of EUR 15.71 per share, leading to a HOLD recommendation.

**Sustainable Growth Trends:** With a CAGR of 4.4% between 2017 and 2023, group revenue is expected to increase on market level. Although, the personal care market in Europe and America is nearly satisfied, high growth is expected in emerging markets. Further, the favorable adhesives market drives the tesa segment and enables high growth potential. However, the growth is already reflected in the current share price.

**Profitability:** Following past trends, a slight margin improvement is expected, converging towards industry levels of L'Oréal, P&G and Henkel.

**Liquidity:** The departure of acquisition-friendly CEO Stefan Heidenreich in December 2018 will reduce the probability of future inorganic growth. Combined with the conservative payout-policy of majority shareholder maxingvest AG, a further accumulation of cash and cash equivalents is expected.

**Risks:** Over 75% of sales in the consumer segment are generated by only the brand NIVEA. Thus, Beiersdorf is exposed to higher brand risk than most of its diversified large-cap competitors. Further, the currently higher margins of competitors enable stronger firepower to invest behind their brands.

**Profile:** Germany-headquartered Beiersdorf AG operates internationally through two business segments: *Consumer* (82% of revenues) offers skin care and beauty care products, comprising brands such as NIVEA, La Prairie and Labello. *tesa* (18%) provides self-adhesive system and product solutions, mainly for industrial customers. The family office maxingvest AG holds the majority of Beiersdorf.

| Key Financials      |               |               |               |               |               |               |               |       |
|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|
| in EURm [growth]    | 2017          | 2018E         | 2019E         | 2020E         | 2021E         | 2022E         | 2023E         | CAGR  |
| Revenue             | 7,056 [+4.5%] | 7,248 [+2.7%] | 7,543 [+4.1%] | 7,895 [+4.7%] | 8,277 [+4.8%] | 8,694 [+5.0%] | 9,119 [+4.9%] | 4.4%  |
| EBIT (norm.)        | 1,096 [+4.5%] | 1,117 [+1.9%] | 1,179 [+5.6%] | 1,244 [+5.4%] | 1,308 [+5.2%] | 1,377 [+5.2%] | 1,445 [+5.0%] | 4.7%  |
| in % of sales       | 15.5%         | 15.4%         | 15.6%         | 15.8%         | 15.8%         | 15.8%         | 15.9%         | -     |
| EBITDA (norm.)      | 1,246 [+4.1%] | 1,271 [+2.0%] | 1,341 [+5.6%] | 1,414 [+5.4%] | 1,487 [+5.2%] | 1,565 [+5.2%] | 1,643 [+5.0%] | 4.7%  |
| in % of sales       | 17.7%         | 17.5%         | 17.8%         | 17.9%         | 18.0%         | 18.0%         | 18.0%         | -     |
| FCFF                | 722           | 715           | 748           | 772           | 808           | 847           | 895           | 3.6%  |
| Cash and Securities | 4,354         | 4,903         | 5,498         | 6,118         | 6,775         | 7,472         | 8,216         | 11.2% |
| Net Liquidity       | 4,241         | 4,790         | 5,385         | 6,005         | 6,662         | 7,359         | 8,103         | 11.4% |
| EPS (EUR)           | 2.96          | 3.36          | 3.58          | 3.80          | 4.02          | 4.26          | 4.51          | 7.3%  |
| ROA                 | 8.2%          | 8.6%          | 8.4%          | 8.2%          | 8.0%          | 7.9%          | 7.7%          | -     |
| ROE                 | 13.2%         | 13.4%         | 12.9%         | 12.4%         | 12.0%         | 11.6%         | 11.3%         | -     |

## Abstract

This dissertation aims to determine the target price of Beiersdorf AG, a leading player in the personal care and self-adhesives market, to issue a buy, hold or sell recommendation relative to the market price. Thus, the underlying research question is: *“What is Beiersdorf’s fair value per share at the 01<sup>st</sup> of January 2019 and resulting upside or downside potential for investors?”*. The valuation for German DAX listed Beiersdorf is based on a profound company, competitor and market analysis, including past development and future outlook of Beiersdorf’s financials and market trends in the consumer goods and adhesives industry. The valuation techniques comprise the WACC DCF-method as representative for the intrinsic valuation and is complemented by a relative valuation, using trading forward-multiples. The valuation results in a target price range of EUR 94.40 to 97.84 per share. Compared with a closing price of EUR 91.16 per share on Friday, the 28<sup>th</sup> of December 2019 (last trading day in 2018), a hold recommendation can be addressed due the marginal deviation of only +3.6 percent to +7.3 percent. Furthermore, the hold recommendation is in line with the equity research of Credit Suisse.

## Resumo

Esta dissertação tem o objetivo de determinar o preço-alvo da Beiersdorf AG, uma empresa líder de mercado nos setores de higiene pessoal e adesivos, e de emitir uma recomendação de compra, neutra ou de venda em relação ao seu preço de mercado. Por esta razão, a principal pergunta a ser investigada é *“Qual é o valor justo de uma ação da Beiersdorf no dia 1 de Janeiro de 2019, e a consequente possibilidade de ganho ou perda para os investidores?”*. A avaliação da Beiersdorf, cotada na DAX, é baseada numa análise da empresa, da concorrência e do mercado, incluindo desenvolvimentos passados e perspectivas futuras da performance financeira da Beiersdorf e das tendências no mercado de bens de consumo e na indústria dos pensos. As técnicas de avaliação incluem o método WACC-DCF como representante da avaliação intrínseca, e é complementado como a utilização de múltiplos prospetivos, como técnica de avaliação relativa. A avaliação resulta num preço alvo entre EUR 94.40 e 97.84 por ação. Comparando com o preço de fecho de EUR 91.16 a 28 de Dezembro de 2019 (o último dia de mercado de 2018), uma recomendação neutra é emitida dado o desvio marginal em relação ao intervalo-alvo (+3.6% a 7.3%). A recomendação neutra está alinhada com a previsão do Credit Suisse.

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## List of Abbreviations

|                |  |
|----------------|--|
| <b>APV</b>     | Adjusted present value   |
| <b>CAGR</b>    | Compounded annual growth rate                                    |
| <b>CAPEX</b>   | Capital expenditures   |
| <b>CAPM</b>    | Capital asset pricing model                                      |
| <b>CCA</b>     | Comparable company analysis                                      |
| <b>CCC</b>     | Cash conversion cycle  |
| <b>COE</b>     | Cost of equity   |
| <b>COGS</b>    | Cost of goods sold   |
| <b>CRP</b>     | Country risk premium   |
| <b>CS</b>      | Credit Suisse  |
| <b>CTA</b>     | Comparable transaction analysis                                  |
| <b>D</b>       | Debt value   |
| <b>DAX</b>     | Deutscher Aktienindex  |
| <b>DCF</b>     | Discounted cash flows  |
| <b>DDM</b>     | Dividend discount model  |
| <b>DIH</b>     | Days inventory on hand   |
| <b>DPO</b>     | Days payable outstanding   |
| <b>DSO</b>     | Days sales outstanding   |
| <b>DPS</b>     | Dividend per share   |
| <b>DTA</b>     | Deferred tax assets  |
| <b>DTL</b>     | Deferred tax liabilities   |
| <b>D&amp;A</b> | Depreciation and amortization                                    |
| <b>EBIT</b>    | Earnings before interest and taxes                               |
| <b>EBITDA</b>  | Earnings before interest, taxes, depreciations and amortizations |
| <b>EPS</b>     | Earnings per share   |
| <b>EQV</b>     | Equity value   |
| <b>EUR</b>     | Euro   |
| <b>EURm</b>    | Million Euro   |
| <b>EV</b>      | Enterprise value   |
| <b>FCF</b>     | Free cash flow   |
| <b>FCFE</b>    | Free cash flow to the equity                                     |
| <b>FCFF</b>    | Free cash flow to the firm                                       |
| <b>FFM</b>     | Fama-French three factor model                                   |
| <b>FMCG</b>    | Fast moving consumer goods                                       |
| <b>GDP</b>     | Gross domestic product   |
| <b>GGM</b>     | Gordon growth model  |
| <b>HQ</b>      | Headquarter  |
| <b>IFRS</b>    | International financial reporting standards                      |
| <b>LTGR</b>    | Long term growth rate  |
| <b>MRP</b>     | Market risk premium  |
| <b>NCL</b>     | Non-current liabilities  |
| <b>NOPLAT</b>  | Net operating profit less adjusted taxes                         |
| <b>NWC</b>     | Net working capital  |
| <b>OCFA</b>    | Other current financial assets                                   |
| <b>OCFL</b>    | Other current financial liabilities                              |
| <b>OPEX</b>    | Operating expenditures   |
| <b>PER</b>     | Price to earnings ratio  |
| <b>p.p.</b>    | Percentage point   |
| <b>PPE</b>     | Plant, property and equipment                                    |

|              |                                       |
|--------------|---------------------------------------|
| <b>PVITS</b> | Present value of interest tax shields |
| <b>ROE</b>   | Return on equity                      |
| <b>ROIC</b>  | Return on invested capital            |
| <b>SOAP</b>  | Sum of all parts                      |
| <b>TV</b>    | Terminal value                        |
| <b>WACC</b>  | Weighted average cost of capital      |
| <b>YTM</b>   | Yield to maturity                     |

## 1 Introduction and Motivation

The financial stability and valuation of a company is not only relevant for current and potential shareholders but also for several stakeholders interacting with the company. Furthermore, valuations are a key element in the decision-making process of internal managers of a company, such as the allocation of resources. The origin of value-oriented key figures is based on a publication of Alfred Rappaport (Rappaport, 1998). He postulates the orientation of all investment decisions, remuneration systems and the performance measurement on the increase in value from the perspective of shareholders (long-term shareholder value) (Hölscher, 1997; Horster & Knauer, 2012). Therefore, measuring and managing the shareholder value creation of companies, partial segments or single projects is crucial not only for external investors but also for the managers and the boards of directors (Koller, Goedhart, & Wessels, 2015).

This thesis aims to determine the fair value of Beiersdorf AG, a listed company on the German DAX, which is one of the major global players in the personal care and adhesives industry. The fair value per share is estimated as of the 1<sup>st</sup> of January, 2019 and compared to the actual share price to determine an upside or downside potential for current or potential diversified investors. To conduct the subsequent equity valuation, past financial data from Beiersdorf's published financial reports, ad-hoc disclosures and presentations were taken into consideration as well as current market conditions and developments.

In the second chapter, an evaluation of the state-of-the-art techniques in company valuation was performed and, further, the aptitude and eligibility of the approaches for the valuation of Beiersdorf assessed. In the third chapter, Beiersdorf and industry trends were closer examined. Afterwards, an equity valuation of Beiersdorf was conducted in chapter four, followed by a comparison to the current market value and an equity research of Credit Suisse. Finally, a sell, hold or buy recommendation was express in chapter 6.

## 2 Literature Review

### 2.1 Introduction to Valuation Methodologies

According to Damodaran, the valuation techniques and models can be categorized into four major approaches (Damodaran, 2006):

- The most renowned method is the **Intrinsic Valuation Method**, in which the value of a company is derived from its ability to generate future value (Luehrman, 1997). Thereby, the Discounted Cash Flow (DCF) method is the most prominent and utilized technique;
- The **Relative Multiple Valuation Method** estimates the value of an asset relative to the value of a comparable peer group. Thereby, a ratio of a peer's valuation to common financials (such as sales, earnings or net income) is computed and applied to the company being valued;
- **Assets-Based Valuation** (also liquidation valuation) is often applied when a company faces financial distress or has no ongoing concern. Primarily, the net asset value is taken into account by defining the costs to re-produce an asset or firm;
- Lastly, the **Real Option or Contingent Claim Valuation** can be used for assets or investments with options embedded in this asset/decision (delays, expansion or abandonment projects), assuming an elusive premium on the intrinsic value estimate (e.g. product patents or natural resource reserves). Therefore, the option pricing models (Binominal Option Price Model or Black Scholes Model) is applied.

All beforementioned valuation approaches have their advantages and disadvantages as well as limitations and should be carefully selected regarding the company's core characteristics and occasion of valuation. In the next chapter, the Intrinsic Valuation Method as well as Relative Valuation Method will be closer scrutinized and examined.

Since Beiersdorf is not confronted with any financial burden or distress in the immediate future, the Asset-Based Valuation is not going to be further addressed in this thesis. Furthermore, no potential assets or investments with option-like characteristics were identified, leading to the neglect of the Contingent Claim Valuation. Instead, this thesis focuses on the critical examination of first two mentioned valuation approaches and the underlying assumptions being applied for Beiersdorf AG.

## 2.2 Intrinsic Valuation Methods

Theoretically, the intrinsic value of an asset captures the true value, assuming a full and comprehensive understanding of all related characteristics (Graham & Dodd, 2009). Thereby, this intrinsic value of an asset, such as a security, may vary from its market price (Pinto, Henry, Robinson, & Stowe, 2010).

The Grossman-Stiglitz paradox is an advocate of the probable difference between market price and intrinsic value: Grossman and Stiglitz state in their rational efficient markets formulation that if the market price were completely congruent with the intrinsic value, no rational investor would bear the costs of analyzing the security's characteristics. In turn, if no one were conducting analyses, how can the market price equal the intrinsic value of a company? (Grossman & Stiglitz, 1980; Pinto et al., 2010)

Therefore, an investor aims to estimate the mispricing between the market price and his conception of the "true" or "real" value of a security. This intrinsic value is derived from an asset's ability to generate prospective value in form of cash flows.

### 2.2.1 Discounted Cash Flow Methods (DCF)

All Discounted Cash Flow-Methods (DCF) follow the same underlying theoretical assumption: The value of an asset is based on future expected cash flows generated by that asset, discounted to the present value at a rate that reflects the riskiness of that asset.

DCF-methods are dynamic investment approaches. Dynamic investment methods take the effect of overtime fluctuating inflows and outflows into account and bundle the multi-period cash flows into one key figure.

$$Value = \sum_{t=1}^n CF_t \cdot \left[ \frac{1}{1+i} \right]^t \quad (1)$$

With,  $CF_t =$  Cash Flow at time  $t$

$i =$  Discount Rate

$n =$  Number of Cash Flows in the Life Period of the Asset

*FOM-1: DCF-Method*

Following the beforementioned definition, two components are substantial for the valuation of an asset: The expected future cash flows as well as the discount rate. In the upcoming chapters,

those components are further explained, following a left-to-right and numerator-to-denominator direction.

## 2.2.2 Free Cash Flows (FCF)

The DCF-method is based upon future expected free cash flows (FCF) representing the available amount of cash distributable to all suppliers of capital, including stockholders and lenders, the so-called Free Cash Flow to the Firm (FCFF). This approach is used to value the entire business, resulting in the Enterprise Value (EV) (Damodaran, 2008).

An alternative approach is to directly compute the equity stake (Equity Value). By deducting all debt related cash flows, only the after-debt financing FCF that are available for shareholders are considered, representing the Free Cash Flow to Equity (FCFE) (Pinto et al., 2010). The interdependence of both variables can be depicted as follows:

$$FCFF = FCFE + interest\ expense \cdot (1 - t) - (new\ debt - debt\ repayments) + div \quad (2)$$

With,  $FCFF = Free\ Cash\ Flow\ to\ the\ Firm$

$t = Taxes$

$FCFE = Free\ Cash\ Flow\ to\ Equity$

$div = Dividends\ Payed$

### *FOM-2: Relationship between FCFF and FCFE*

#### 2.2.2.1 Discounted Free Cash Flows to the Firm (FFCF)

To compute the FCFF, unlevered (or pre-debt) FCF are calculated, assuming no debt and related tax shields as they are factored into the discount rate (WACC) later. Thereby, only items that impact cash inflow or outflow are taken into consideration. The FCFF can be calculated by adjusting the EBIT by non-cash charges (addition) and relevant cash items (subtraction) as follows (Fernández, 2007):

|  |
|--|
| <b>Earnings before profit and tax (EBIT)</b>                   |
| - Tax on EBIT ( $t_c \cdot EBIT$ )                             |
| <hr/> <b>= Net operating profit after taxes (NOPLAT)</b> <hr/> |
| + Depreciation   |
| + Provisions   |
| + Other non-cash Charges                                       |
| - Investments in Net Working Capital (NWC)                     |
| - Capital Expenditures (CAPEX)                                 |
| <hr/> <b>= Free Cash Flow from Operations</b> <hr/>            |
| +/- Cash flow from non-operating activities                    |
| <hr/> <b>= Free Cash Flow to the Firm (FCFF)</b> <hr/>         |

FIG-1: Computation of FCFF

To compute the EV of a company, the forecasted FCFF are discounted by the company's cost of capital in form of the Weighted Average Cost of Capital (WACC) since the FCFF are distributable to all suppliers of capital:

$$EV_0 = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} + \frac{TV_n}{(1 + WACC)^n} \quad (3)$$

With,  $EV_0 =$  Implied Enterprise Value  $WACC:$  Weighted Average Cost of Capital  
 $FCFF_t =$  Free Cash Flows to the Firm at Time  $t$   $TV =$  Terminal Value in Perpetuity  $n$

### *FOM-3: EV in the FCFF-Valuation*

The Discounted FCFF is the most used DCF-model for company valuation and particularly suitable if the company has a steady state capital structure in the future (Sabal, 2008). However, Damodaran (2002) and Luehrman (1997) limit the informative power and validity, especially when the capital structure is fluctuating over time, high capital investments are required or a company faces financial distress due to negative cash flows or EBIT respectively.

#### **2.2.2.2 Discounted Free Cash Flows to Equity (FFCE)**

Alternatively, the previously discussed post-debt FCFE-concept can be utilized. Thereby, the Equity Value (EQV) of a firm can be computed directly by discounting FCFE. The FCFE is derived from adjusting the FCFF by net borrowings. Latter is the difference of new debt issued and interests as well as principals payed to debtholders and can be computed as follows from FCFF or directly from net income:

|  |   |
|--|---|
| <b>Earnings before profit and tax (EBIT)</b><br>- Tax on EBIT ( $t_c \cdot EBIT$ )<br><hr/> <b>= Net operating profit after taxes (NOPLAT)</b><br>+ Depreciation<br>+ Provisions<br>+ Other non-cash Charges<br>- Investments in Net Working Capital (NWC)<br>- Capital Expenditures (CAPEX)<br><hr/> <b>= Free Cash Flow from Operations</b><br><hr/> +/- Cash flow from non-operating activities<br><hr/> <b>= Free Cash Flow to the Firm (FCFF)</b><br><hr/> + New Debt Issued<br>- Debt Repayments<br>- Interest Expense $\cdot (1 - t_c)$<br><hr/> <b>= Free Cash Flow to Equity (FCFE)</b> | <b>Net Income</b><br>+ Other non-cash Charges<br>- Investments in Net Working Capital (NWC)<br>- Capital Expenditures (CAPEX)<br>+ New Debt Issued<br>- Debt Repayments<br>- Interest Expense $\cdot (1 - t_c)$<br><hr/> <b>= Free Cash Flow to Equity (FCFE)</b> |
|--|---|

FIG-2: Computation of FCFE

When computing the EQV analogous to EV, the forecasted FCFE are only discounted by the company's cost of equity as the FCFE are solely distributable to equity holders (Fernández, 2007):

$$EQV_0 = \sum_{t=1}^n \frac{FCFE_t}{(1 + k_E)^t} + \frac{TV_n}{(1 + k_E)^n} \quad (4)$$

With,  $EQV_0 =$  Implied Equity Value

$k_E$ : Cost of Equity

$FCFE_t =$  Free Cash Flows to Equity at Time  $t$

$TV =$  Terminal Value in Perpetuity  $n$

#### FOM-4: EQV in the FCFE-Valuation

Thus, under identical assumptions and input variables, the discounted FCFF and FCFE should yield an equal valuation (Young, Sullivan, Nokhasteh, & Holt, 1999). However, the FCFF is more commonly used and practical, especially when a levered company returns negative FCFE. (Pinto et al., 2010).

### 2.2.2.3 Dividend-Discount-Model (DDM)

The dividend-discount-model (DDM) is based on the premises, that the value of a stock equals the present value of future dividends. Consequently, the current share price should correspond to the expected dividend plus the future share price in one year, discounted by the cost of equity:

$$P_0 = \frac{Div_1 + P_1}{(1 + k_E)^1} \quad (5)$$

With,  $P_0 =$  Current Share Price

$P_1 =$  Share Price in  $t = 1$

$Div_1 =$  Expected Dividend in  $t = 1$

$k_E =$  Cost of Equity

*FOM-5: Share Price with Dividends ( $t=0$ )*

As the future share price is unknown, the price can be estimated as follows:

$$P_1 = \frac{Div_2 + P_2}{(1 + k_E)^2} \quad (6)$$

With,  $P_t =$  Share Price in  $t$

$k_E =$  Cost of Equity

$Div_t =$  Expected Dividend at time  $t$

*FOM-6: Share Price with Dividends ( $t=1$ )*

Following this logical conclusion, the share price corresponds to the sum of all expected dividends in the future, discounted to the present:

$$P_0 = \frac{Div_1}{(1 + k_E)^1} + \frac{Div_2}{(1 + k_E)^2} + \dots + \frac{Div_t}{(1 + k_E)^t} = \sum_{t=1}^n \frac{Div_t}{(1 + k_E)^t} \quad (7)$$

With,  $P_t =$  Share Price in  $t$

$k_E =$  Cost of Equity

$Div_t =$  Expected Dividend at time  $t$

*FOM-7: Dividend-Discount-Model (DDM)*

This intuitive approach is manifested in the Gordon-Growth-Model (GGM) and is further applicable for the computation of the terminal value in perpetuity. The GGM estimates the price of a stock that expels stable dividends by applying a constant growth rate:

$$P_0 = \frac{Div_1}{k_E - g} \quad (8)$$

With,  $P_0 =$  Current Share Price

$Div_1 =$  Expected Dividend in  $t = 1$

$g =$  Constant Dividend Growth Rate in Perpetuity

$k_E =$  Cost of Equity

#### *FOM-8: Gordon-Growth-Model (GGM)*

Many academics criticise the model due to the unpredictable future dividend policy of a company. When taking past dividends or payout-ratios as a proxy, companies can easily manipulate the estimated value. In case a company pays out more than the FCFE, the value per share would be overestimated and vice versa (Kruschwitz & Löffler, 2013). Furthermore, the price is very sensitive to the growth rate. In order to overcome the restriction of one constant growth rate over time, the GGM can be extended to a Two-Stage-DDM taking two different growth rates into account:

$$P_0 = \sum_{t=1}^n \frac{Div_0 \cdot (1 + g_1)^t}{(1 + k_E)^t} + \frac{Div_{n+1}}{(1 + k_E)^n} \quad (9)$$

With,  $P_0 =$  Current Share Price

$k_E =$  Cost of Equity

$Div_0 =$  Dividend in  $t = 0$

$g_1 =$  Short-term Dividend Growth Rate

$g_2 =$  Constant Dividend Growth Rate in Perpetuity

#### *FOM-9: Two-Stage-DDM*

Damodaran (2012) suggest applying the GGM carefully and best in the situation where the FCFE equals dividend payments. On the other side, for companies showing higher FCFE than dividends, the DDM can be used as a lower valuation boundary.

#### **2.2.2.4 Terminal Value and Growth Rate**

A similar conceptual methodology to the GGM can be applied to compute the terminal value of forecasted cash flows in perpetuity. After the explicit, the terminal value represents the sum of all future cash flows (Damodaran, 2002). Thereby, the length of the explicit period is not commonly predetermined. Therefore, the GGM should only be applied after accessing the point

of time where a company reaches steady-state (Koller et al., 2015). According to the GGM, the terminal value can be expressed as follows:

$$TV_T = \frac{FCF_T \cdot (1 + g)}{k - g} \quad (10)$$

With,  $TV_T = \text{Terminal Value in Perpetuity}$        $k = \text{Discount Rate (e.g. Cost of Equity or WACC)}$   
 $FCF_T = \text{FCF in Perpetuity}$        $g = \text{Constant Dividend Growth Rate in Perpetuity}$

#### *FOM-10: Computation of TV*

Due to the high share of usually more than 50% of the share price, the assumptions for the TV play a crucial role (Young et al., 1999) and should be closer examined in a sensitivity analysis, altering the impactful parameters, growth and discount rate. Other methods to estimate the TV, such as the liquidation value approach or multiples approach, lack accuracy (Damodaran, 2002) and are neglected in the following. However, a triangulation approach of market multiples from publicly traded peers is often used as a robustness-test of the TV's underlying assumptions (Pinto et al., 2010).

At some point of time, every company reaches a mature state. In steady-state, it is delusive to assume a perpetuity growth rate exceeding the nominal GDP of the countries where the company operates (Damodaran, 2002). There are two different approaches to estimate the perpetuity growth rate. While Damodaran (2002) recommends deriving the sustainable growth rate by multiplying a company's underlying reinvestment rate with the intrinsic return on equity (ROE) (FOM-11), practitioners often apply a simplification by multiplying the ROE with the retention rate of earnings (FOM-12).

$$g_p = \text{Reinvestment Rate}_T \cdot \text{Return on Capital}_T$$

$$\text{Reinvestment Rate}_T = \frac{\text{Net CAPEX}_T + \Delta\text{NWC}_T}{\text{NOPLAT}_T} \quad (11)$$

$$\text{Return on Capital}_T = \frac{\text{NOPLAT}_T}{\text{Invested Capital}_T}$$

With,  $g_p = \text{Growth Rate in Perpetuity}$   $t_c = \text{Corporate Tax Rate}$   
 $T = \text{Ending Year of Explicit Period}$   $\text{NWC} = \text{Net Working Capital}$   
 $\text{CAPEX} = \text{Capital Expenditures}$

*FOM-11: Computation of Growth Rate in Perpetuity*

$$g_p = \text{Income Retention Rate}_{T+1} \cdot \text{Return on Equity}_{T+1}$$

$$\text{Return on Equity}_{T+1} = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \quad (12)$$

With,  $g_p = \text{Growth Rate in Perpetuity}$   $T = \text{Ending Year of Explicit Period}$

*FOM-12: Simplified Computation of Growth Rate in Perpetuity*

### 2.2.2.5 Adjusted Present Value Method (APV)

Contrary to WACC-based approaches, the Adjusted Present Value Method (APV) is seen to be more precise in case of changing leverage of a company in the explicit period. Whereas a WACC-based approach implies a constant debt-to-equity-ratio and further incorporates the effects of debt in the discount rate, the APV separates the firm value into the value of operation as if the firm were fully equity financed (unlevered firm value) and the benefits and costs of leverage in terms of the tax benefits and associated cost of higher default risk (bankruptcy costs) (Ross, Westerfield, & Jaffe, 2013).

Instead of adjusting the WACC annually according to the capital structure, the APV allows a dynamic capital structure and additionally provides information about the explicit value of the interests tax shield to the management (Luehrman, 1997):

$$\text{Value of Levered Firm} = PV(\text{Unlevered EV}) + PV(\text{ITS}) + BC \quad (13)$$

With,  $PV = \text{Present Value}$

$BC = \text{Expected Bankruptcy Costs}$

$ITS = \text{Interest Tax Shield}$

#### FOM-13: APV-Valuation

To compute the unlevered firm value, the FCFF are discounted at the unlevered cost of equity, without the tax benefit of debt (Koller et al., 2015). The tax benefit from the deductibility of interests on the tax bill is discounted at the cost of debt to factor in the associated riskiness (Damodaran, 2002):

$$PV(ITS) = \frac{D \cdot k_D \cdot t_C}{(1 + k_D)^t} \quad (14)$$

With,  $D = \text{Debt}$

$t_C = \text{Corporate Tax Rate}$

$k_D = \text{Cost of Debt}$

#### FOM-14: Present Value of Interest Tax Shield

More debt usually yields in higher probability of defaulting intermediate interest payments or the repayment of the final principal. Consequently, the expected bankruptcy costs are increasing simultaneously. Those costs may be of direct (lawyer fees) or indirect (customer loss) nature. Latter depend heavily on the company and industry and are difficult to estimate (Sabal, 2008). Whereas general industry tables are often used by practitioners as a proxy to compute the bankruptcy costs (Altman, 1984), a company's rating or the Merton Model can alternatively be used to compute the probability of default by considering the stock's volatility, leverage, cost of debt and maturity of debt.

$$\text{Expected Bankruptcy Costs} = \text{Probability of Bankruptcy} \cdot \text{Bankruptcy Costs} \quad (15)$$

#### FOM-15: Expected Bankruptcy Costs

### 2.2.3 Discount Rate and Time Value of Money

Since the absolute value of money rises due to interests in the future, retrospectively, the future payments one receives are currently worth less. Thus, equally high cash flows in different periods do not have the same value (Horst, 2009; Zingel, 2009). In order to take this time value of money into account, the future cash inflows of an investment must be discounted (Luehrman, 1997).

This discount rate is composed of the risk-free rate, reflecting the time value, and a demanded risk premium, reflecting the risk of future cash flows of the underlying asset (Pinto et al., 2010). Consequently, the discount rate depicts the opportunity costs that can be expected by an investor on an alternative investing, entailing equivalent risk (Luehrman, 1997).

#### 2.2.3.1 Weighted Average Cost of Capital (WACC)

To apply the enterprise DCF-method, expected FCFF must be discounted at the Weighted Average Cost of Capital (WACC). All investors (equity and debt holders) demand a return on their invested capital that compensates for the risk incurred and time value of money (Berk & DeMarzo, 2014). Consequently, investors request higher returns from investments with higher risk exposure. Therefore, WACC reflects the expected and required return for all investors (shareholders and lenders) for investing in a venture with similar risk and is often referred to as the long-term opportunity costs of the invested funds (Koller et al., 2015).

Thereby, the WACC is determined as weighted average costs of equity and after-tax cost of debt, taking the target capital structure into account (mix of debt and equity). Due to the deductibility of interest costs on tax payments (Interest Tax Shields), the WACC represents the cost of funding after tax.

$$WACC = k_E \cdot \frac{E}{V} + k_D \cdot \frac{D}{V} \cdot (1 - t) \quad (16)$$

With,  $k_E$  = Cost of Equity

$E/V$  = Target Market Value Equity to Enterprise Value

$k_D$  = Cost of Debt

$D/V$  = Target Market Value of Debt to Enterprise Value

$t$  = Company's marginal income tax rate

#### FOM-16: WACC

Because the expected cash flows will occur in the future, not the discount rate should be forward looking but also the appropriate target mix of equity and debt.

However, the usage of the WACC has some limitations. Fluctuating and dynamic capital structures as well as complex capital instruments, such as convertible bonds, mezzanine capital or floating debt rates are not sufficiently reflected in the WACC (Booth, 2002). Consequently, periodic and dynamic adjustments can be required (Luehrman, 1997).

Furthermore, the WACC can not only be interpreted as the average risk of all investments of an enterprise but also as the minimum acceptable rate of return that new investments must yield to maintain the value of a company (Berk & DeMarzo, 2014).

### **2.2.3.2 Estimating Cost of Equity**

The required return on equity is based on the risk premium investors demand for investing in equities instead of risk-free assets. (Koller et al., 2015). This risk premium refers to the non-diversifiable systematic risk of a company being priced as the remaining risk of a security, so called idiosyncratic risk, and can be diversified by investing in multiple assets (Fernandez, 2006).

The two major models to determine the risk premium of a company are the Capital Asset Pricing Model (CAPM) and the Fama-French Three Factor Model.

The CAPM is based on principles of the Portfolio theory, which was developed by Markowitz and Sharpe, and provides a practical approach to describe the relationship between the expected return of an asset and the systematic risk. According to the CAPM an investor requires for investing in a risky asset a risk premium on top of the return on a risk-free asset (Koller et al., 2015). Due to the diversification effect of an asset's specific risk, only the non-diversifiable systematic risk (market risk) will be rewarded (Fernandez, 2006).

The risk premium is calculated by multiplying the systematic risk, the so-called  $\beta$ -factor, with the expected excess return in a portfolio that includes all the stocks in the market (market portfolio), the so-called market risk premium (Berk & DeMarzo, 2014). The excess return consists of the difference between the expected return of the market portfolio and the return from a risk-free asset.

$$k_E = r_f + \underbrace{\beta_i^L \cdot (E(r_M) - r_f)}_{\text{Market Risk Premium}} \quad (17)$$

With,  $k_E = \text{Cost of Equity}$   
 $r_f = \text{Risk-free Rate}$

$\beta_i^L = \text{Levered Beta of an Asset } i$   
 $r_M = \text{Market Return Rate}$

#### FOM-17: Cost of Equity

Several theoretical premises must be fulfilled in order to apply the CAPM, which are often controversially discussed in the literature (Kruschwitz & Löffler, 2013; Kunz & Teuscher, 2007; Perridon, Steiner, & Rathgeber, 2012). Exemplarily, one of the premises assumes the unlimited possibility of investing and borrowing capital at a risk-free interest rate, which can be rejected by different debit and credit interest rates in reality (Nöll & Wiedemann, 2011). Additionally, the restrictive assumption on transaction costs as well as private information have often been controversially discussed (Damodaran, 2002). Furthermore, the usage of historical data for the estimation of the beta and, consequently, the discount rate for future cash flows have long been viewed with skepticism (Ballwieser, 1998).

Although the CAPM is considered critical by its premises in the literature, it is applied by practitioners in the absence of a suitable and superior alternative (Baetge & Krause, 1994; Fama & French, 1992; Pape, 2010; Roll & Ross, 1994; Steiner & Bruns, 2002). An extension of the CAPM model represents the Fama-French three-factor model (Appendix-1).

#### 2.2.3.2.1 Risk-free Rate

As previously mentioned, the risk-free rate reflects the time value of money and can be seen as the return of an risk-free asset being traded in the open market (Damodaran, 2008).

While high rated government bonds are assumed to be free from default risk, corporate bonds are more likely to be impacted by risks arising from the equity-market. Therefore, high rated government bonds are preferred to corporate bonds with high credit-quality and reflect an appropriate assessment of the risk-free rate (Pinto et al., 2010). In order to disregard the impact of currency effects and related inflation, the risk-free rate should be obtained from government bonds in the same currency as the cash flows occur (Damodaran, 2008). Further, the maturity of the risk-free asset should reflect the period of forecasted cash flows. Damodaran suggests to

apply the 10-year government bond with the lowest yield-to-maturity (YTM), following Markowitz's portfolio theory of risk-return relationship (Damodaran, 2008; Houthakker & Markowitz, 1962). Exemplarily, he recommends the usage of the 10-year German Bund for companies in the Eurozone.

However, bearing in mind that ratings depict the default risk of countries, one could argue contrarily: Assuming high liquidity, a rational investor would select from two government bonds with the same rating but different YTM, the government bond with the higher YTM, exemplarily the Dutch over the German bond.

### 2.2.3.2.2 Beta

A beta quantifies the deviation and sensitivity of an asset's return compared to the return of the market (Pinto et al., 2010). A common proxy is to obtain historical returns to measure sensitivity. The beta is not only influenced by the selection of the market portfolio but also the considered period and frequency (Koller et al., 2015). Practitioners usually examine weekly or monthly returns of the past two to five years (Berk & DeMarzo, 2014), matching the recommendation of Barthody and Peare (2005). Besides the MSCI World Index, liquid equity market indices (such as the S&P, EuroStoxx, DAX) are being used to represent the market portfolio and should be selected in accordance to the currency of a company's FCFF.

Technically, the beta is computed by the covariance of an asset's past returns with the returns on the market portfolio, divided by the market's variance of returns (Pinto et al., 2010).

$$\beta_i^L = \frac{Cov(r_i, r_M)}{Var(r_M)} \quad (18)$$

With,  $\beta_i^L = \text{Levered Beta of an Asset } i$

$Cov(r_i, r_M) = \text{Covariance of an Asset's (i) Returns with Returns of the Market Portfolio (M)}$

$Var(r_M) = \text{Variance of the Returns of the Market Portfolio } (\sigma^2)$

#### *FOM-18: Levered Beta (Regression-Model)*

Because the market portfolio's covariance with itself is equivalent to its variance, the beta of the market portfolio corresponds to one. Therefore, assets with higher (lower) return volatility, reflecting the risk, will show a beta greater (smaller) than one (Damodaran, 2002).

This backwards looking beta is often referred to as historical raw beta (Pinto et al., 2010). However, by looking at the past returns of an asset and the market portfolio, the forward-looking

approach of valuation is neglected (Elgers, Haltiner, & Hawthorne, 1979). Blume showed that estimated raw beta coefficients tend to converge over time towards the mean of systematic risk, consequently, the beta of the market portfolio (Blume, 1979). Therefore, Blume suggests a mean-reversion adjustment to translate the historic beta into a forward-looking beta (Blume, 1975):

$$\text{Adjusted } \beta_i^L = \frac{2}{3} \cdot \text{raw } \beta_i + \frac{1}{3} \cdot \text{raw } \beta_M \quad (19)$$

With,  $\beta_i^L = \text{Levered Beta of an Asset } i$        $\beta_M = \text{Beta of the Market Portfolio (equals one)}$

#### *FOM-19: Beta's Mean-Reversion (Blume's Drift Adjustment)*

When a company is private or the stocks are traded infrequently, alternatively the beta can be estimated indirectly on the basis of a comparable listed peer's beta (Pinto et al., 2010). Therefore, a three-step-approach (bottom-up approach) is often used to factor in differences in financial leverage (Damodaran, 2002):

- **Step 1 – Obtain Beta:** After identifying a comparable peer group of publicly traded companies in the same industry, the levered betas are obtained using previously explained regression betas (FOM-18);
- **Step 2 – Unlever Beta:** To break the betas into business and financial risk, the betas of the peers are unlevered, thus, reflecting only the systematic risk of the peer's industry;<sup>1</sup>

$$\beta_{Peer}^U = \frac{\beta_{Peer}^L}{1 + (1 - t) \cdot \frac{D}{E}} \quad (20)$$

With,  $\beta_{Peer}^U = \text{Unlevered Beta of Industry (Peer)}$        $t = \text{Corporate Tax Rate}$   
 $\beta_{Peer}^L = \text{Levered Beta of Industry (Peer)}$        $\frac{D}{E} = \text{Debt-to-Equity Value}$

#### *FOM-20: Unlevered Beta*

- **Step 3 – Relever Beta:** Finally, the average unlevered beta of the benchmark group is relevered according to the current market values of equity and debt, allowing depicting the financial leverage of the underlying company.<sup>1</sup>

<sup>1</sup> Under the assumption that the debt of the comparable company is high quality with the result that  $\beta_D = 0$  (Koller et al., 2015).

$$\beta_i^L = \beta_{Peer}^U \cdot (1 + (1 - t) \cdot \frac{D}{E}) \quad (21)$$

With,  $\beta_i^L$  = Relevered Beta of Company (i)  $t$  = Corporate Tax Rate  
 $\beta_{Peer}^U$  = Unlevered Beta of Industry (Peer)  $\frac{D}{E}$  = Debt-to-Equity Value

#### *FOM-21: Relevered Beta*

Although the first step of this technique is likewise exposed to the limitations discussed on using regressed raw betas, the bottom-up approach is seen to be more accurate due to a lower standard error. Even though the individual raw beta still contains a standard error, the error counterbalances by averaging the multiple regressions performed for all peers (Damodaran, 2002).

#### **2.2.3.2.3 Market Risk Premium (MRP)**

Following the CAPM, the market risk premium (MRP) is the expected excess return of the market portfolio, a portfolio that consist of all stocks in the market, and reflects the willingness of an investor to hold a market portfolio containing risky securities (Berk & DeMarzo, 2014).

There is no consensus amongst academics in relevant literature on the best technique to estimate the MRP. Therefore, practitioners often use historical market returns as a proxy to estimate future MRP. Nevertheless, the MRP varies due to different assumptions, such as the equity index representing the market returns, the chosen time period, the selected proxy for the risk-free return and the computation of mean returns (arithmetic or geometric mean) (Pinto et al., 2010). According to Berk and DeMarzo (2014), researchers and analysts assume an expected market return over a risk-free rate ranging between 4.0%- 6.0%. As the MRP has a significant impact on valuation, it is often closer examined in sensitivity analyses.

In line with the Institute of Public Auditors in Germany (IDW), KPMG recommends applying a MRP in a corridor of 5.5%-7.0%. KPMG (2018) states that until 2011/2012 the historical average MRP fluctuated between 5.0% and 5.2%. The financial and sovereign debt crises amplified risk aversion and let to an increase of the MRP after 2011/2012 (Castedello & Schöniger, 2018).

#### **2.2.3.2.4 Country Risk Premium (CRP)**

According to the country spread model, a country risk premium (CRP) should be added to the cost of equity to compensate the exposure towards emerging market risk or political, legal,

social or cultural risk associated with the country, where the company generates its cash flows (Pinto et al., 2010). The CRP represents an additional premium investors demand for investing in countries associated with substantial risk (Berk & DeMarzo, 2014). Damodaran shows three approaches to estimate the CRP: Sovereign bond default spreads, equity market volatility and a melded approach of both beforementioned (Damodaran, 2002). The easiest accessible method, however, is to derive the CRP by the rating, measuring the sovereign's default-risk, assigned to a country's debt. On a yearly basis, Damodaran publishes those premiums per country and recommends to add the CRP as follows (Damodaran, 2002):

$$k_E = r_f + \underbrace{\beta_i^L \cdot (E(r_M) - r_f)}_{\text{Market Risk Premium}} + \lambda_C \cdot CRP_C \quad (22)$$

Equity Risk Premium

With,  $k_E = \text{Cost of Equity}$

$r_f = \text{Risk-free Rate}$

$\lambda_C = \text{Country's (C) Revenue Share}$

$\beta_i^L = \text{Levered Beta of an Asset } i$

$r_M = \text{Market Return Rate}$

$CRP = \text{Country Risk Premium of } C$

#### FOM-22: Cost of Equity with CRP

Some practitioners add the CRP directly to the MRP before multiplying the sum with the beta. This results in increased cost of equity for high beta companies and vice versa (Damodaran, 2002). Contrary, not all academics are in favor of adding a CRP, arguing that country risk is diversifiable, rating agencies often lag markets or countries usually mature, which would lead to declining country risks over time.

#### 2.2.3.3 Estimating Cost of Debt

The cost of debt represents a company's current cost of borrowing funds. Equivalent to the equity premium, lenders expect a return including a premium for default risk. If the probability of default and the associated default spread of a company is increasing, lenders request a higher premium to compensate the rising risk incurred. This risk includes the company's failure of paying the intermediate interests or coupons as well as the final principal.

According to Koller, Goedhart, and Wessels (2015), the cost of debt is best calculated for companies with liquid long-term bonds outstanding by considering the current yield-to-maturity

(YTM). For companies with publicly traded debt, the YTM can be directly derived from the current prices of the bonds being impacted by ratings as proxy for default risk.

$$k_D (\text{pre-tax}) = r_f + \text{default spread} \quad (23)$$

With,  $k_D = \text{Cost of debt}$

$r_f = \text{Risk-free Rate}$

#### FOM-23: Cost of Debt

Alternatively, for companies with no bonds outstanding or infrequently traded debt, the cost of debt can be indirectly derived by a company's credit rating, representing the credit worthiness of an issuer. Thus, the company's default spread is obtained from comparable peers with equivalent rating. Thereby, a higher rating implies a lower spread (Damodaran, 2002).

In the absence of a credit rating, a synthetic rating can be generated as a proxy by taking a company's financial leverage into account. Exemplarily, the debt-to-EBITDA-ratio and the interest-coverage-ratio are often used as financial indicators to evaluate a company's financial ability to meet debt obligations (Pinto et al., 2010).

To account for the deductibility of interest cost, the after-tax cost of debt needs to be computed as follows:

$$k_D (\text{after tax}) = k_D (\text{pre tax}) \cdot (1 - t) \quad (24)$$

With,  $k_D = \text{Cost of debt}$

$t = \text{Corporate Tax Rate}$

#### FOM-24: After-tax Cost of Debt

### 2.2.3.4 Tax-Rate

For the cost of debt and forecasted FCF, the tax-rate plays a crucial role. There are two different tax-rates: The effective and the marginal (or corporate) tax-rate. The effective tax-rate can easily be computed from the published income statement of a company and reflects actual taxes due, divided by the pre-tax income.

$$t_{\text{effective}} = \frac{\text{Taxes Due}}{\text{Taxable Income}} \quad (25)$$

With,  $t_{\text{effective}} = \text{Effective Tax-Rate}$

#### FOM-25: Effective Tax-Rate

Alternatively, most practitioners and many academics prefer the marginal tax-rate, which is based on the statutory tax-rate of a country's jurisdiction. This federal corporate tax-rate reflects the taxes incurred on the last dollar of income (Damodaran, 2002).

Deviations of both tax-rates can occur due to differences in the reported income and taxable income, exemplarily due to depreciation, tax credits or deferred taxes. Using the marginal tax-rate is preferred by most academics as most tax credits are temporary and rarely perpetual and further eliminate dilution from nonrecurring items (Pinto et al., 2010).

Then again, Damodaran suggests converging the tax-rate from effective to marginal over time, reaching the marginal tax-rate to compute the terminal value (Damodaran, 2002). Contrary, however, one could argue that it disregards quasi-permanent or permanent differences, such as the non-deductibility of certain operating expenditure or tax-exempt earnings.

### **2.3 Relative Multiple Valuation Models**

The fundamental concept of relative valuation is to adduce comparable assets to value another similar asset by a multiple (Kumar, 2016). Despite a multitude of different multiples, the most widely spread ones are price multiples and enterprise value multiples. Both methods derive an asset's valuation from fundamental accounting values of the peers. Whereas, price multiples directly relate the ratio to the underlying share price, EV-multiples are obtained by comparing a peer's entire company value to accounting values (Pinto et al., 2010).

The simplicity of this technique bears both advantages and disadvantages, as it aggregates complex financial information into a single multiple. Additionally, this method heavily depends on the careful selection of a peer group. To diminish subjectivity, a propensity score can be applied by weighting the multiples by the comparability of fundamental financials (size, growth, profitability) (Koller et al., 2015).

The relative valuation model can be separated in the abstraction of multiples by traded companies (market-based valuation) or from historical transactions (transaction-based valuation). While transaction multiples might include an acquisition premium of taking control of an entity and are seldomly published, the application of market-multiples implies the accurate valuation of the peers and might neglect a general over/undervaluation in the market.

Because of above restraints, the relative valuation is often seen as a complement to intrinsic valuation approaches (Koller et al., 2015) and used for a robustness-test of the Terminal Value.

### 3 Company Analysis

Beiersdorf AG was incorporated in 1882 and is a global leader in the consumer and self-adhesives goods industry. Beiersdorf is headquartered in Hamburg, Germany, and employs about 19,000 people in more than 160 affiliates worldwide.

Beiersdorf has been publicly listed since 1928 and has been part of the major German index DAX since December 2008. The company is controlled by the family office maxingvest AG, which owns 51.01%. Beiersdorf's operations can be divided into two independently operating business segments, defined as *Consumer Business Segment* and *tesa Business Segment*.

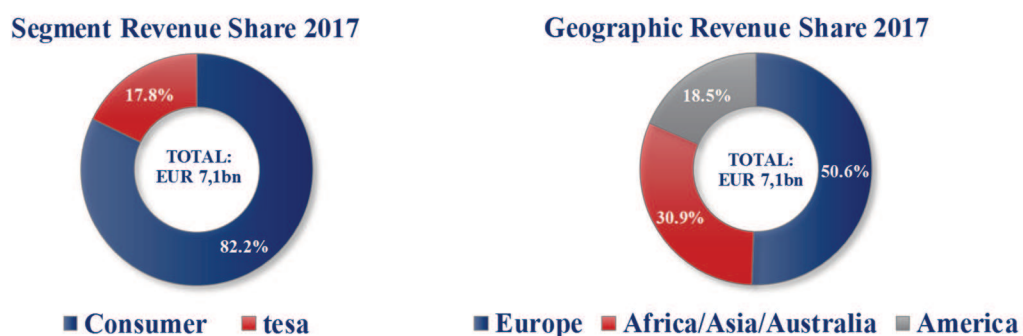


FIG-3: Revenue Share 2017

#### 3.1 Segmentation and Distribution Channels

The Consumer Business Segment encompasses the manufacturing of personal-care products with a broad portfolio of skin and personal care brands. Each brand is tailored to target different consumer needs, prices and geographical markets. The iconic core brand *Nivea* is designed to target the mass market, *Eucerin* and *Aquaphor* are aimed to be sold in pharmacies and in the dermo-cosmetics market, whereas the pricy brand *La Prairie* is targeting the selective and luxury cosmetics market. Additionally, Beiersdorf is globally positioned with the brands *Hansaplast* and *Elastoplast* in the segment of plasters and wound care. Other renowned brands comprise *Labello*, *Florena*, *8x4*, *Hidrofugal*, and *atrix*. *SLEK* and *Maestro*, both hair care brands, are especially designed for the Asian market.

The consumer business segment is subject to high pressure from its customers. Beiersdorf sells its products through five distribution channels: Food and general goods retailers, drugstores, pharmacies, eCommerce and a handful of own stores. Food and general goods retailers can be separated into high-quality retailers and discounters. Whereas, the former has been an important customer since decades, discounters such as German “Aldi” or “Lidl” have only started to offer

branded products in 2015, including products from Beiersdorf. In Europe, especially in Germany, drugstores have a unique position as only four major players share the entire market: *Dirk Rossmann GmbH* with 3,790 drugstores in Europe (2017), *dm-drogerie markt GmbH & Co. KG* with 3,566 drugstores in Europe (2017/2018), *Müller Holding Ltd. & Co. KG* with 847 stores in Europe (08/2018) and smaller *BUDNI Handels- und Service GmbH & Co. KG* with 185 drugstores in Germany (2018). Furthermore, owner-operated pharmacies play a key role for the brands Eucerin and Hansaplast as most countries in EU prohibit pharmacy chains. More than 20,000 mostly independent pharmacies are operated in Germany. In Europe, the number totals to 97,000 pharmacies. Although there are only 64,000 pharmacies in the USA., they are often larger and integrated into retailer chains (ABDA, 2018). Lately, high growth is generated through online distribution. Thus, Beiersdorf does not only operate its own webshop but also sells its products via eCommerce retailers such as Amazon, Walmart or Alibaba. Beiersdorf's few offline stores are diminishing and rather serve as flagship-stores to enhance brand awareness.



FIG-4: Beiersdorf's Brand Portfolio

The tesa Business Segment was separated from the Consumer Business Segment in 2001 and operates independently as tesa SE, a 100%-owned subsidiary of Beiersdorf AG. The tesa brand offers self-adhesive products and system solutions for the industry, craft businesses, and consumers. Beiersdorf clusters its customers by distribution channel into *direct industries* and *trade markets*.

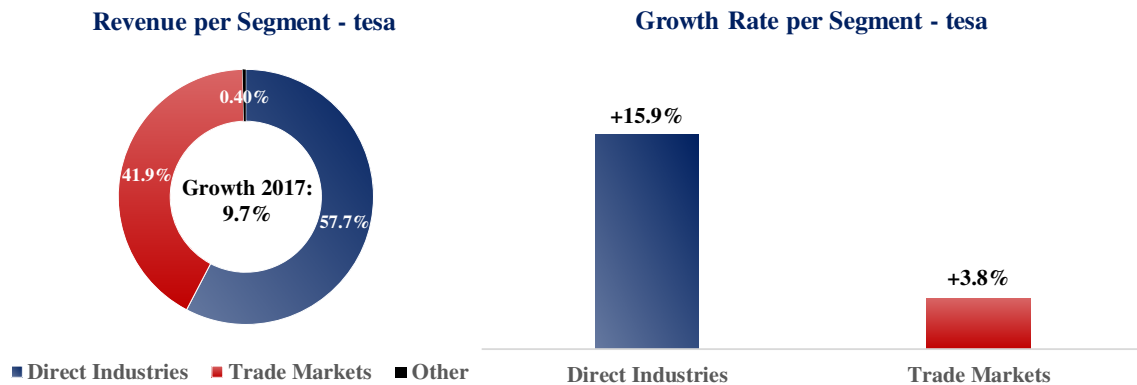


FIG-5: Revenue Split (tesa)

For the customers in the direct industries, tesa sells system solutions mainly to improve production processes, optimize packaging systems or facilitate construction-related applications. Thereby, tesa sells its solution directly to the automotive, electronics, construction, and printing industry. Especially, robust and heat-resistant adhesives for engines or batteries used in electric powered vehicles play a substantial role in past and current growth.

For the trade markets segment tesa sells more than 300 adhesive products to intermediate trading partners, who resell tesa's products through diverse distribution channels (online, specialized construction markets and tradesmen, office outfitters, etc.). Exemplarily, products include innovative solutions for applications in repair, renovation, packaging, energy saving or offices. The segment directs industries (57.7% of revenue) gained 15.9% in 2017, whereas the trade markets (41.9%) grew by 3.8%.

To analyze the nature of competition within both segments, Porter's 5-forces analysis was conducted and can be found in Appendix-2.

### 3.2 Shareholder Structure and Share Price Development

Beiersdorf went public in 1928 and joined the DAX in 2008, Germany's major stock market index consisting of the 30 largest companies that are trading on the Frankfurt Stock Exchange in terms of order book volume and market capitalization.

After a takeover battle with American competitor Procter&Gamble in 2003, maxingvest increased its share from 30.3% to 49.9% to strengthen local industry in Hamburg (Appendix-3). Nowadays, maxingvest holds the majority (51.01%) of the 252 million shares outstanding.

9.99% are held by Beiersdorf and are recognized in the retained earnings. Lastly, 39.00% are attributed to the free float:



FIG-6: Shareholder Structure

Although only 39.00% are attributed to free float, FIG-7 reveals constant trading volume and a daily traded volume of 393,157 shares in past 52 weeks, corresponding to 0.40% of public shares. By annualizing the daily volume, a yearly turnover of 100.81% of all shares attributed to the free float is reached ( $0.40\% \cdot 252$  trading days per year), leading to the conclusion that the shares are not thinly traded.

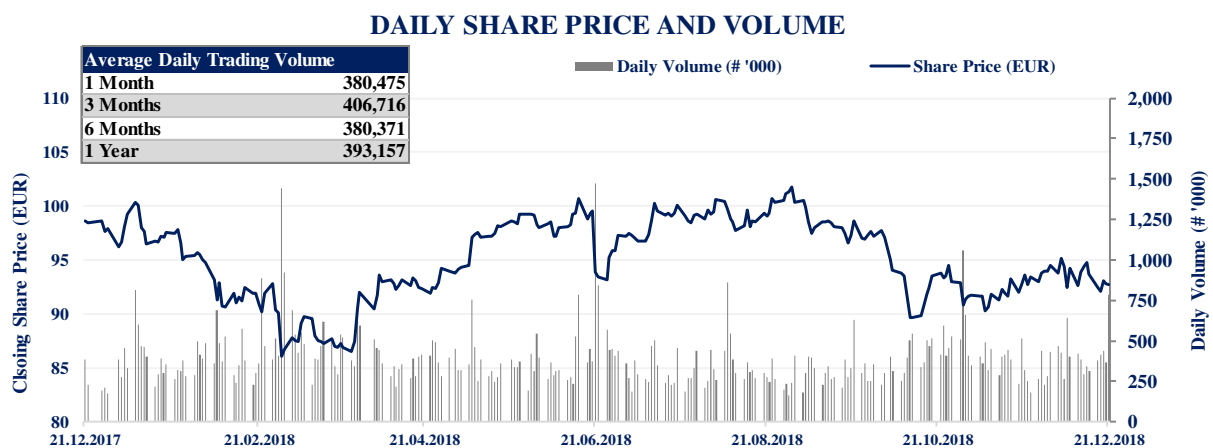


FIG-7: Share Price Development

To strengthen the informative power of the share price development, a comparison was made with major indices. FIG-8 depicts the indexed development of Beiersdorf shares in contrast to DAX30 and EuroStoxx50.

In both time horizons, a time-scale of five years and a short perspective of the past 52 weeks, Beiersdorf's development follows the overall trends of DAX30 and EuroStoxx50, however, outperformed both indices.

### INDEXED (WEEKLY-) SHARE PRICE COMPARISON (5 YEARS)

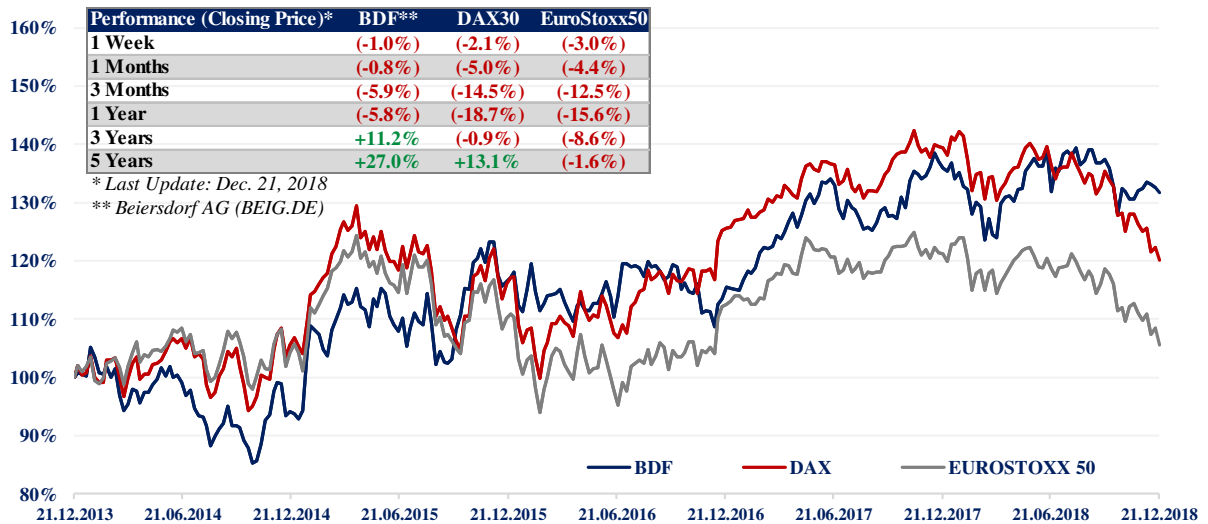


FIG-8: Indexed Share Price Comparison (5 Years)

### INDEXED (WEEKLY-) SHARE PRICE COMPARISON (1 YEAR)

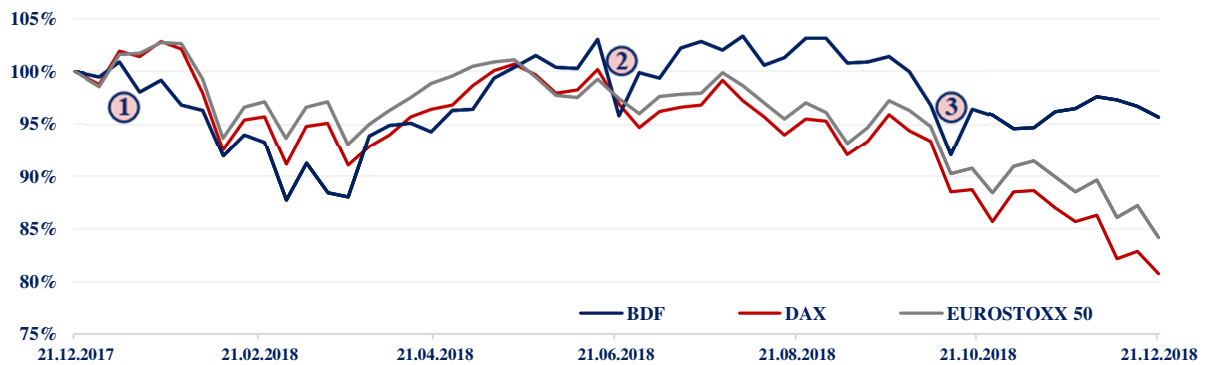


FIG-9: Indexed Share Price Comparison (1 Year)

Three major events were highlighted: On January 8<sup>th</sup>, 2018 (①), Beiersdorf published its preliminary business figures 2017, disappointing some investors. Though increased organic growth (+5.7%), earnings decreased (-5.2%). On June 21<sup>st</sup>, 2018 (②), Beiersdorf disclosed the information that the long-standing and thriving CEO, Stefan Heidenreich, will resign from the executive board after 7 years, vacating his post at the end of 2018 and leaving before his contract expires. On October 15<sup>th</sup>, 2018 (③), Beiersdorf's supervisory board appointed Stefan De

Loecker as new CEO, effective as of January 1<sup>st</sup>, 2019. His appointment represents no disruptive transformation as he has been member of the executive board since 2014.

To compare the risk exposure, the volatility of Beiersdorf's share price development was compared to the volatility of the DAX. FIG-10 shows similar volatility over the past 5 years. The standard deviation of Beiersdorf's daily stock return and DAX30 are 1.0% respectively for the past 52 weeks.

#### DAILY RETURNS BDF AND DAX50 (5 YEARS)

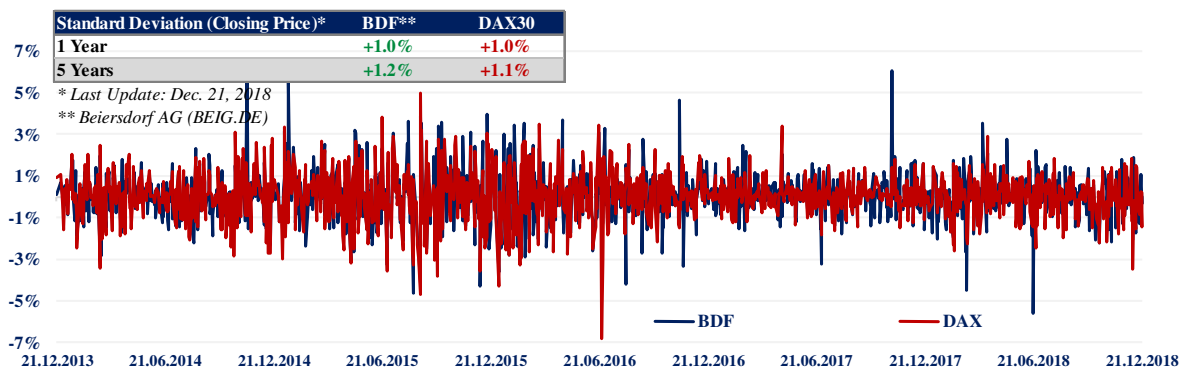


FIG-10: Beiersdorf's and DAX30's Daily Returns (5 Years)

### 3.3 maxingvest AG

The maxingvest AG is a German family office, which is controlling not only more than 50% of the voting rights of Beiersdorf, but also a 100% stake in Tchibo GmbH and other asset management subsidiaries. Tchibo is the world's fourth-largest coffee producer and with around 1,000 branches in Europe, over 16,000 employees and EUR 3.2 billion revenues in 2017, one of Germany's largest consumer goods and retail companies.

It is crucial to mention that although Beiersdorf operates officially independently, maxingvest has a strong impact on its subsidiaries. maxingvest not only monitors and supports its holdings, but also plays a key role in the fundamental strategic alignment, including acquisitions, dividend payout or nomination of management positions. This influence is manifested in Beiersdorf's advisory board being staffed with maxingvest's members of the management board.

It is well known that this family office, which is fully owned by the Herz-family, is following a sustainable business model and conservative long-term strategy. This risk-averse policy is reflected in Beiersdorf's high net liquidity and Beiersdorf's ownership of 9.99% of its own shares.

maxingvest's name refers to the founding couple of Tchibo GmbH, Max and Ingeburg Herz. The Herz family is listed among the wealthiest German families and has initially accumulated a fortune by trading and selling coffee. After the founder Max Herz died in 1965, the shares were distributed among his wife and their five children.

Nowadays, Michael Herz (born 1943) is the principal representative of the family, taking operating lead as member of the management board of maxingvest and member of the supervisory board of Beiersdorf. Michael Herz and his brother Wolfgang Herz (born 1950) have already passed on parts of their company shares to their children due to current favorable inheritance tax laws in Germany. In addition to the two family-lines, the remaining 20% are held by the non-profit Max and Ingeburg-Herz Foundation, representing the remaining share of the parents and Joachim Herz, who died in an accident in 2008.

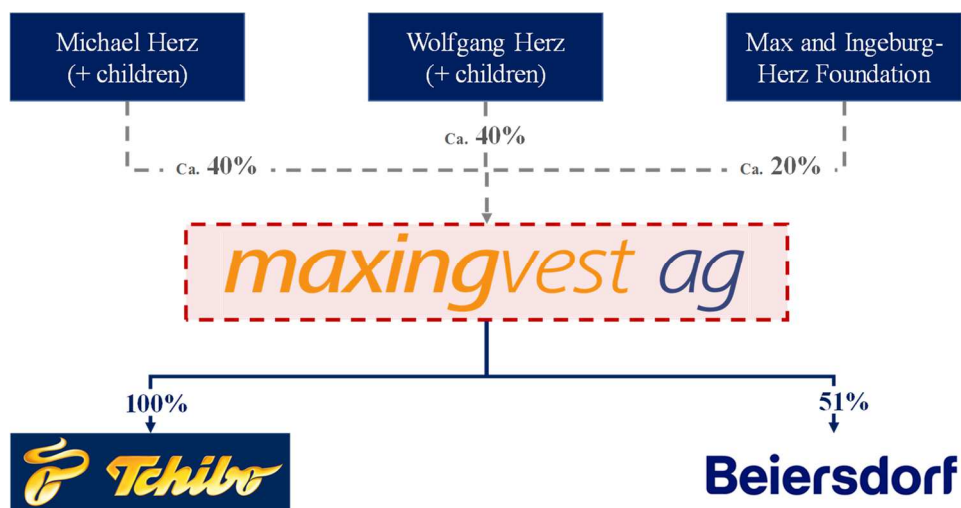
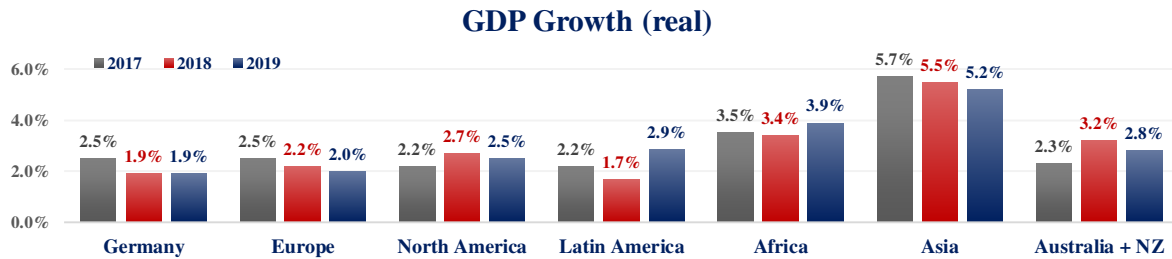


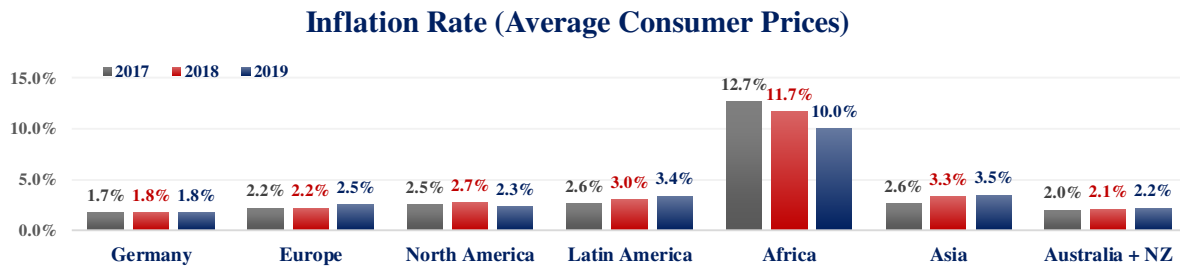
FIG-11: maxingvest Corporate Structure

### 3.4 Economic Development

Like most FMCG companies, Beiersdorf's growth is subject to the development of GDP and population growth. A special focus lies on Germany and Europe, where more than 50% of revenues are generated. Whereas, inflation-adjusted real GDP growth in industrialized countries (Europe and North America) is moderate around 2-3% and expected to decline, the global upswing comes from emerging countries in Latin America, especially in Central America, and Africa. Largely due to China, Asia continues to be the main economic driver, however, real GDP growth is expected to decline, partly because of increasing inflation.

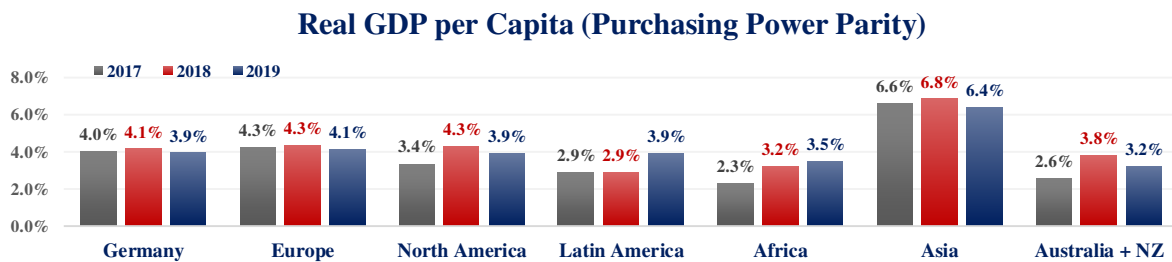


*FIG-12: GDP Growth (2017-2019)*



*FIG-13: Inflation Rate (2017-2019)*

To connect GDP growth to population growth, the real GDP per capita was closer examined. The purchasing power in Europe and North America starts off not only very high but growth also remains stable around 4.0%. While the overall GDP per capita in emerging countries is low, growth starts to accelerate in 2019. Though high population growth in Asia, the purchasing power per capita increases with a fast pace.



*FIG-14: GDP per Capita (2017-2019)*

### 3.5 Comparable Company Analysis

To determine a suitable peer group, a long list of all publicly traded competitors in the same industries (consumer and adhesives) with similar global revenue breakdown was created. As most companies, which are manufacturing personal care and beauty products, are highly diversified, all players with personal care products in their portfolio were included. Thus, assuming a similar risk exposure, the peer group also includes FMCG-companies like Nestle, Johnson&Johnson or Danone.

Next, players with different size, profitability and growth characteristics were excluded. Thereby, size was represented by expected revenues in 2018, profitability by the average EBITDA-margin between 2018-2020 and growth by sales CAGR between 2018-2020. Thus, a forward-looking approach was implied, extracting forecasted data from Thomson Reuter Eikon (19/12/2018). To compare those characteristics with Beiersdorf, the peers were contrasted to the financials of Beiersdorf's respective segments, consumer and tesa.

FIG-15 to FIG-17 contain all competitors in the long list, highlighting excluded players and underlying characteristics. In both segments, Beiersdorf generates lower revenue's than most of its peers. Additionally, Beiersdorf has a lower EBITDA-margin in the consumer segments (17.1%) than its three major peers P&G (26.2%), L'Oréal (22.9%) and Unilever (21.8%).

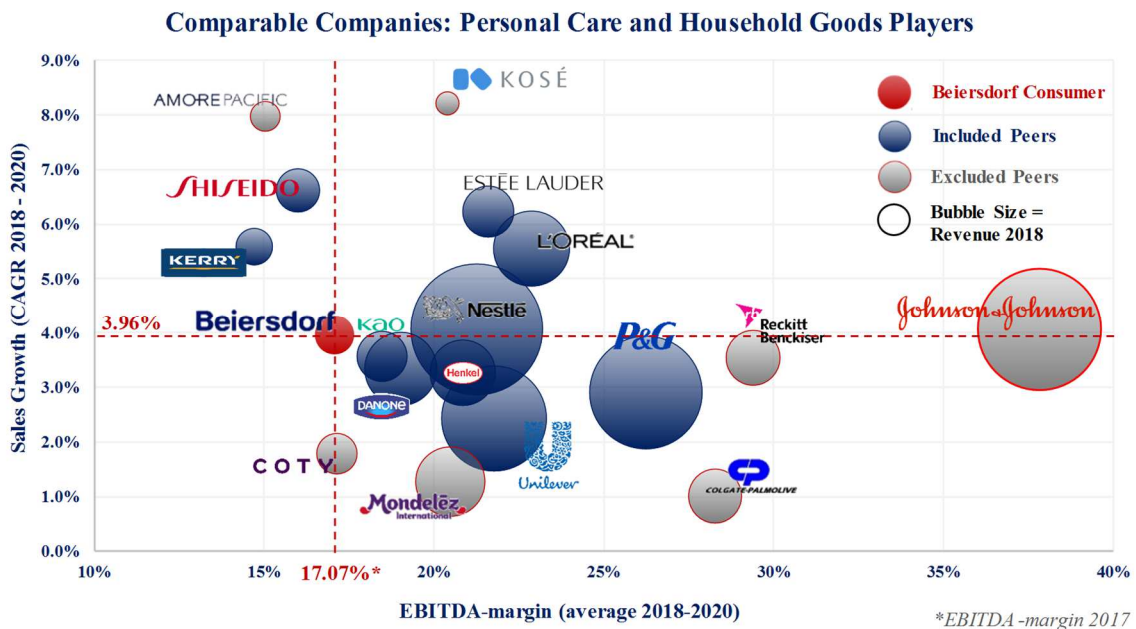


FIG-15: Consumer Peer Group

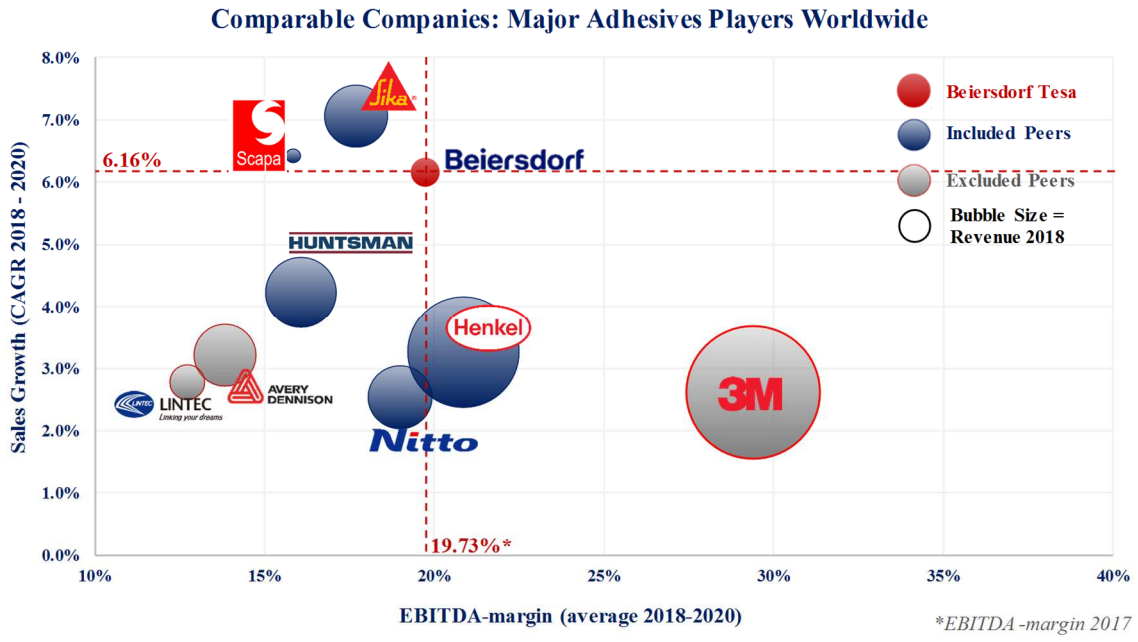


FIG-16: tesa Peer Group

| #  | Company           | Excluded<br>(x = Yes) | Reason for Exclusion | Ticker    | Country HQ     | Primary Industry      | Free Float<br>(in %) | Sales 2018<br>(in EURm) | Market Cap<br>(in EURm) | EV 2018<br>(in EURm) | Total Debt<br>(in EURm) | Sales Growth CAGR |               | EBITDA-margin |               |
|--|-------------------|-----------------------|----------------------|-----------|----------------|-----------------------|----------------------|-------------------------|-------------------------|----------------------|-------------------------|-------------------|---------------|---------------|---------------|
|  |                   |                       |                      |           |                |                       |                      |                         |                         |                      |                         | 2015-2017         | 2018E - 2020E | 2015-2017     | 2018E - 2020E |
|  | Beiersdorf AG     |                       |                      | BEIG.DE   | Germany        | Personal Products     | 43.3%                | 7,222                   | 22,958                  | 17,692               | 65                      | 2.7%              | 4.4%          | 17.2%         | 18.2%         |
| <i>Comparable Companies: Personal Care and Household Goods Players</i> |                   |                       |                      |           |                |                       |                      |                         |                         |                      |                         |                   |               |               |               |
| 1  | Johnson&Johnson   | x                     | EBITDA-margin        | JNJ       | United States  | Pharmaceuticals       | 100%                 | 70,921                  | 301,780                 | 329,813              | 28,827                  | -0.6%             | 4.1%          | 34.2%         | 37.8%         |
| 2  | Nestle SA         |                       |                      | NESN.S    | Switzerland    | Food Products         | 100%                 | 81,180                  | 216,440                 | 232,560              | 25,477                  | -3.0%             | 4.1%          | 19.6%         | 21.3%         |
| 3  | Procter & Gamble  |                       |                      | PG        | United States  | Household Products    | 100%                 | 58,766                  | 199,679                 | 226,024              | 26,779                  | -1.4%             | 2.9%          | 26.7%         | 26.2%         |
| 4  | Unilever NV       |                       |                      | Unc.AS    | Netherlands    | Personal Products     | 100%                 | 51,083                  | 134,262                 | 155,976              | 23,832                  | 0.4%              | 2.4%          | 17.8%         | 21.8%         |
| 5  | L'Oreal SA        |                       |                      | OREP.PA   | France         | Personal Products     | 42%                  | 26,774                  | 112,417                 | 103,179              | 1,174                   | 3.5%              | 5.6%          | 22.2%         | 22.9%         |
| 6  | Mondelez Int      | x                     | Revenue CAGR         | MDLZO     | United States  | Food Products         | 100%                 | 22,808                  | 50,743                  | 69,672               | 14,715                  | -11.1%            | 1.3%          | 19.0%         | 20.5%         |
| 7  | Reckitt Benckiser | x                     | EBITDA-margin        | RB.L      | United Kingdom | Household Products    | 96%                  | 13,980                  | 47,320                  | 60,822               | 14,486                  | 3.8%              | 3.5%          | 29.4%         | 29.4%         |
| 8  | Colgate-Palmolive | x                     | Revenue CAGR         | CL        | United States  | Household Products    | 100%                 | 13,663                  | 45,011                  | 49,863               | 5,483                   | -6.6%             | 1.0%          | 28.4%         | 28.3%         |
| 9  | Danone SA         |                       |                      | DANO.PA   | France         | Food Products         | 99%                  | 24,700                  | 42,017                  | 52,632               | 18,751                  | 4.9%              | 3.3%          | 17.0%         | 19.0%         |
| 10   | Estee Lauder Inc  |                       |                      | EL        | United States  | Personal Products     | 99%                  | 12,610                  | 41,161                  | 43,768               | 3,033                   | 7.5%              | 6.2%          | 20.0%         | 21.6%         |
| 11   | Henkel AG         |                       |                      | HNKG_p.DE | Germany        | Household Products    | 100%                 | 20,035                  | 39,250                  | 42,457               | 4,344                   | 5.2%              | 3.3%          | 19.8%         | 20.9%         |
| 12   | Kao Corp          |                       |                      | 4452.T    | Japan          | Personal Products     | 99%                  | 11,835                  | 31,602                  | 29,255               | 892                     | -1.2%             | 3.6%          | 16.7%         | 18.5%         |
| 13   | Shiseido Co Ltd   |                       |                      | 4911.T    | Japan          | Personal Products     | 95%                  | 8,739                   | 21,863                  | 24,139               | 1,040                   | 12.8%             | 6.6%          | 10.7%         | 16.0%         |
| 14   | Amorepacific      | x                     | Revenue CAGR         | 090430.KS | South Korea    | Personal Products     | 52%                  | 4,161                   | 10,444                  | 8,350                | 101                     | 3.5%              | 8.0%          | 11.3%         | 15.0%         |
| 15   | Kerry Group PLC   |                       |                      | KYGa.l    | Ireland        | Food Products         | 86%                  | 6,567                   | 15,206                  | 16,714               | 1,742                   | 2.5%              | 5.6%          | 14.1%         | 14.7%         |
| 16   | Kose Corp         | x                     | Revenue CAGR         | 4922.T    | Japan          | Personal Products     | 52%                  | 2,604                   | 8,294                   | 7,124                | 10                      | 10.4%             | 8.2%          | 17.5%         | 20.4%         |
| 17   | Coty Inc          | x                     | Revenue CAGR         | COTY.K    | United States  | Personal Products     | 59%                  | 7,752                   | 4,296                   | 11,443               | 6,440                   | 43.3%             | 1.8%          | 19.2%         | 17.1%         |
| <b>Total</b>   |                   |                       |                      |           |                |                       |                      |                         |                         |                      |                         |                   |               |               |               |
|  | min               |                       |                      |           |                |                       |                      | 2,604                   | 4,296                   | 7,124                | 10                      | -11.1%            | 1.0%          | 10.7%         | 14.7%         |
|  | max               |                       |                      |           |                |                       |                      | 81,180                  | 301,780                 | 329,813              | 28,827                  | 43.3%             | 8.2%          | 34.2%         | 37.8%         |
|  | mean              |                       |                      |           |                |                       |                      | 25,775                  | 77,752                  | 86,105               | 10,419                  | 4.4%              | 4.2%          | 20.2%         | 21.8%         |
|  | median            |                       |                      |           |                |                       |                      | 13,980                  | 42,017                  | 49,863               | 5,483                   | 3.5%              | 3.6%          | 19.2%         | 20.9%         |
| <i>Comparable Companies: Major Adhesives Players Worldwide</i>         |                   |                       |                      |           |                |                       |                      |                         |                         |                      |                         |                   |               |               |               |
| 1  | 3M Co             | x                     | Size                 | MMM       | United States  | Ind. Conglomerates    | 100%                 | 28,809                  | 96,739                  | 109,481              | 11,678                  | -2.7%             | 2.6%          | 28.2%         | 29.4%         |
| 2  | Henkel AG         |                       |                      | HNKG_p.DE | Germany        | Household Products    | 100%                 | 20,035                  | 39,250                  | 42,457               | 4,344                   | 5.2%              | 3.3%          | 19.8%         | 20.9%         |
| 3  | Sika AG           |                       |                      | SIKA.S    | Switzerland    | Packaging & Chemicals | 88%                  | 6,281                   | 15,643                  | 18,029               | 618                     | 2.9%              | 7.1%          | 16.4%         | 17.7%         |
| 4  | Nitto Denko       |                       |                      | 6988.T    | Japan          | Packaging & Chemicals | 99%                  | 6,569                   | 7,638                   | 5,126                | 40                      | 2.8%              | 2.5%          | 19.1%         | 19.0%         |
| 5  | Avery Dennison    | x                     | EBITDA-margin        | AVY       | United States  | Packaging             | 99%                  | 6,313                   | 6,792                   | 8,458                | 1,319                   | 0.2%              | 3.2%          | 13.0%         | 13.8%         |
| 6  | Huntsman          |                       |                      | HUN       | United States  | Packaging & Chemicals | 85%                  | 8,114                   | 4,008                   | 6,728                | 1,916                   | -3.6%             | 4.2%          | 14.5%         | 16.1%         |
| 7  | Lintec Corp       | x                     | EBITDA-margin        | 7966.T    | Japan          | Packaging & Chemicals | 62%                  | 1,985                   | 1,436                   | 1,346                | 151                     | 7.6%              | 2.8%          | 12.5%         | 12.7%         |
| 8  | Scapa Group       |                       |                      | SCPA.L    | United Kingdom | Packaging & Chemicals | 93%                  | 346                     | 527                     | 646                  | 26                      | 3.2%              | 6.4%          | 12.2%         | 15.8%         |
| <b>Total</b>   |                   |                       |                      |           |                |                       |                      |                         |                         |                      |                         |                   |               |               |               |
|  | min               |                       |                      |           |                |                       |                      | 346                     | 527                     | 646                  | 26                      | -3.6%             | 2.5%          | 12.2%         | 12.7%         |
|  | max               |                       |                      |           |                |                       |                      | 28,809                  | 96,739                  | 109,481              | 11,678                  | 7.6%              | 7.1%          | 28.2%         | 29.4%         |
|  | mean              |                       |                      |           |                |                       |                      | 9,807                   | 21,504                  | 24,034               | 2,511                   | 1.9%              | 4.0%          | 17.0%         | 18.2%         |
|  | median            |                       |                      |           |                |                       |                      | 6,441                   | 7,215                   | 7,593                | 968                     | 2.9%              | 3.2%          | 15.4%         | 16.9%         |

FIG-17: Comparable Company Analysis (CCA)

## 4 Company Valuation

### 4.1 Discounted Cash Flow (DCF) Valuation

The upcoming valuation is based on the procedure of firstly analyzing past performance, being followed by the explicit forecast of respective relevant items for a thorough valuation. Lastly, results are consolidated to conduct a DCF-valuation. To allow an in-debt overview, the considered length of the past performance equals the explicit period.

#### 4.1.1 Explicit Period

The length of the explicit period is not commonly predetermined and should reflect the period until Beiersdorf reaches steady-state. Beiersdorf penetrates both mature markets and emerging markets. As mature markets are already divided among a few players, Beiersdorf's growth depends on the development of overall market demand and increase in market share. Latter is exemplarily reached through novel innovative products, price policy or increased marketing development. Due to the long-standing experience of Beiersdorf, the number of new product launches, price targets and marketing expenses have prevailed, leading to the conclusion that Beiersdorf has reached its steady-state already in mature markets. Nevertheless, Beiersdorf future growth is funded from increased sales in development countries, leading to the conclusion to set the medium-term explicit period of six years. This period from 2018 to 2023 is underlined by the fact that D&A, CAPEX and NWC are leveling to constant ratios to sales.

#### 4.1.2 Sales Development

##### 4.1.2.1 Historical Analysis

In 2017, Beiersdorf continued the growth trend of recent years, reaching a historical revenue record of EUR 7,056 million, which represents nominal growth of +4.5%. This positive growth path continued in the first three quarters of 2018, reaching nominal growth of +2.3%. When analyzing the historic development per segment, the revenue in both segments, consumer and tesa, has been increasing continuously since 2011. Whereas the revenue of the group grew by a CAGR of +2.6% between 2009 and 2017, the growth of the tesa segment exceeded with a CAGR of +6.9% the CAGR of the consumer segment (+1.8%).

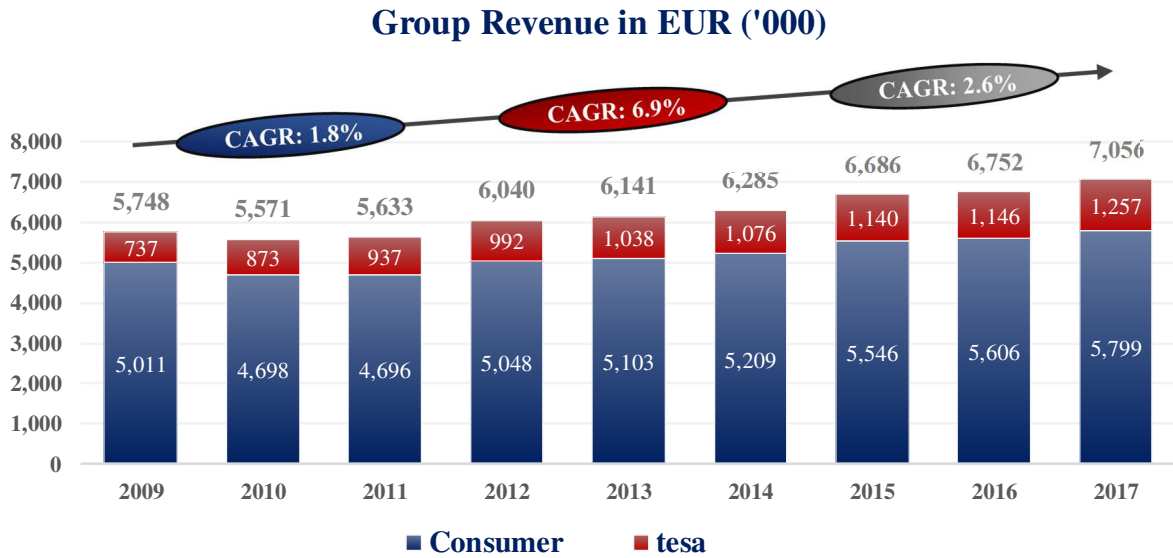


FIG-18: Revenue per Segment (2009-2017)

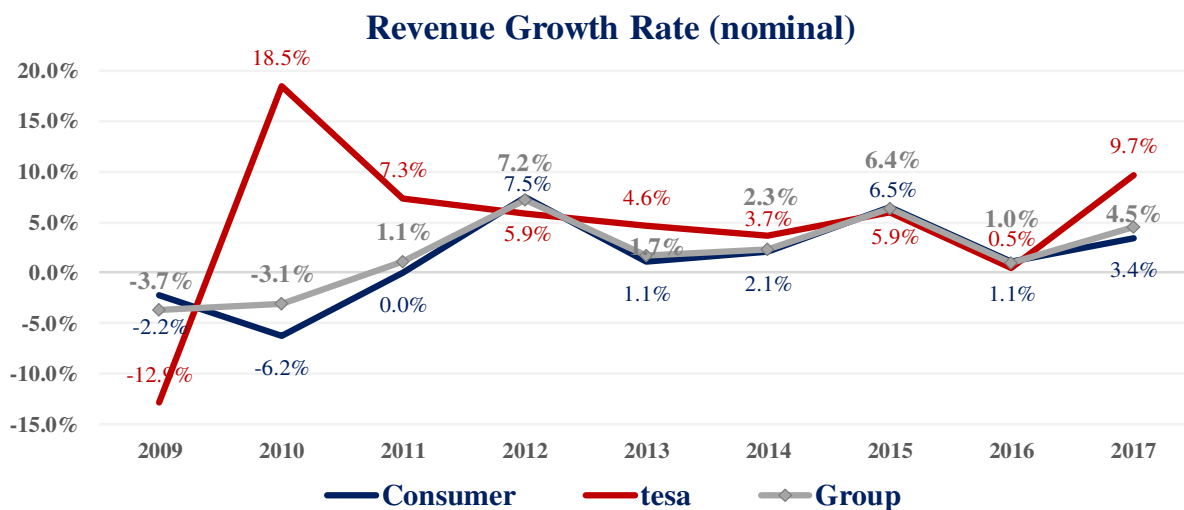
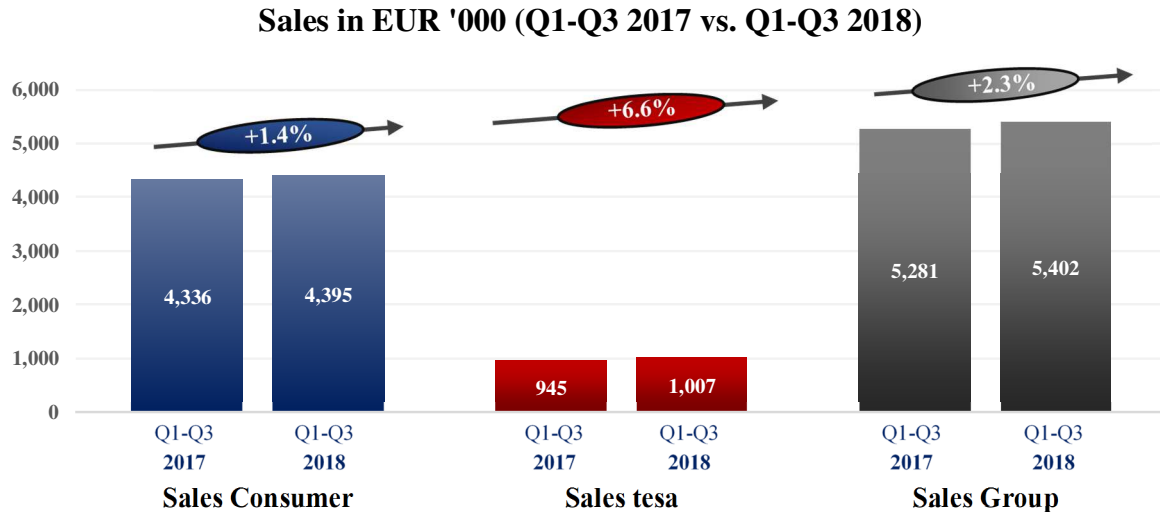


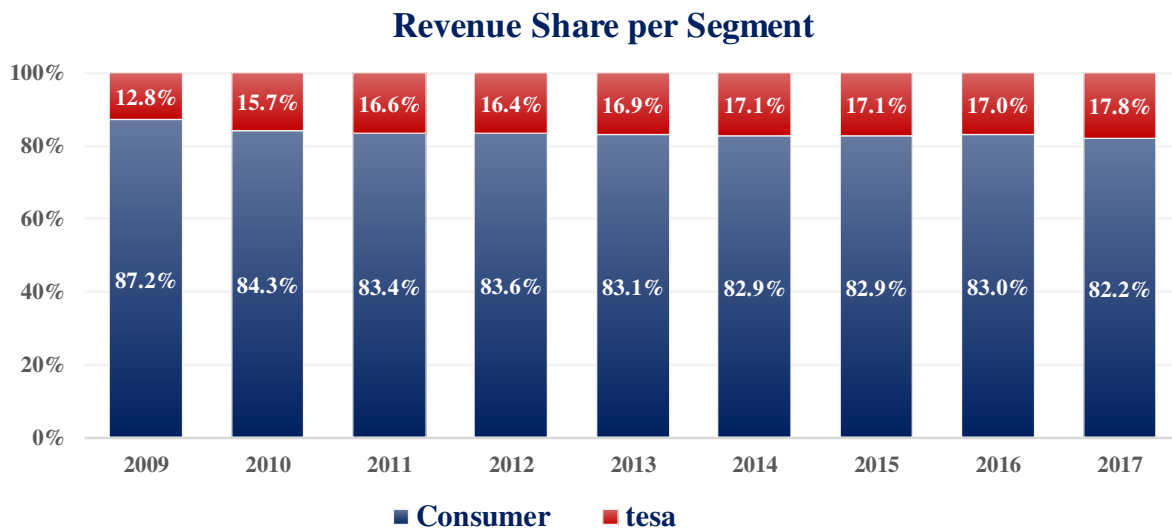
FIG-19: Revenue Growth per Segment (2009-2017)

When looking at the preliminary result for 2018, the consumer segment grew by 1.4% in the first three quarters though organic growth even reached 5.6%, being mainly negatively impacted by currency translation losses in Latin America. tesa, on the other hand, increased revenues by 6.6% (FIG-20). For the full-year 2018, Beiersdorf predicts consolidated sales growth of around 5%.



*FIG-20: Revenue Development (Q1-Q3 2018)*

Although the revenue share of the consumer segment is larger (82.2% of group revenue), the previously mentioned differences in growth pace lead to an increasing revenue share of the tesa segment (17.8%).



*FIG-21: Revenue Share per Segment (2009-2017)*

Beiersdorf provides detailed information about geographical distribution of the revenue in the consumer segment. Thereby, the regions in which Beiersdorf operates are divided into Europe (Western and Eastern), Americas (North and South) and Africa/Asia/Australia (A/A/A). In 2017, all regions contributed to the positive growth path. 49.3% of revenue in the consumer segment was generated in Europe with sales growing moderately by +2.2% compared to 2016. In America (19.3% of revenue) the consumer segment grew by +4.0%, being propelled by high

growth in Latin America (+5.5%). The A/A/A-region moved up by 9.2% in 2017, increasing the share in the consumer segment to 31.4%.

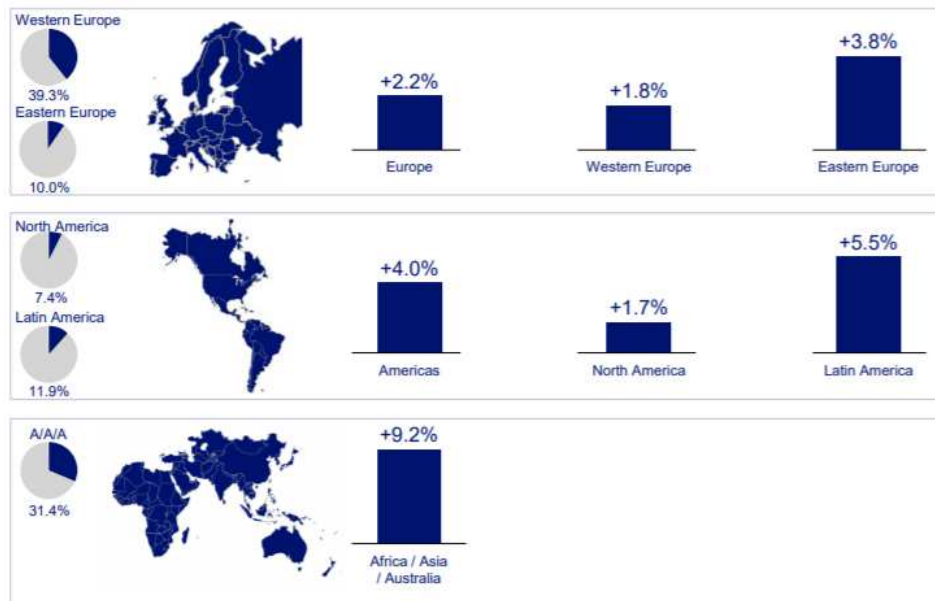


FIG-22: Geographical Distribution of Consumer Revenue 2017 (Annual Report, 2018)

#### 4.1.2.2 Forecast

The revenue was forecasted for the consumer and tesa segment separately, whereby the growth of the consumer segment was further split by region. For the consumer segment, revenues were forecasted according to the geographical differentiation of Beiersdorf into Europe, Americas, and Africa/Asia/Australia.

A direct forecast based on quantity and price development was not feasible due to the variety of brands, products and broad price ranges as detailed information are not publicly disclosed. Therefore, to gain the future growth of the consumer segment, the revenues were derived from the development of the beauty and personal care market in respect to past market share. The market data was obtained per region from Euromonitor International (2017). Thereby, only product groups that Beiersdorf provides were taken into consideration, including *Skin Care*, *Hair Care*, *Bath and Shower*, *Men's Grooming*, *Deodorants*, *Baby and Child Specific Products*, *Sun Care* and, *Depilatories*. Thus, *Color Cosmetics*, *Fragrances* and *Oral Care* were excluded. A detailed development of each category can be found in Appendix-9.

The market in Europe for the selected categories of the beauty and personnel care market increased with a CAGR of +4.4% between 2012 and 2017 and is expected to increase with a CAGR of +3.4% between 2018 and 2023. From 2012 to 2017, the market share decreased per

annum on average slightly by -0.21p.p. This continuous decrease is likely to hold in the future and incorporated by a so called “*adjustment factor*”. Thus, this factor represents the expected decrease in the near future, however, this decrease will not hold forever, which is factored in by halving yearly. Consequently, the forecasted market share is reduced by the recent diminution of -0.21p.p., which decreases by 50% yearly. Subsequently, the decrease in market share for 2019 will amount to -0.105p.p., for 2020 -0.052p.p. until a steady market share of 4.20% is reached in 2023.

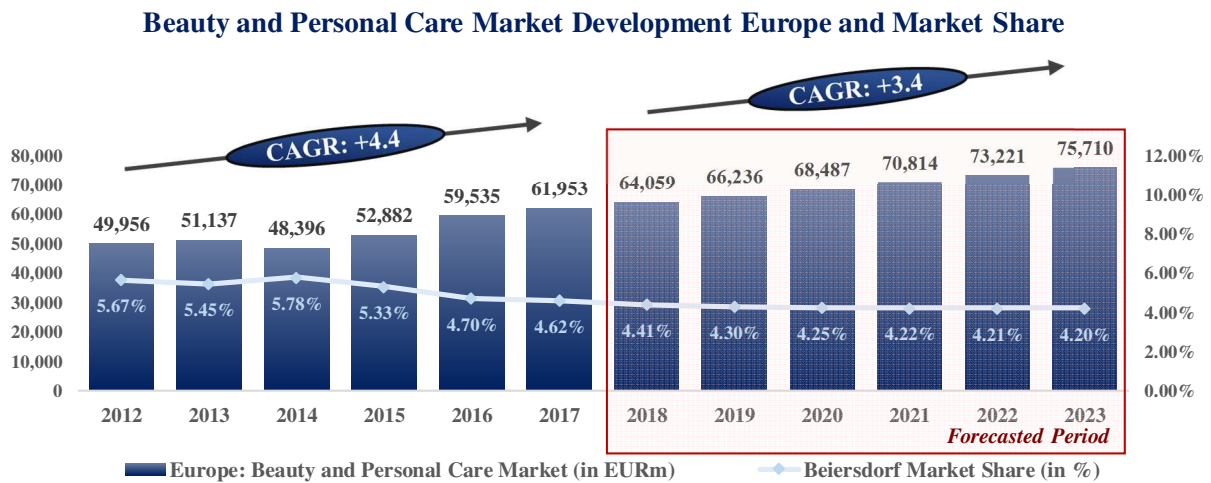


FIG-23: Personal Care Market Development Europe (2012-2023)

From the market development and the forecasted market share, the revenue of Beiersdorf for the consumer segment in Europe can be derived, leading to a moderate CAGR of +2.4% for the explicit period.

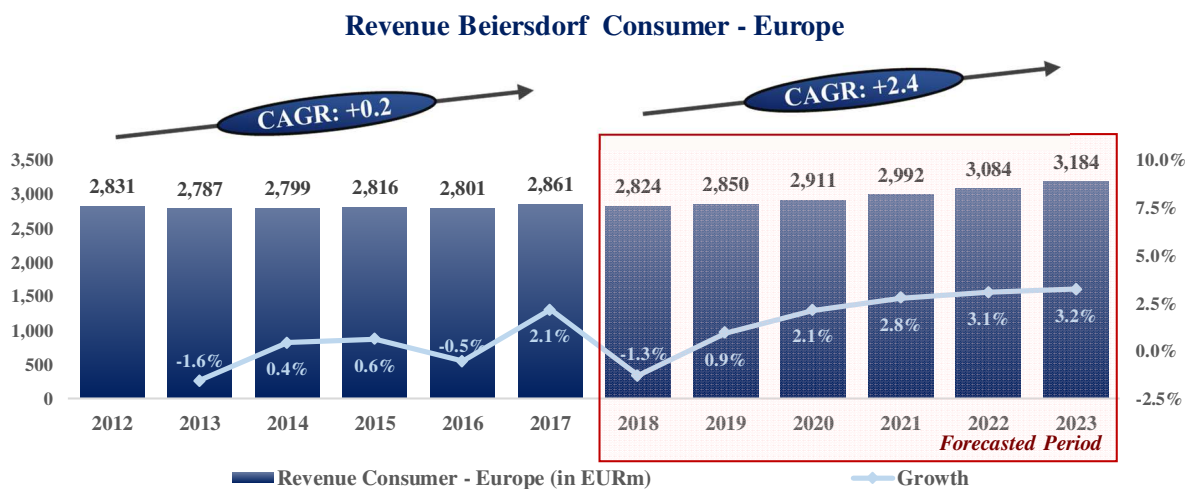


FIG-24: Consumer Revenue in Europe (2012-2023)

Same approach has been applied for Americas and Africa/Asia/Australia (Appendices 4-7).

For the development of the tesa segment, the global market of self-adhesives from Euromonitor International (2017) were taken into consideration. Analogous to previous computation, the market share of Beiersdorf was derived. Between 2012-2017, the market share increased slightly by accumulated +0.29p.p. (FIG-25). The average yearly gain in market share of +0.06p.p. between 2012 and 2017 was again factored in as “*adjustment factor*”. Thus, market share increases by +0.06p.p. in 2018, +0.03p.p. in 2019, until it reaches a steady level of 2.05% by 2023.

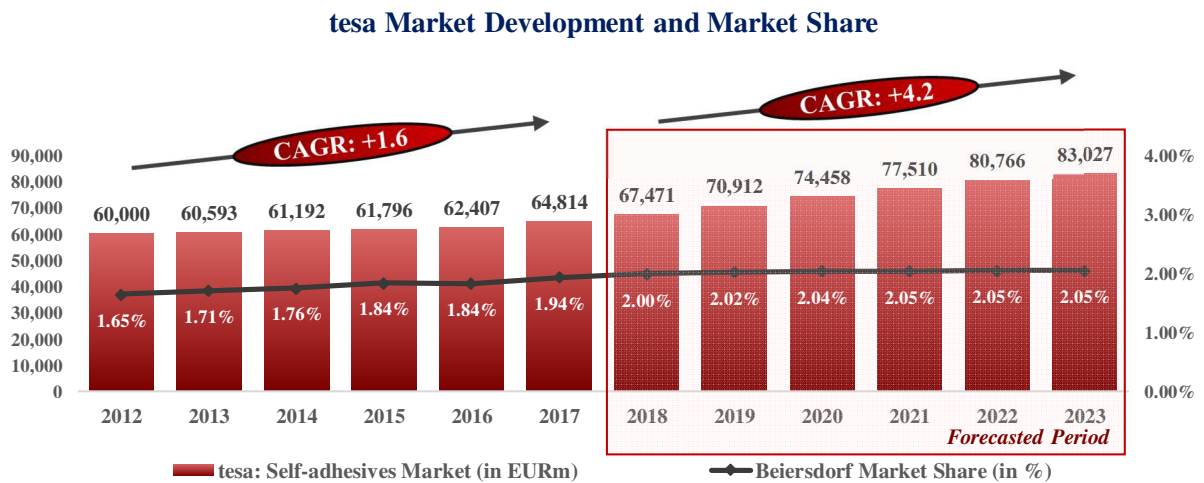


FIG-25: Self-adhesives Market Development (2012-2023)

Due to the increase of market share, the tesa segment is expected to grow slightly above the market with a CAGR of +4.8% between 2018 and 2023. However, the revenue growth will decrease after 2018 simultaneously to slower growth pace of the self-adhesives market.

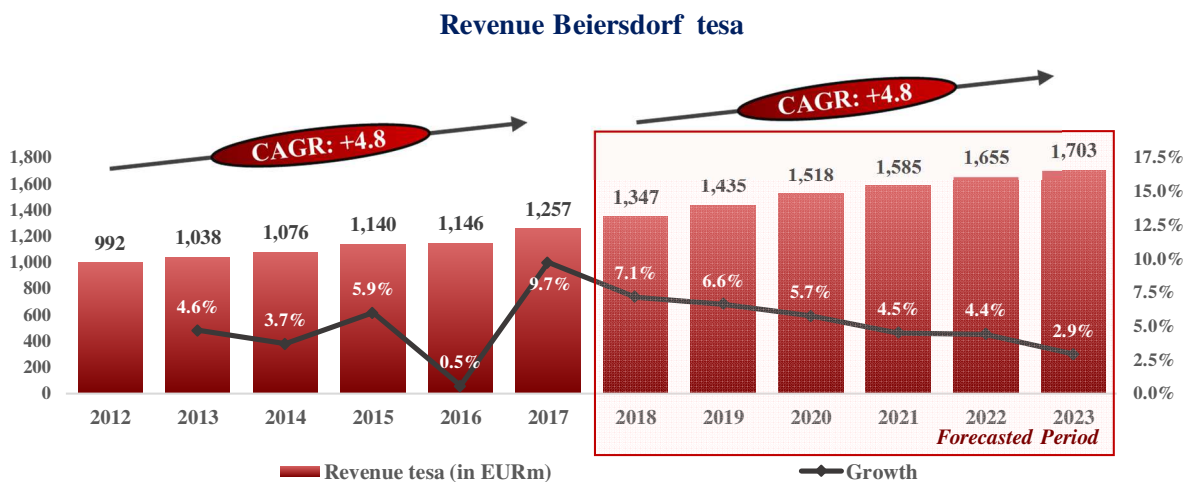


FIG-26: tesa Revenue (2012-2023)

The consolidated revenue development is depicted in FIG-27. Growth in Europe and Americas is moderate due to stable market share and slightly decreasing demand. Though low and constant market share in Africa/Asia/Australia, Beiersdorf profits from the high market growth. The tesa segment continues its positive growth path, however, growth pace slows down.

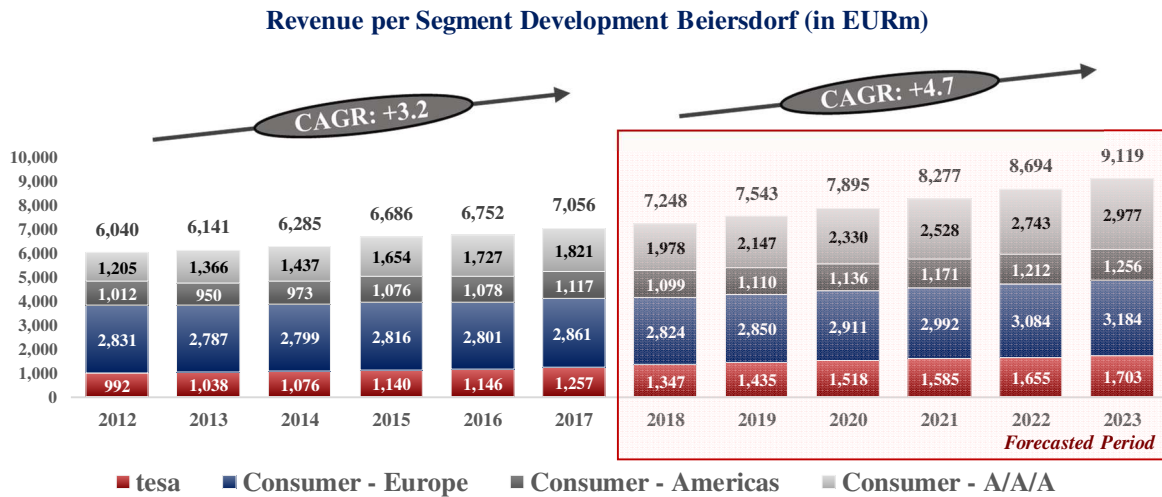


FIG-27: Revenue per Segment (2012-2023)

The revenue share of tesa continuous its past trend and slowly increases, stabilizing in 2023.

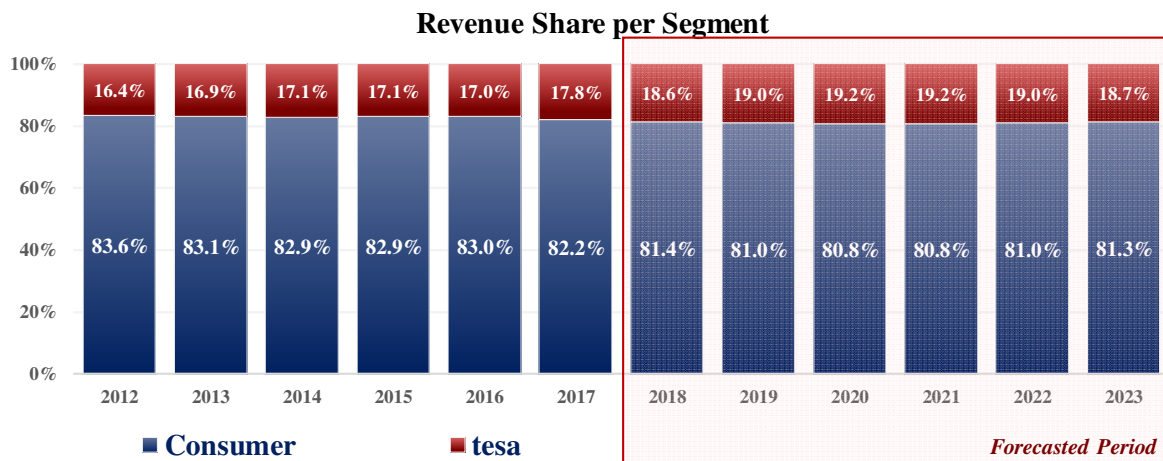


FIG-28: Revenue Share per Segment (2012-2023)

### 4.1.3 Cost of Goods Sold and Operating Expenses

To analyze Cost of Goods Sold (COGS) and Operating Expenses, those positions were measured as a percentage of sales. COGS are primarily attributable to internally produced goods (material, direct labor, energy) and capture a large portion as Beiersdorf products are manufactured largely internally. In 2017, COGS totaled 41.2% of sales, resulting in a gross profit margin

of 58.8%. Due to the re-location of the tesa's headquarter and production facilities, COGS increased from 2015 onwards. Furthermore, some labor related costs were transferred to the item marketing and selling expenses. Thus, only the past three years (2015-2017) were utilized to forecast COGS. Analogous to revenue forecast, an "adjustment factor" was introduced, however, only considering the change of the past 3 years. This approach was introduced to factor internal margin improvements as they are supposed to continue according to Beiersdorf's management.

Identical approach was implemented for the operating expenses (OPEX), including *marketing and selling expenses* (35.0% of revenues in 2017), *general and administrative expenses* (5.6%) *research and development expenses* (2.8%), *other operating income* (2.5%) and *other operating expenses* (2.5%).

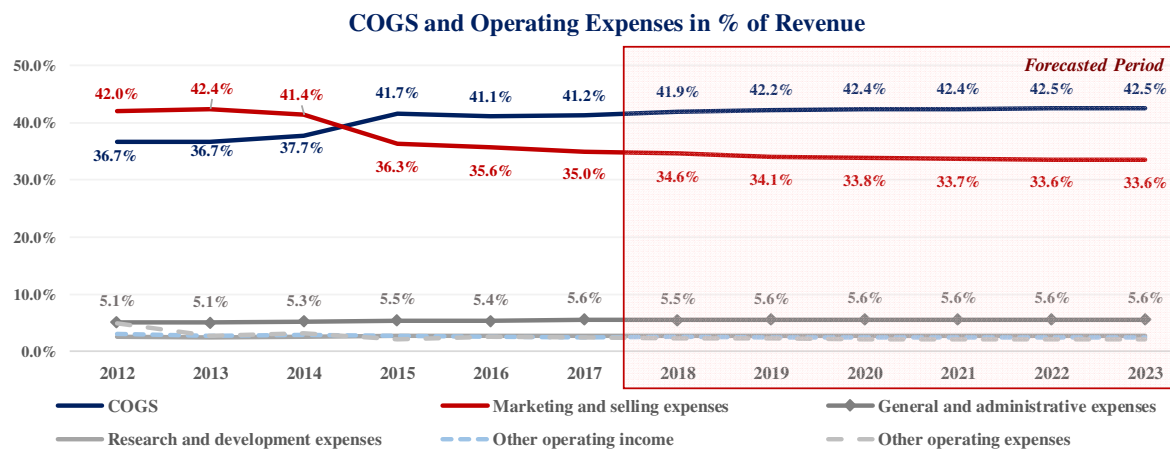


FIG-29: COGS and Operating Expenses (2012-2023)

#### 4.1.4 EBIT and EBIT-Margin

Analogous to the steady growth in sales, the Group-EBIT increased simultaneously with a CAGR of 8.2% from 2012 to 2017. Thereby, Beiersdorf managed to improve the EBIT-margin from 12.2% to 15.4%. FIG-30 depicts development of the past five years, taking the EBIT without special factors into account, thus, excluding one-of costs (from restructuring or cyber-attacks) to only reflect the performance.

## Group EBIT and EBIT-Margin

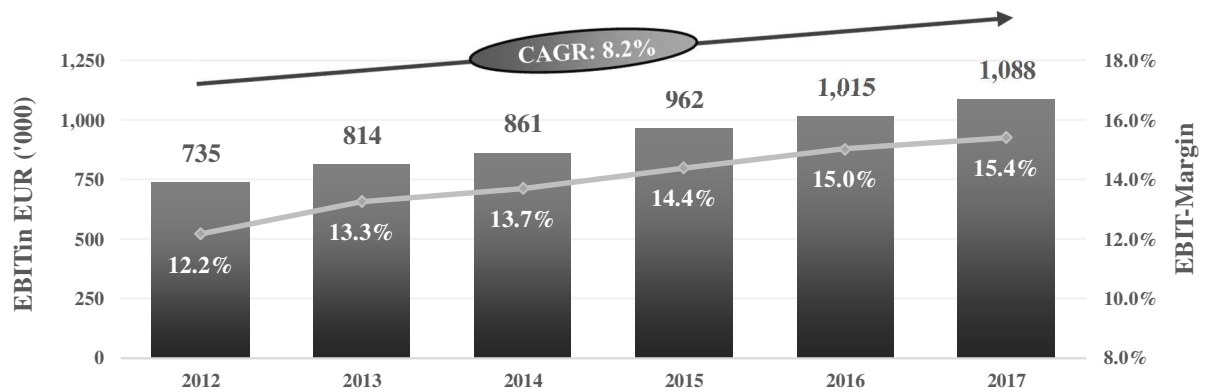


FIG-30: Group EBIT (2012-2017)

However, the growth and margins differ between both segments, making a separate analysis necessary. Whereas the margin of the consumer segment increased steadily over time from 12.0% in 2012 to 15.2% in 2017 and is converging to industry levels (L'Oréal or P&G), the EBIT-margin for tesa is higher, however, is slightly decreasing from 2013 onwards (FIG-32).

## Consumer EBIT and EBIT-Margin

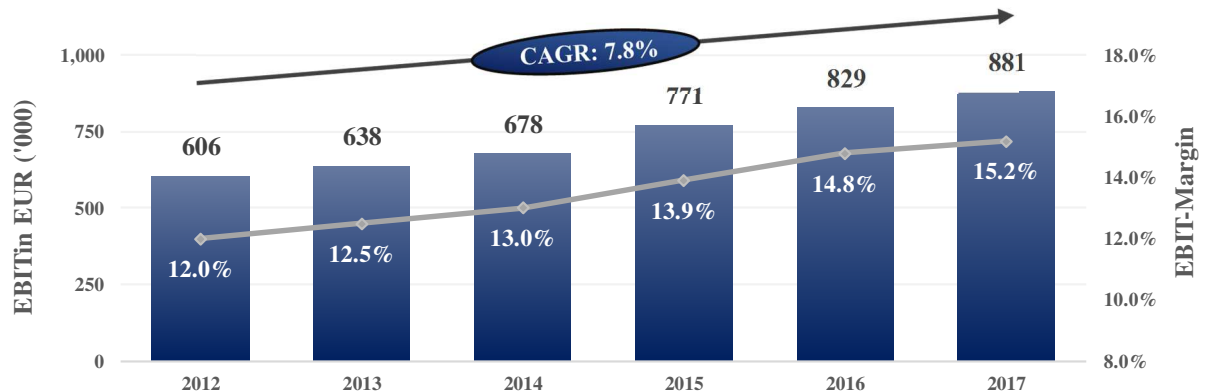


FIG-31: Consumer EBIT (2012-2017)

## tesa EBIT and EBIT-Margin

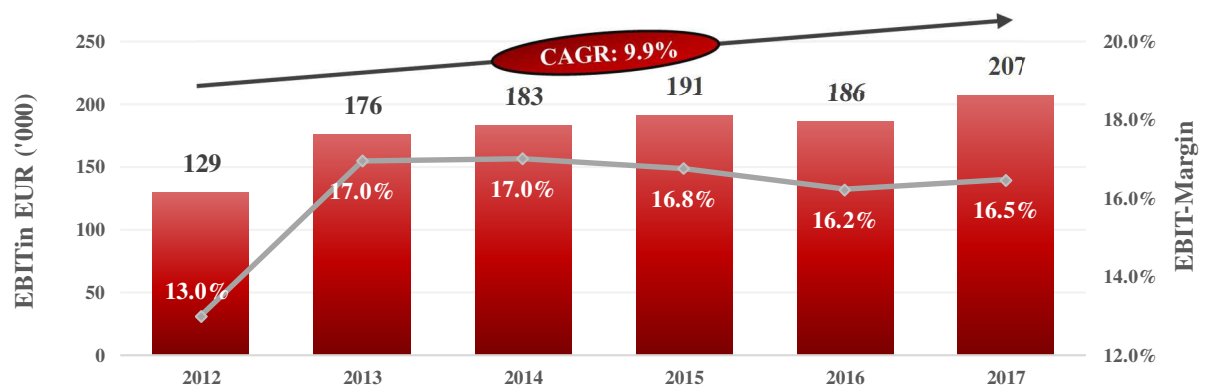


FIG-32: tesa EBIT (2012-2017)

According to the Beiersdorf's quarterly statement about the first three quarters in 2018, the company managed to stabilize EBIT-margins on a similar level compared to 2017. For the full year 2018, Beiersdorf anticipates slightly higher EBIT-margins in the consumer segment and for tesa an EBIT-margin slightly below the prior-year figure. Thus, the consolidated EBIT-margin for the group is expected to hold on a par with 2017 level.

Due to the fact that Beiersdorf does not publish segmentation details regarding COGS and OPEX, EBIT were computed on a consolidated basis. Building on the forecasted figures for COGS and OPEX, the operating result (EBIT) and EBIT-margin can be computed after adjusting the EBIT by non-recurring items and unusual expenses (income), such as one-off restructuring charges. Adjustments primarily relate to 2012 (+0.9% EBIT-margin improvement), 2014 (+1.2%) and 2016 (+0.5%). The normalized EBIT, EBIT-margin and the consolidated impact of the "adjustment factor" are depicted in FIG-33:

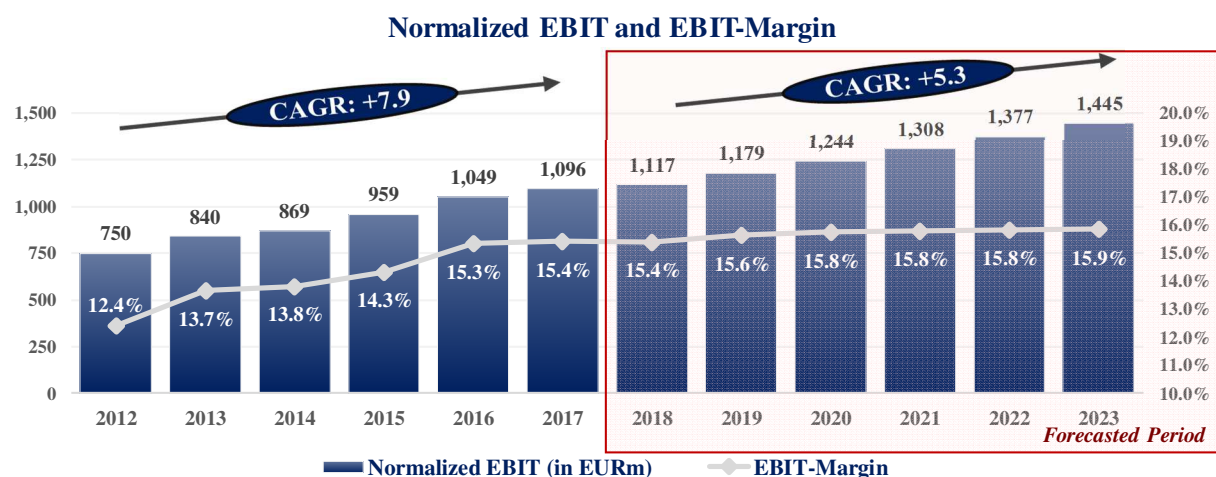


FIG-33: Normalized EBIT (2012-2023)

#### 4.1.5 Profit-after tax

Interest income (0.5% of revenue in 2017), interest expense (0.1%), net pension result (0.2%) and other financial result (1.1%) are summed in net financial result, totaling 0.9% of revenues in 2017. For the forecast, interest income was estimated as past percentage of cash and marketable securities, interest expense was tied to debt, net pension results to pension obligations and other financial result to sales. Due to low leverage of Beiersdorf interest expenses are marginal.

After adding/deducting the minor net financial result to the EBIT, the profit before tax can be computed. Subsequent, to obtain the profit after tax, income taxes need to be deducted.

A thorough discussion regarding effective or nominal tax-rate took place in chapter 2.2.3.4. Whereas, the effective tax-rate of the past three years averaged 31.1%, the statutory tax-rate in Germany amounted 30.0%. For the explicit period, Damodaran’s approach was followed by applying the effective tax-rate (31.1%) as basis for 2018 and converging towards the marginal tax-rate of Germany (30%) until steady-state in 2023.

Profit after tax and profit margin increased steadily between 2012-2017, however, slightly decreased from EUR 727 million in 2016 to EUR 689 million in 2017 (-5.2%) due to impairment losses of available-for-sale financial assets and negative effects from fluctuating exchange rates. Excluded special factors concern 2012-2014 and consist of extraordinary one-time expenses/income being neglected to allow consistent comparability. After 2017, the future margin developments reflect past trends and is thus increasing slightly. This is primarily driven by decreasing marketing and selling expenses, a positive financial result related to increasing cash and securities and a lower tax burden. However, the increase slows down over time and reaches steady-state in 2023.

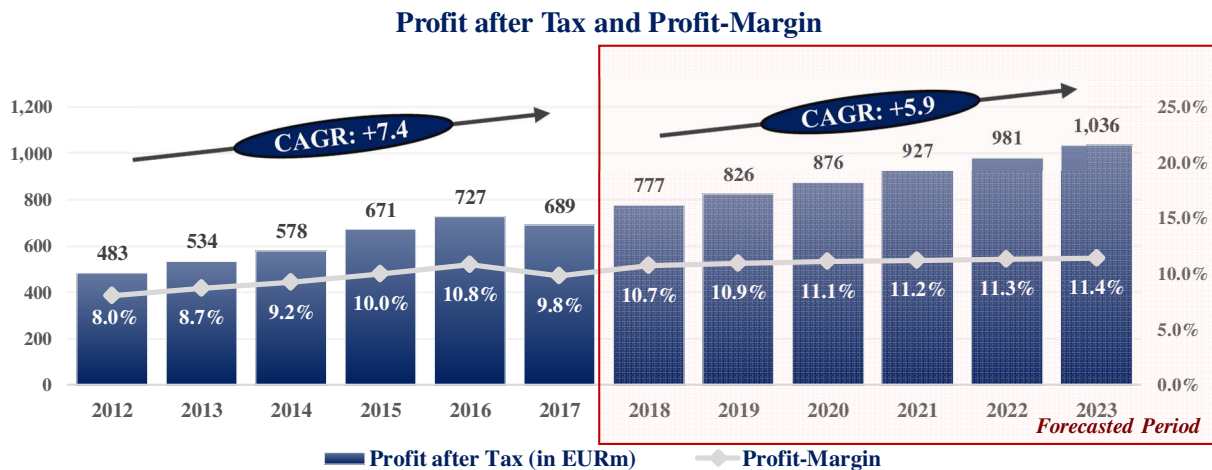


FIG-34: Profit after Tax (2012-2023)

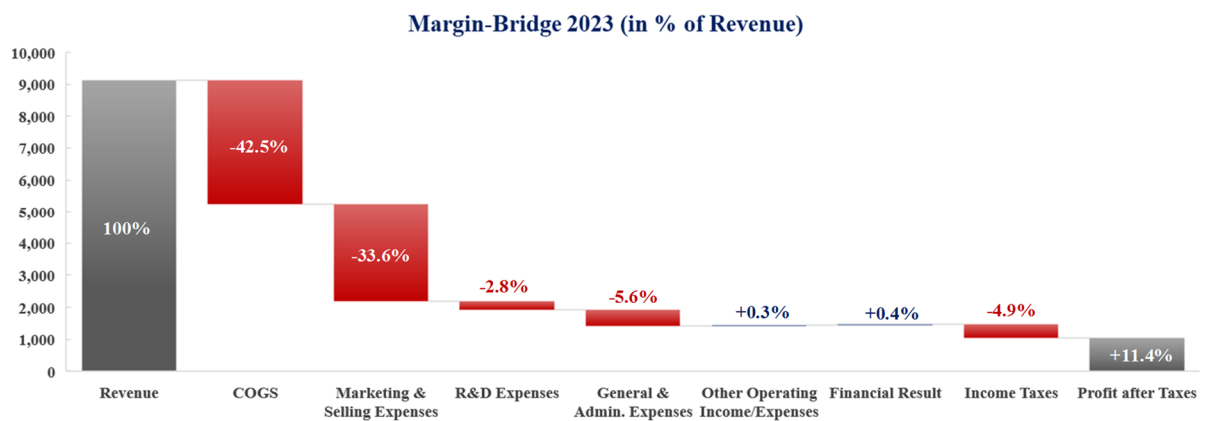


FIG-35: Margin Bridge 2023

#### 4.1.6 Financing Structure

The capital structure of Beiersdorf reveals its strong financing position. At accounting date in 2017, 62.5% of the company's assets were financed internally with equity. Furthermore, EUR 1.4 billion (17.3% of total assets) belong to trade payables, being balanced out by EUR 1.3 billion in trade receivables (16.2%) and EUR 0.9 billion in inventories (10.4%) on the asset side.

Provisions consist of liabilities for unfunded pensions and other post-employment benefits (8.0%) and other current provisions (6.7%), which are mostly short-term and include provisions for legal risk, marketing and selling expenses and other personal expenses.

Lastly, interest-bearing liabilities amount to only 1.4% of total equity and liabilities and manifest the healthy financial fundament of Beiersdorf.

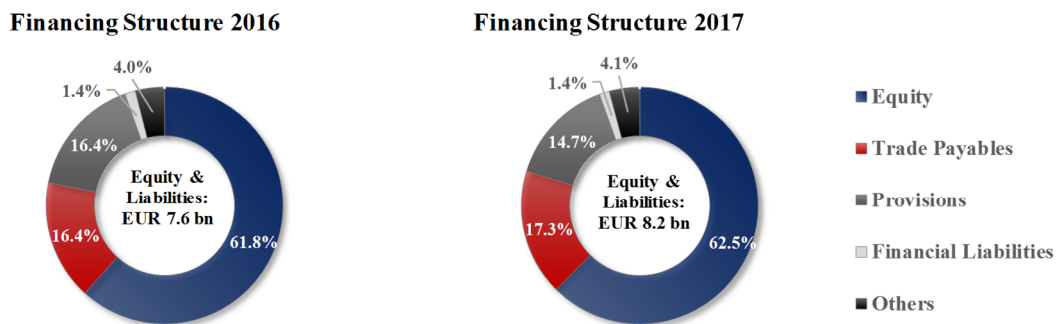
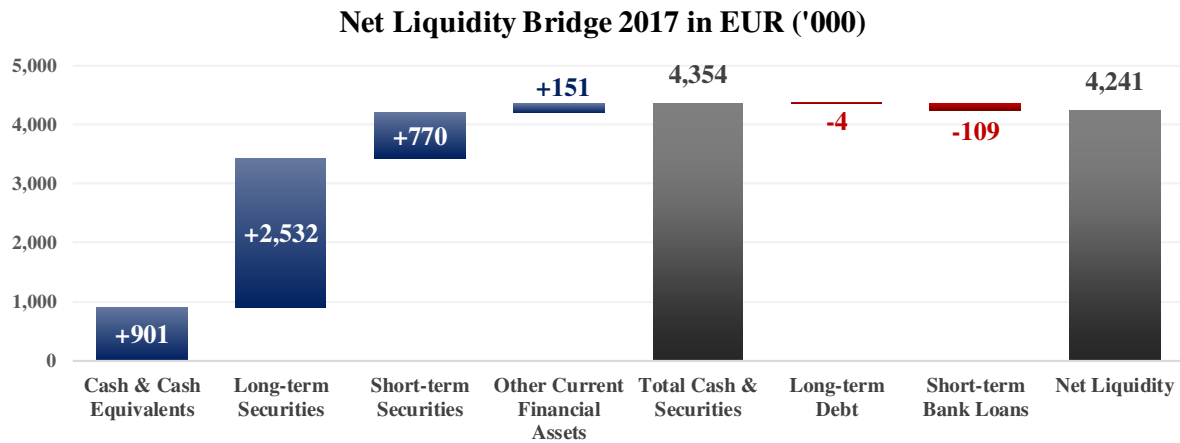


FIG-36: Financing Structure (2016 vs. 2017)

#### 4.1.7 Financial Position and Net Liquidity

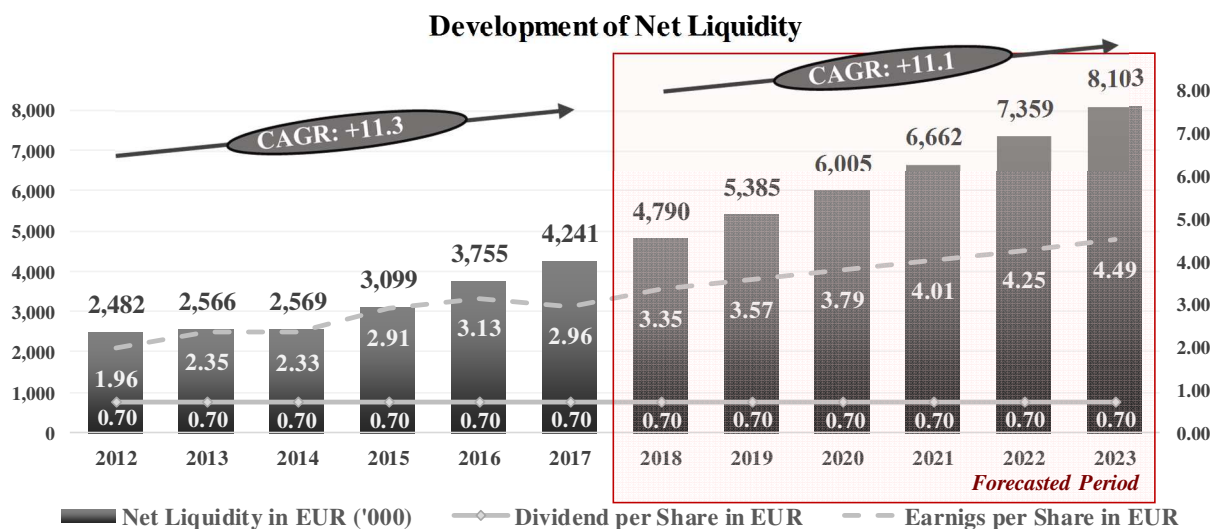
A closer examination of the financial position reveals that Beiersdorf maintains a positive net liquidity position of EUR 4,241 million in 2017. While interest-bearing loans only amount to EUR 113 million, the company reached a cash & securities position of EUR 4,354 million.

Thereby, cash & cash equivalents include bank balances, cash-on-hand, checks, and short and liquid investments (money market funds). Securities (EUR 3,302 million) comprise listed government and corporate bonds, equities, and commercial papers.



*FIG-37: Net Liquidity Bridge (2017)*

FIG-38 depicts the development of net liquidity, dividend per share (DPS) and earnings per share (EPS). Whereas, EPS increases with the group's profit simultaneously, the DPS is staying constant over the past six years. As the shares outstanding remain constant likewise, the absolute amount of dividends paid to shareholders has not changed since 2009. Instead of paying dividends, the company ploughed back last year's earnings and built up a cash pile of over EUR 4 billion. Considering that the payout is related to the dividend policy of a company, the constant DPS reflects the conservative financial policy of Beiersdorf and its influential majority shareholder maxingvest AG. Analysts and relevant newspapers have predicted a larger acquisition for years, relying on public statements of the CEO Stefan Heidenreich. However, market rumors state that the family office behind the major shareholder is very cautious and reticent about inorganic growth.



*FIG-38: Net Liquidity (2012-2023)*

Thus, the constant dividend policy in combination with low debt and increasing retained earnings are expected to hold in the explicit period, leading to a cumulative net liquidity of over EUR 8 billion in 2023.

#### 4.1.8 Assets, CAPEX and Depreciation/Amortization

##### 4.1.8.1 Tangible Assets

In 2017, tangible assets amounted to 26.1% of non-current assets and 12.5% of total assets with a carrying amount of EUR 1,026 million (–1.9% to previous year). Whereas Capital Expenditures (CAPEX) amounted to EUR 157 million (+2.6%), depreciation totaled EUR 133 million (–2.2%). Beiersdorf’s plant, property and equipment (PPE) is carried at cost and depreciated by straight-line-method. Due to divergent useful lives of Beiersdorf’s PPE, a differentiated analysis of each item is crucial.

##### USEFUL LIVES OF PROPERTY, PLANT, AND EQUIPMENT

|                                   |                |
|-----------------------------------|----------------|
| Buildings                         | 10 to 33 years |
| Technical equipment and machinery | 5 to 15 years  |
| Office and other equipment        | 3 to 15 years  |

FIG-39: Useful Lives of Tangible Assets (Beiersdorf Annual Report, 2017)

Beiersdorf separates PPE into following four categories according to the useful life and related depreciation period: *Land, land rights, and buildings* (42.2% of PPE), *technical equipment and machinery* (29.6%), *office equipment* (17.0%) and *advance payments and assets under construction* (11.2%).

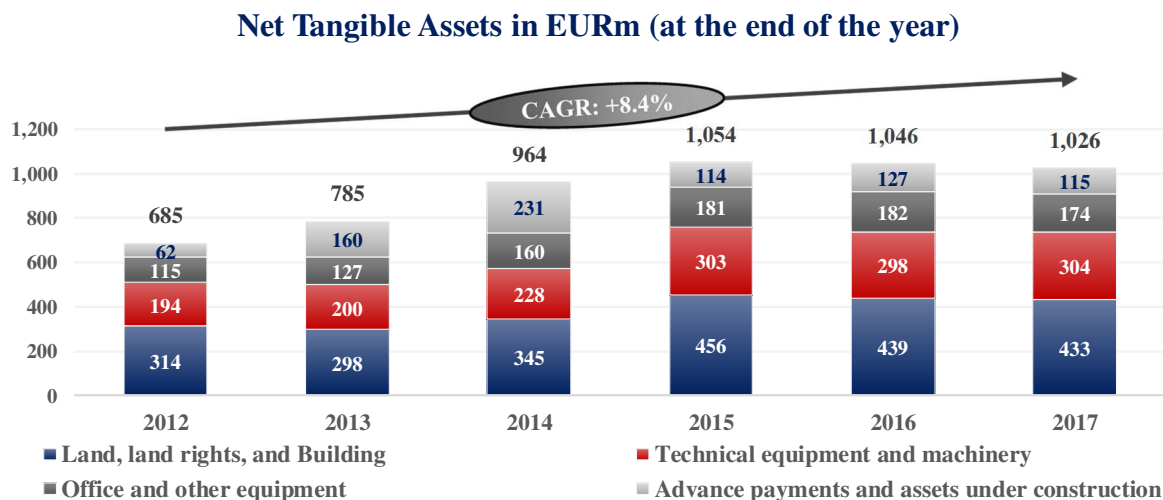


FIG-40: Net Tangible Assets (2012-2017)

Land, land rights, and buildings are depreciated according to their useful lives, whereas buildings reflect the biggest share of depreciation. The growth in 2014 (+15.8%) and 2015 (+32.2%) are primarily related to a relocation of tesa's headquarter within Hamburg. Prior to 2015, tesa and Beiersdorf shared facilities, however, decided to separate business premises.

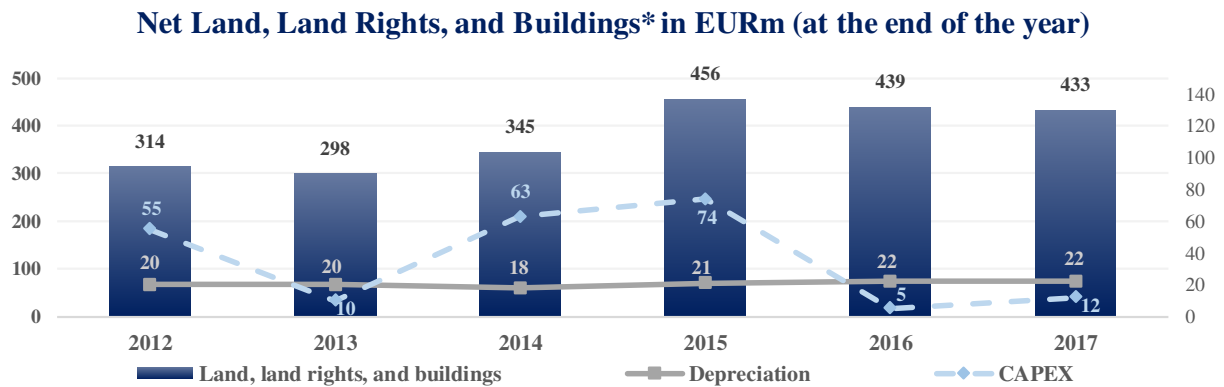


FIG-41: Land, Land Rights, and Buildings (2012-2017)

Technical equipment and machinery are depreciated on a straight-line basis (5-15 years). Thereby, repairs and maintenance costs are directly expensed and not capitalized unless it results in substantial improvement in production capacity or economic life. The increase in 2014 (+14.0%) and 2015 (+32.9%) is likewise related to the relocation of tesa.

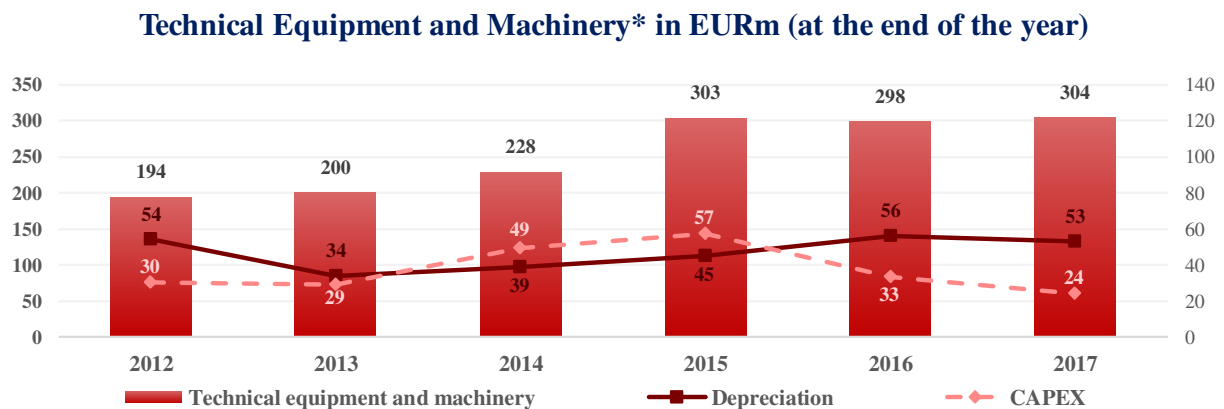
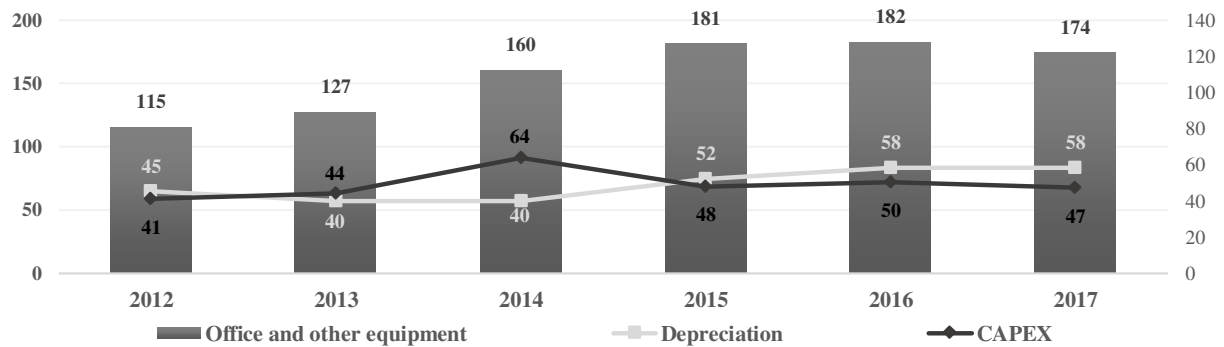


FIG-42: Technical Equipment and Machinery (2012-2017)

Office and other equipment are written off over the useful live of 3 to 15 years and increased in 2014 by 26.0% and in 2015 by 13.1%.

## Office and other Equipment\* in EURm (at the end of the year)

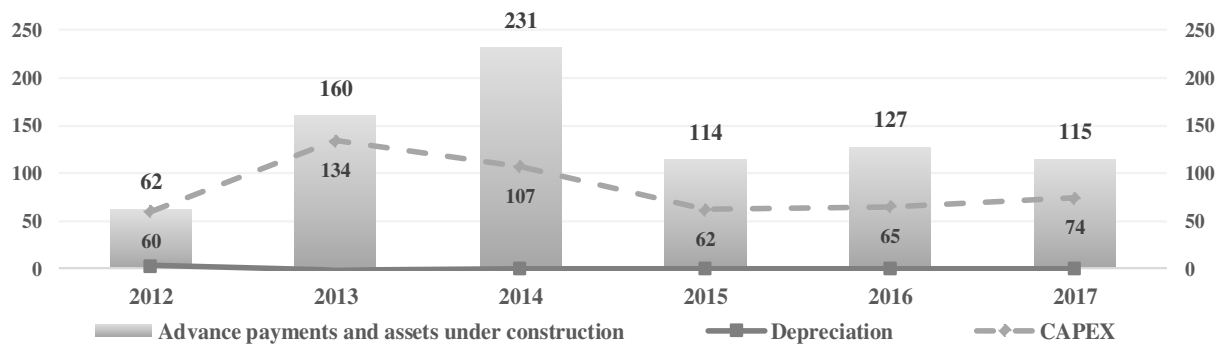


\*  $Assets [t=1] = Assets [t=0] - D\&A [t=1] + CAPEX [t=1]$  does not necessarily hold due to disposals, transfers and currency translation adjustments.

FIG-43: Office and other Equipment (2012-2017)

Assets under construction are recognized in land, land rights, and buildings once completed, therefore depreciation equals zero. This position decreased in 2015 (-50.6%) as the new business premises of tesa were finalized and consequently this position was transferred into land, land rights, and buildings. Currently, Beiersdorf constructs a new office facility in Hamburg, replacing the headquarter.

## Advance Payments and Assets under Construction\* in EURm (at the end of the year)



\*  $Assets [t=1] = Assets [t=0] - D\&A [t=1] + CAPEX [t=1]$  does not necessarily hold due to disposals, transfers and currency translation adjustments.

FIG-44: Advance Payments and Assets under Construction (2012-2017)

To reflect the necessity of a differential analysis and forecast, the depreciation of each category in percentage of the corresponding Net PPE was opposed in FIG-45. A closer look reveals that the depreciation of office and other equipment is with 33.3% in 2017 much higher than technical equipment and machinery (17.4%), followed by office land, land rights, and buildings.

## Depreciation in % of Net PPE (at the end of the year)

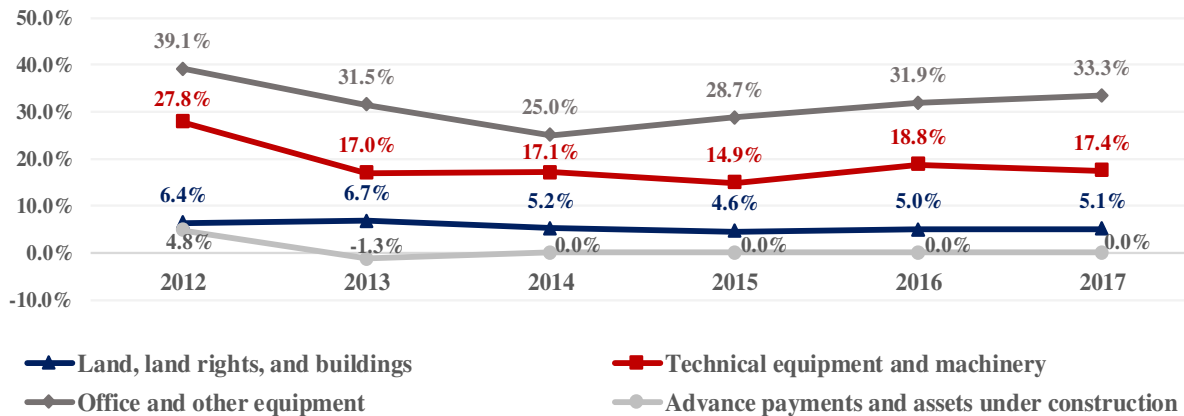


FIG-45: Depreciation in Percentage of Net PPE (2012-2017)

For the explicit period, Net PPE was computed as percentage of sales from historical ratios. As the relocation of tesa and related shifts of PPE were completed in 2015, the average Net PPE-to-Sales ratio of only the past three years was considered. To include the overall trend as variance of this ratio between 2015 and 2017, an “*adjustment factor*” was introduced once again. This adjustment factor perpetuated the average change in this period. To stabilize changes over time, the adjustment is decreasing by 50% per annum.

Next, the depreciation of each category was forecasted and derived from the past ratio of depreciation-to-net PPE. Once again, the “*adjustment factor*” was established to account for past trends. Finally, CAPEX were computed according to following formula:

$$CAPEX_{t=1} = Net\ PPE_{t=1} - Net\ PPE_{t=0} + Depreciation_{t=1} \quad (26)$$

With,  $CAPEX_t$  = Capital Expenditures at time  $t$

$Net\ PPE_t$  = Net Property, Plant and, Equipment at time  $t$

## FOM-26: Computation of CAPEX

Thus, the resulting development of net tangible assets can be seen in FIG-46. The higher growth between 2012 and 2017 (CAGR: +8.4%) compared to the growth between 2018 and 2023 (CAGR: +4.3%) lies in the one-time increase due to the relocation of tesa (2013-2015).

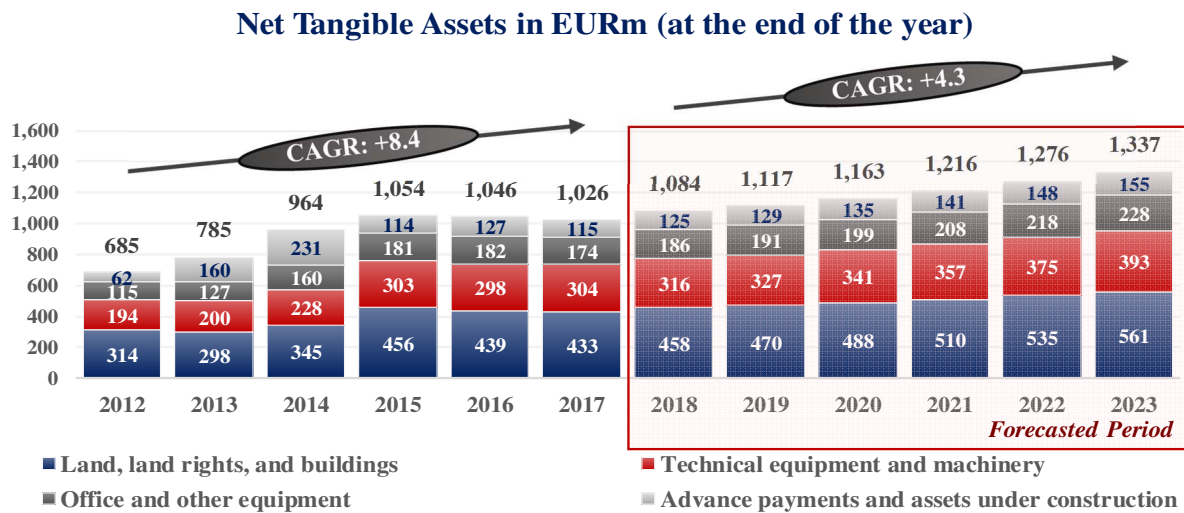


FIG-46: Net Tangible Assets (2012-2023)

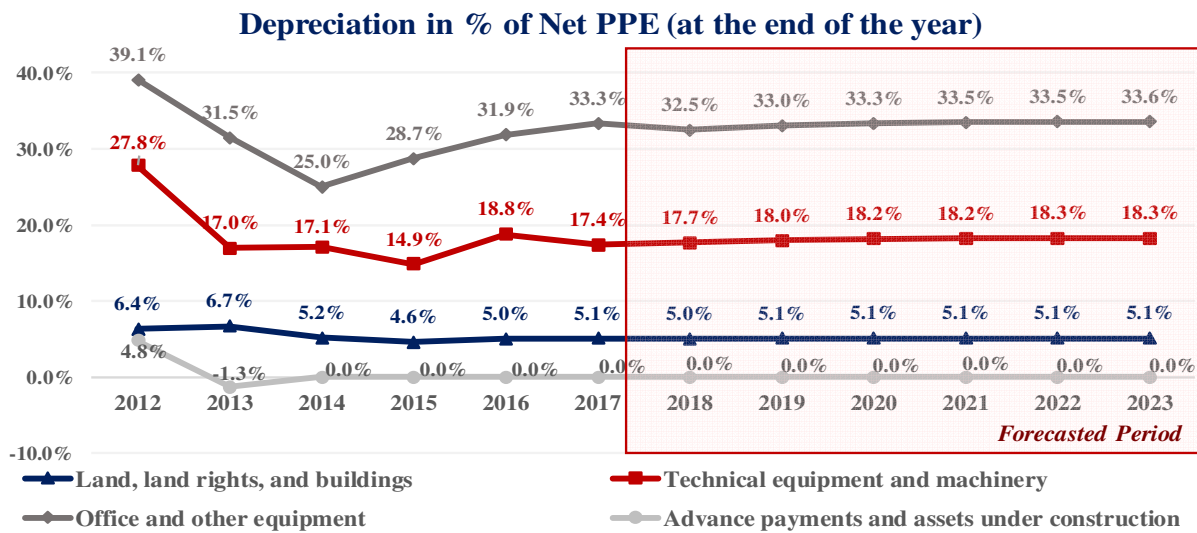


FIG-47: Depreciation in Percentage of Net PPE (2012-2023)

The detailed development per categories of Net PPE, depreciation and CAPEX can be found in Appendix-10. The ratio CAPEX-to-depreciation amounts to 1.35x in 2023, representing that CAPEX slightly exceeds depreciation. This number reflects the moderate growth in perpetuity. If CAPEX were equal to D&A, net PPE would stay constant, resulting in the unfeasible assumption of increasing infinite capital efficiency. Thus, steady-state is not reached once CAPEX is close to D&A, but rather when a constant ratio is achieved. With a ratio of 1.33x in 2021 and 1.35x in 2022, steady state is attained by 2023.

#### 4.1.8.2 Intangible Assets

Intangible assets accounted in 2017 to only 3.6% of non-current assets and 1.7% of total assets. Beiersdorf separates its intangible assets into the three categories *finite-lived intangible assets*

(39.3%), *indefinite-lived intangible assets* (15.0%) and *goodwill* (45.7%) according to its amortization characteristics.

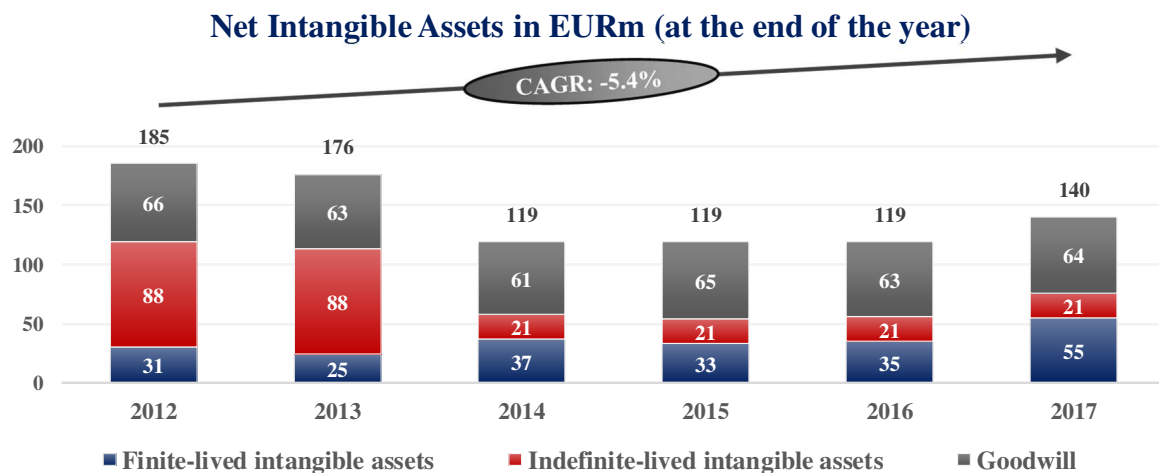
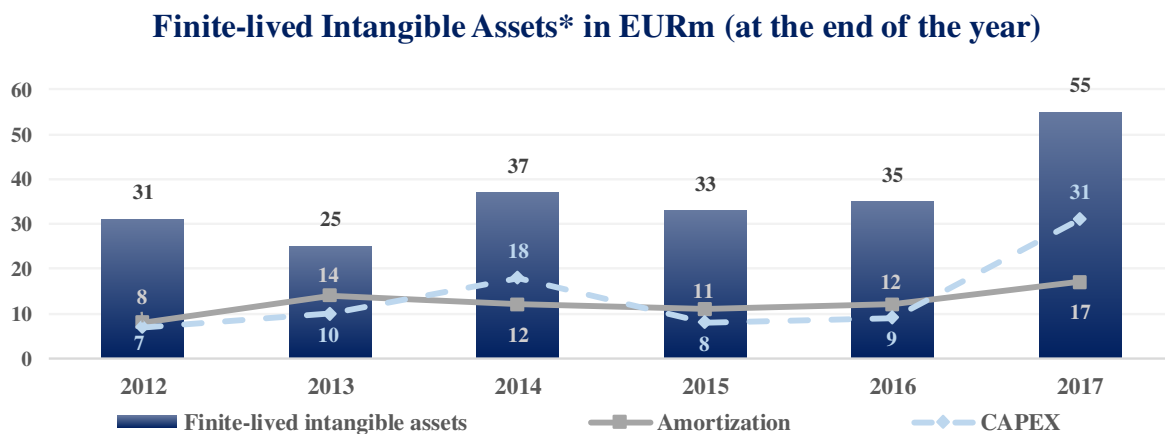


FIG-48: Net Intangible Assets (2012-2017)

Finite-lived tangible assets include purchased intangible assets (patents, trademarks, software) measured at cost and being straight-line amortized over the useful life. Position increased in 2017 due to acquired software application.

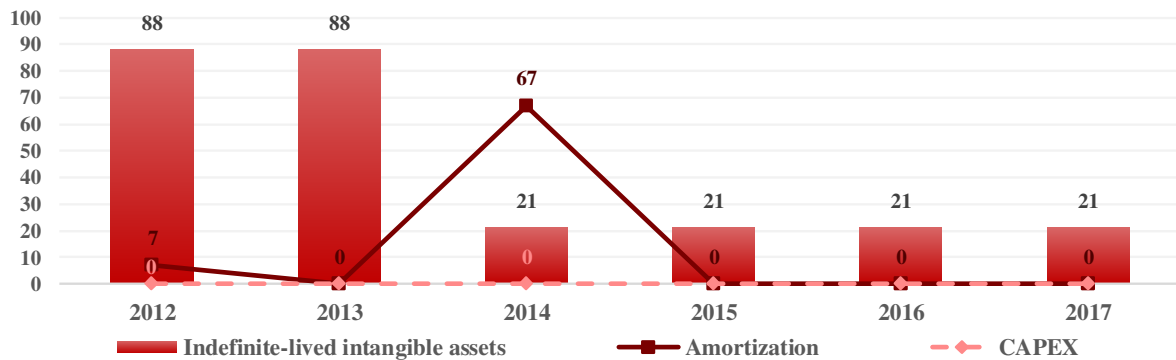


\*  $Assets [t=1] = Assets [t=0] - D\&A [t=1] + CAPEX [t=1]$  does not necessarily hold due to disposals, transfers and currency translation adjustments.

FIG-49: Finite-lived Intangible Assets (2012-2017)

Internally generated intangible assets are rarely recognized, probably to build up hidden reserves. The indefinite-lived tangible assets primarily consist of an acquired Chinese hair care brand, which is not amortized due to its unlimited usage and can only be affected by annual impairment tests. The depicted decrease in 2014 is mainly due to a revaluation of Chinese hair care brand because of negative trends on the Chinese market.

### Indefinite-lived Intangible Assets\* in EURm (at the end of the year)

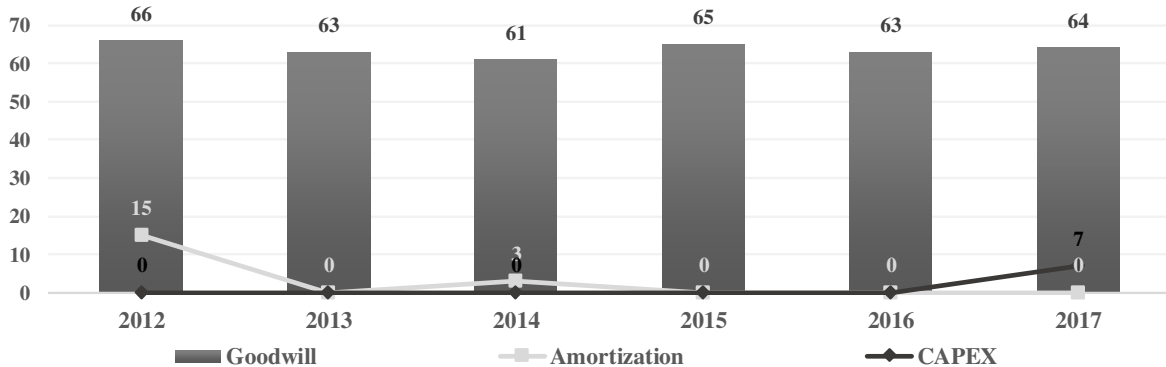


\*  $Assets [t=1] = Assets [t=0] - D\&A [t=1] + CAPEX [t=1]$  does not necessarily hold due to disposals, transfers and currency translation adjustments.

FIG-50: Indefinite-lived Intangible Assets (2012-2017)

78.1% of goodwill is attributable to its subsidiary “Beiersdorf AG (Switzerland)” and is not amortized. Small changes primarily relate to currency translation adjustments.

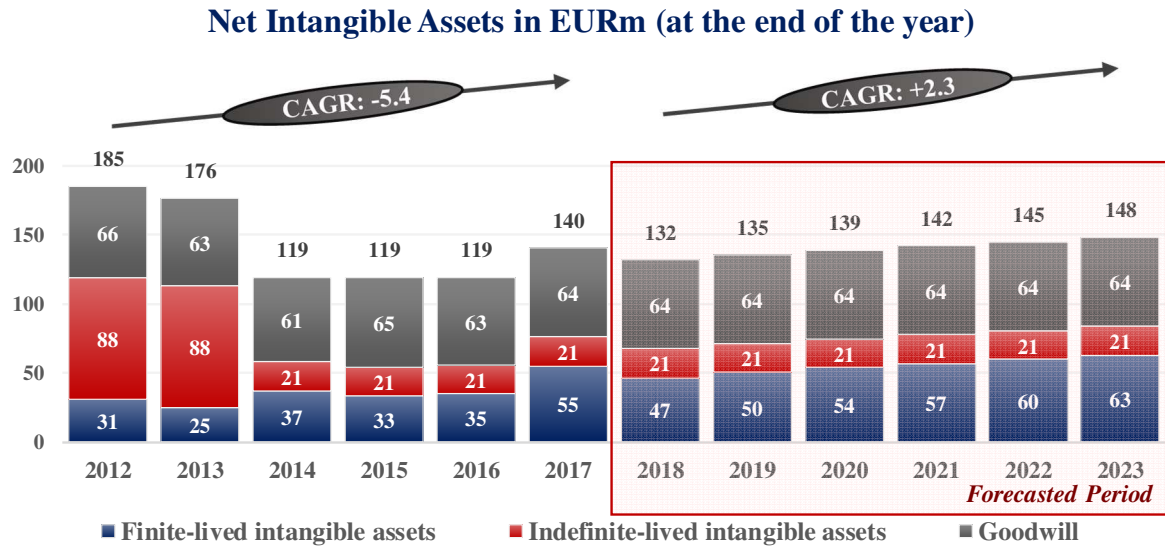
### Goodwill\* in EURm (at the end of the year)



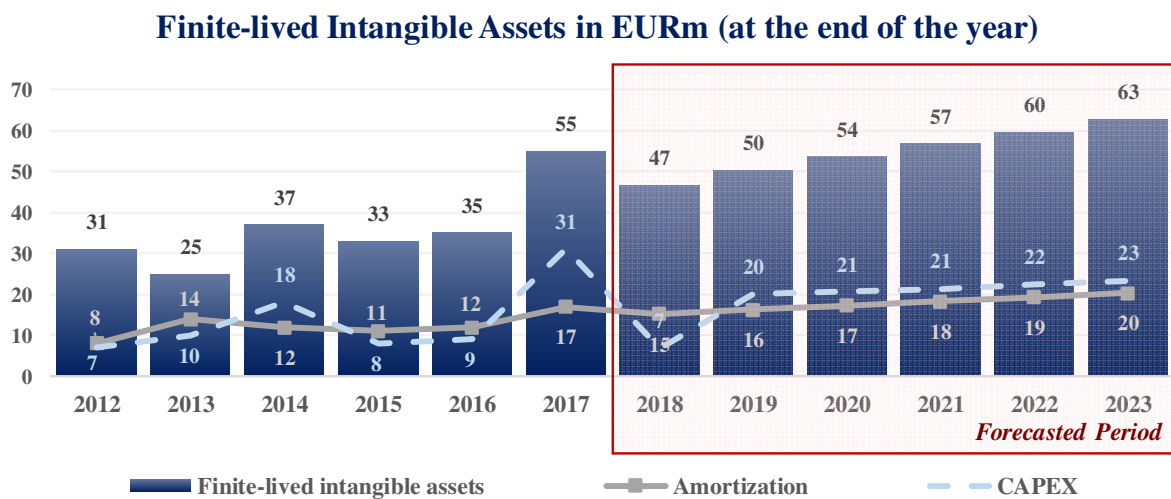
\*  $Assets [t=1] = Assets [t=0] - D\&A [t=1] + CAPEX [t=1]$  does not necessarily hold due to disposals, transfers and currency translation adjustments.

FIG-51: Goodwill (2012-2017)

To forecast intangible assets, the previous approach used for tangible assets (applying ratios from the past three years and including an adjustment factor) was implemented. However, indefinite-lived intangible assets (Chinese hair care brands) are expected to stay constant, without any amortization, impairment or additional expenditures. Same holds for Goodwill. CAPEX-to-amortization amounts 1.15x.



*FIG-52: Net Intangible Assets (2012-2023)*



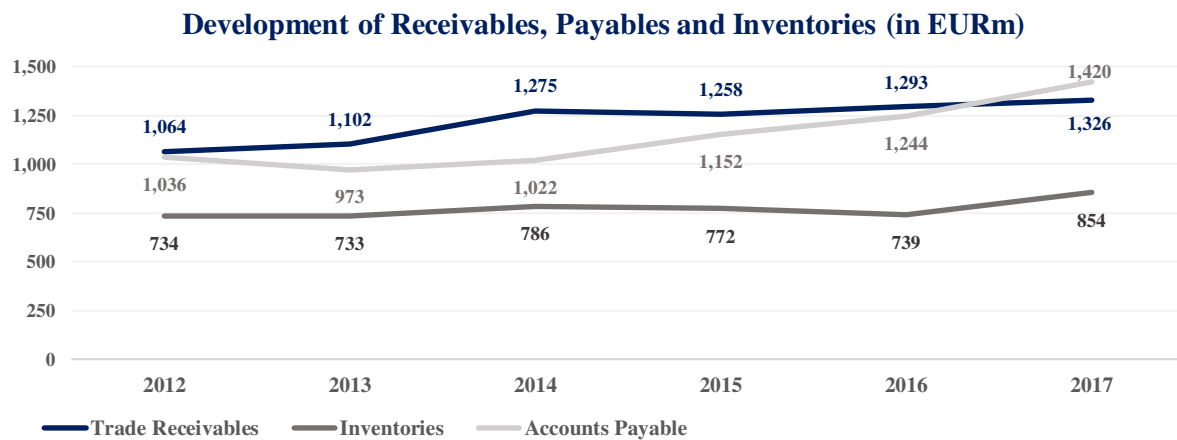
*FIG-53: Finite-lived Intangible Assets (2012-2023)*

#### 4.1.9 Net Working Capital

As the major customers of Beiersdorf are multinational retail and drugstore chains, the company is exposed to their market power. Especially, the large customers pay for Beiersdorf products only once the end-customer has acquired the product in the shop, leading to increased trade receivables. Thus, a sustainable cash management plays a key role.

To analyze the working capital management, the cash conversion cycle (CCC) was conducted, taking trade receivables (16.2% of total assets), inventories (10.4%) and accounts payables (17.3%) in mind. The CCC measures the days to convert investments in inventory into cash

from sales. The CCC is the sum of *Days Inventory on Hand (DIH)* and *Days Sales Outstanding (DSO)* deducted by *Days Payable Outstanding (DPO)*.



*FIG-54: Receivables, Payables and Inventories (2012-2017)*

Thereby, the DIH reflects the duration of Beiersdorf selling its inventory and turning it into sales, on average. The DSO represents the average number of days it takes until Beiersdorf collects the receivables after a sale has been made. Lastly, DPO measures the days Beiersdorf takes to pay off its suppliers. Whereas the DSO are related to Beiersdorf's sales, DIH and DPO were linked to cost of goods sold (COGS) as follows:

$$DIH = \frac{\text{Inventories}}{\text{COGS}} \cdot 365$$

$$DPO = \frac{\text{Accounts Payables}}{\text{COGS}} \cdot 365$$

$$DSO = \frac{\text{Accounts Receivables}}{\text{Revenue}} \cdot 365 \quad (27)$$

$$CCC = DIH + DSO - DPO$$

With, *DIH = Days Inventory on Hand*      *COGS = Cost of Goods Sold*  
*DPO = Days Payable Outstanding*      *DSO = Days Sales Outstanding*  
*CCC = Cash Conversion Cycle*

*FOM-27: Cash Conversion Cycle*

FIG-53 shows a relatively high DPO of 178 days and DSO of 69 days in 2017. Whereas a high DPO reflects that Beiersdorf pays creditors late, which is usually advantageous as it allows less financing need from banks and enables short-term investing activities, a high DSO reflects Beiersdorf long duration to collect money from its customers.

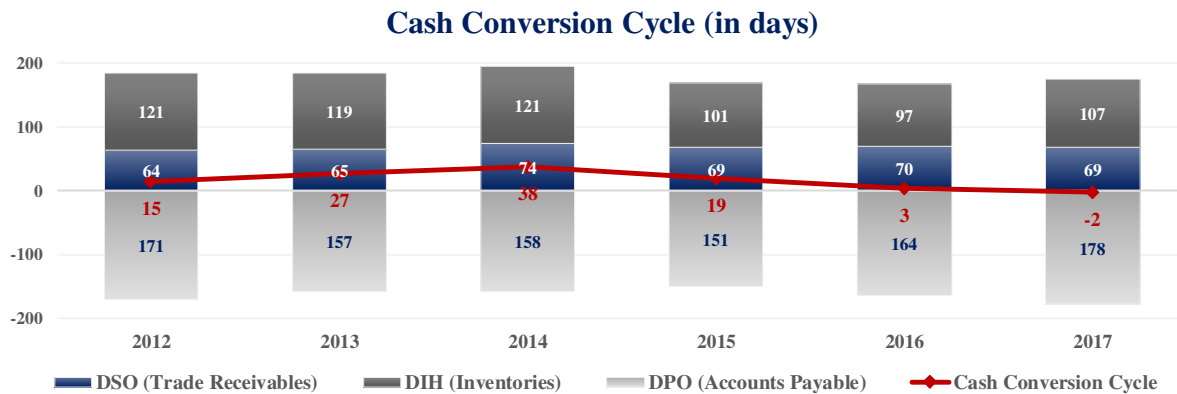


FIG-55: Cash Conversion Cycle (2012-2017)

Combining FIG-55 with FIG-56 reveals that CCC decreased since 2014 due to continuously increasing accounts payable (CAGR 2014-2017 of +11.6%), whereas trade receivables (+1.3%) and inventories (+2.8%) increased only slightly.

For the explicit period, the DSO, DIH and DPO of only the past year was used as parameter to forecast trade receivables, inventories and accounts payables due to previously mentioned shifts. To depict those trends, an adjustment factor was once again introduced, halving yearly. To capture the volatile development and full trend, the average change of the past five years was considered for the adjustment factor.

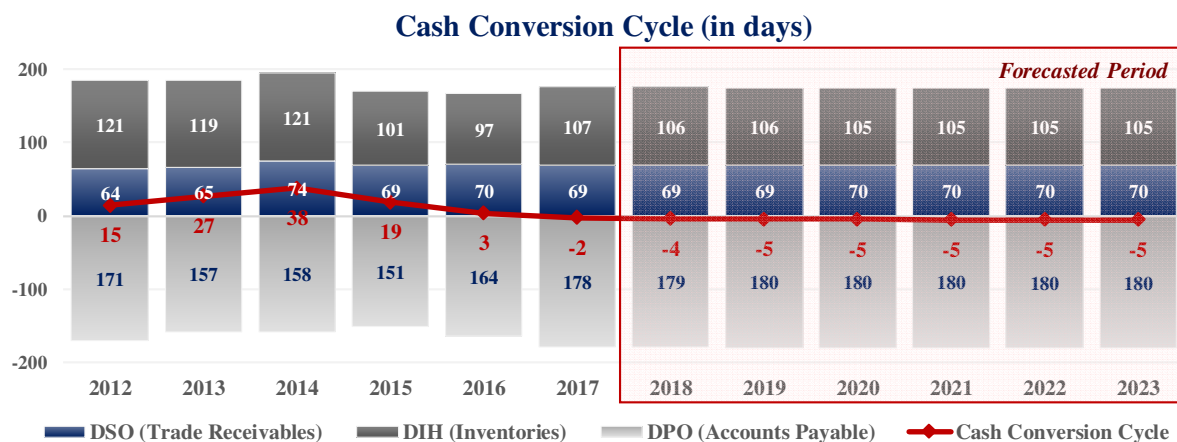


FIG-56: Cash Conversion Cycle (2012-2023)

Combining estimated DSO, DIH and DPO with previously forecasted revenues and COGS, the receivables, inventories and payables can be forecasted (FIG-57). A closer look reveals that in

the long-term, trade receivables and accounts payables nearly level out, resulting in NWC to resemble inventories.

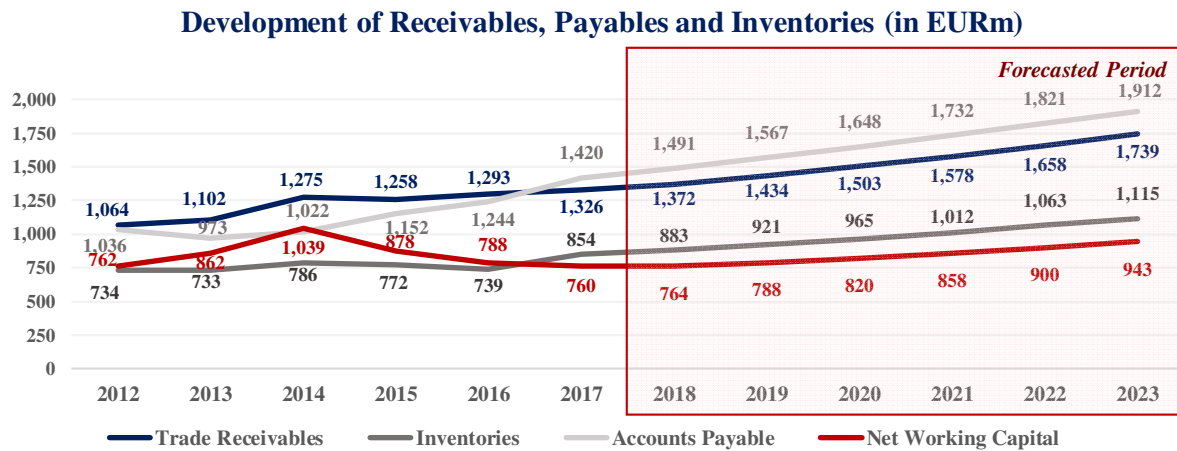


FIG-57: Receivables, Payables and Inventories (2012-2023)

Furthermore, the low deferred tax assets and liabilities were forecasted respectively according to the historical ratio to EBITDA. The yearly change was recognized separately from the change in NWC when computing the FCFF. Same was applied for income tax receivables and liabilities.

#### 4.1.10 Forecasted FCFF Beiersdorf

All ingredients to compute the FCFF were forecasted after deducting/adding yearly changes of deferred tax liabilities/assets. The low FCFF in 2013 and 2014 relate to the high CAPEX associated with the relocation of tesa, increased deferred tax assets and trade receivables. The slight dip in 2018 reflects the trend from 2016 to 2017 and the stabilizing NWC.

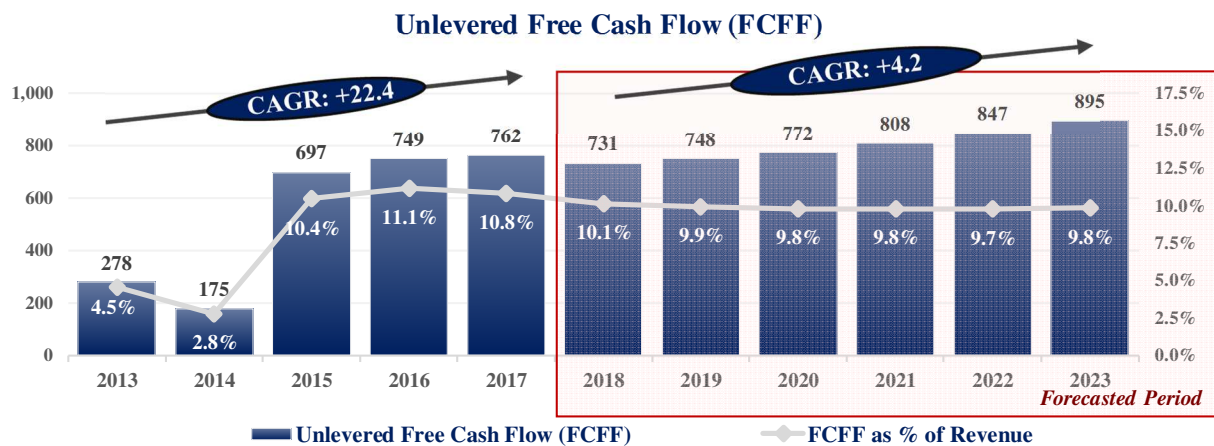


FIG-58: Unlevered FCFF (2012-2023)

#### 4.1.11 Discount Rate

To compute the present value of FCFF, the discount rate is needed. As previously mentioned, Beiersdorf's cash and securities exceed the value of debt, leading to net liquidity of above EUR 4 billion. Furthermore, the cash pile increases steadily while the absolute interest-bearing liabilities remained constant in past years, amounting just 1.4% of total equity and liabilities in 2017. Thus, the target equity-to-debt-ratio in market values changes in the explicit period negligibly, reaching 100% in perpetuity. Consequently, the APV-method, which is especially useful in case of changing capital structure, is not applied. Instead, the discount rate equals the cost of equity and is employed to discount the FCFF.

The cost of equity was derived using the CAPM and amounts to 7.25% for Beiersdorf (FIG-59).

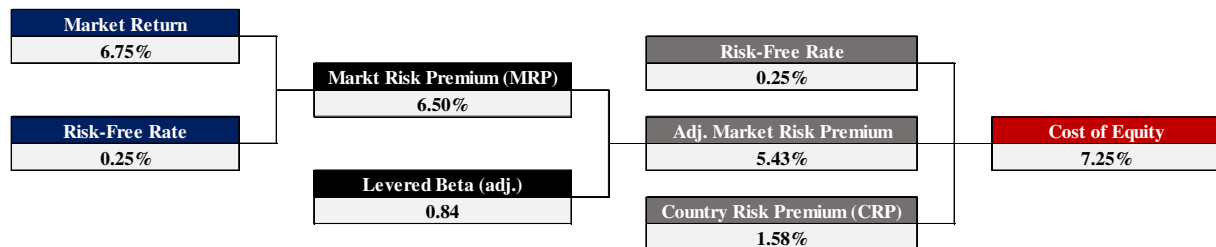


FIG-59: Beiersdorf's Discount Rate Tree

DAX30's annualized monthly market return of the past five years (31/12/2013-30/11/2018) totaled 4.82%. However, because DCF-methods are forward-looking, KPMG's MRP of 6.5% was applied (Castedello & Schöniger, 2018), meeting the consensus of the Institute of Public Auditors in Germany (IDW) as closer discussed in chapter 2.2.3.2.3. However, a MRP of 6.5% reaches the upper boundary of other analysts and researchers and is thus later subject to the sensitivity analysis.

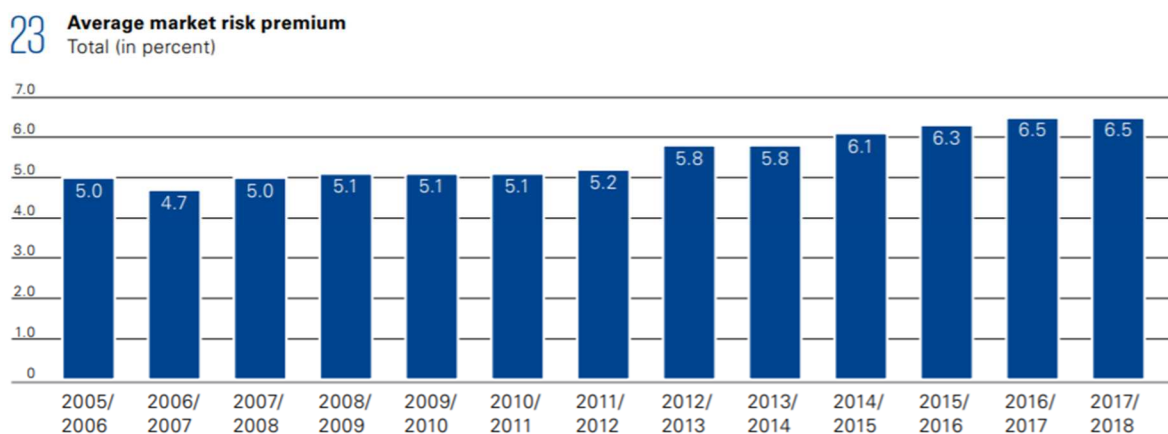
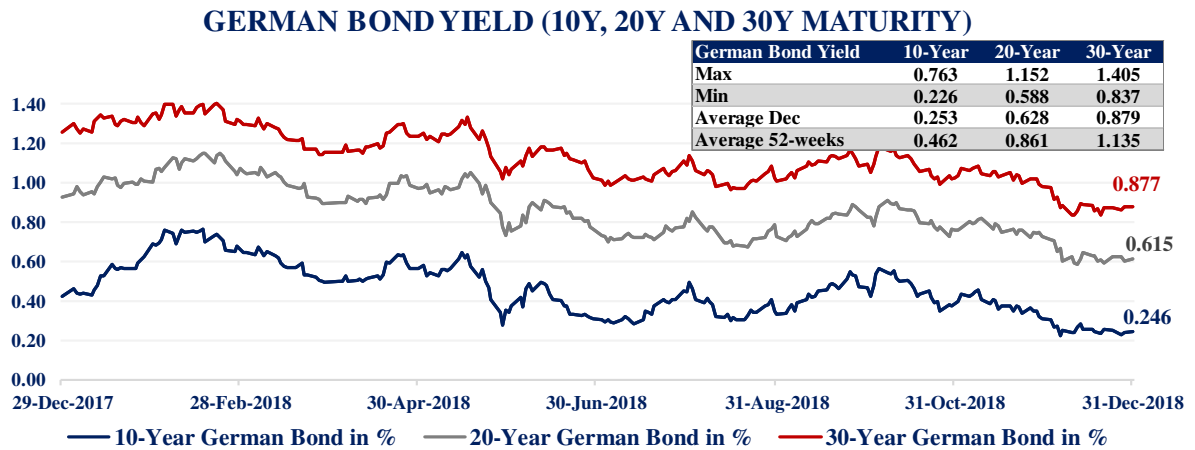


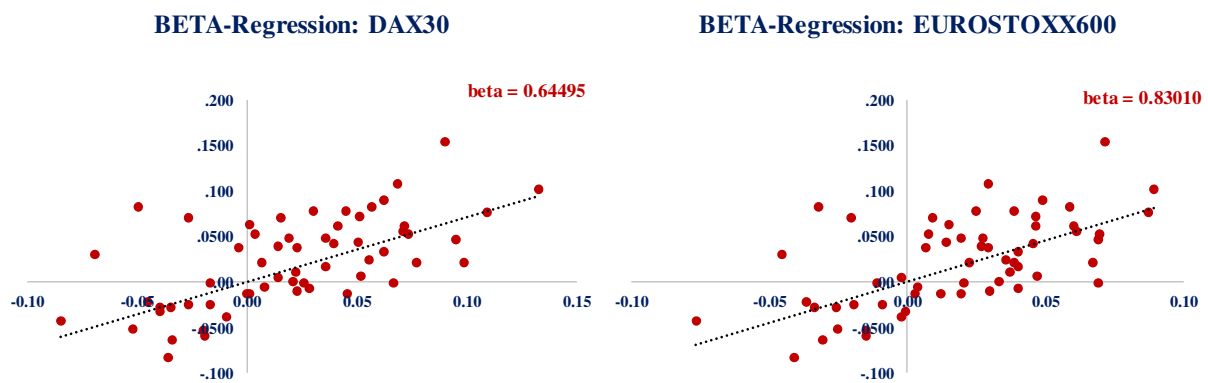
FIG-60: KPMG's Assessment of the MRP (Castedello and Schöniger, 2018)

Since no investments are truly risk-free, the 10-year German AAA-rated government bond was consulted as a proxy for the risk-free rate due to equal currency, low default risk and, high liquidity. Furthermore, the maturity resembles the explicit period. On December 31<sup>st</sup>, 2018, mentioned bond yielded 0.246%, which is in line with the average of December (0.253%).



*FIG-61: German Bond Yield*

Although the discount rate should illustrate future capital costs, the best proxy for the beta represents historical returns to derive the variation to the market. Either Beiersdorf's own historical raw beta can be estimated from its stock price volatility relative to market price volatility or the beta can be derived from a peer group. The former was computed using a least squares linear regression line based on the monthly returns of the past five years (31/Dec/2013-30/Nov/2018). As comparison DAX30 and EUROSTOXX600 were consulted. To emphasize intrinsic risk exposure, the monthly changes of the EURIBOR were deducted from the indices and Beiersdorf's returns. This results in a raw beta of 0.645 compared to DAX30 and 0.830 (EUROSTOXX600), reflecting Beiersdorf's lower price volatility and riskiness.



*FIG-62: BETA-Regression*

However, as discussed in chapter 2.2.3.2.2, the bottom-up approach is considered as more accurate due to counterbalancing the occurred standard error. Thus, the 5-year levered monthly beta of each listed peer company was obtained from Thomson Reuters Eikon (19/12/2018) and unlevered. Next, the peer's average unlevered beta per segment was weighted according to the forecasted revenue share in 2023 (Consumer: 81.3%; tesa: 18.7%). Finally, the obtained beta was relevered according to the target capital structure of Beiersdorf (100% equity), resulting in a beta of 0.75. Additionally, Blume's drift adjustment was applied to allow for mean-reversion, translating the yet historical beta derived from the peers into a forward-looking beta. Applying FOM-19 results in an adjusted beta of 0.84.

To compensate the exposure towards emerging market risk, the CRP was obtained from Damodaran's database. While Damodaran provides CRP per country, Beiersdorf publishes revenues only per region. Expecting higher revenue shares in countries with high GDP, the CRP per region was estimated by weighting manually a country's CRP with the GDP relative to the region, resulting in a GDP weighted CRP of 1.58%.

| Weight: Country Risk Premium                           | Regional Risk Premium (simple country average) | Regional Risk Premium (Country's GDP) | Revenue 2017 | in % of Group Revenue |
|--|--|---------------------------------------|--------------|-----------------------|
| <b>Consumer</b>  | <b>2.94%</b>                                   | <b>1.58%</b>                          | <b>5,799</b> | <b>82.19%</b>         |
| Europe   | 1.99%  | 1.46%                                 | 2,861        | 40.55%                |
| Western Europe   | 1.36%  | 0.93%                                 | 2,280        | 32.31%                |
| Eastern Europe   | 4.48%  | 3.55%                                 | 581          | 8.23%                 |
| America  | 2.77%  | 2.19%                                 | 1,117        | 15.83%                |
| North America  | 0.00%  | 0.00%                                 | 427          | 6.05%                 |
| Latinamerica   | 4.48%  | 3.55%                                 | 690          | 9.78%                 |
| Africa/Asia/Australia                                  | 4.53%  | 1.40%                                 | 1,821        | 25.81%                |
| <b>tesa</b>  | <b>2.84%</b>                                   | <b>1.55%</b>                          | <b>1,257</b> | <b>17.81%</b>         |
| Europe   | 1.99%  | 1.46%                                 | 707          | 10.02%                |
| America  | 2.77%  | 2.19%                                 | 190          | 2.69%                 |
| Africa/Asia/Australia                                  | 4.53%  | 1.40%                                 | 360          | 5.10%                 |
| <b>Beiersdorf all regions [Revenue 2017 weighted]:</b> | <b>2.92%</b>                                   | <b>1.58%</b>                          | <b>7,056</b> | <b>100.00%</b>        |

FIG-63: Beiersdorf's Revenue Weighted CRP

#### 4.1.12 Terminal Growth

Because of constant dividends and a related decreasing payout ratio, the portion of retained earnings increases simultaneously with non-operating cash and securities. Lastly, however, do not drive revenue growth. Thus, deriving the long-term growth rate (LTGR) from the product of retention rate and ROE seems unfeasible. Consequently, the terminal growth was computed according to FOM-11, representing the return on capital invested of the newly re-invested capital after the explicit period. Thereby, the investment rate amounts to 31.3%, whereas the ROIC reached 9.3% in 2023, reaching a terminal growth rate of 2.9%. EY's cosmetic financial

factbook (2016) verifies this estimate, computing a long-term growth rate of 2.6% based on several broker reports.

| Cosmetics companies | Market capitalization (in €m) | WACC         | Gearing        | Beta        | LTGR        |
|---------------------|-------------------------------|--------------|----------------|-------------|-------------|
| L'Oréal             | 87,542                        | 7.8%         | 0.2%           | 0.86        | 2.3%        |
| Estée Lauder        | 30,843                        | 7.8%         | 2.4%           | 0.91        | 2.2%        |
| Beiersdorf          | 18,230                        | 7.8%         | (6.4%)         | 0.84        | 2.6%        |
| Coty                | 8,318                         | 7.0%         | 27.2%          | 0.78        | 2.1%        |
| Shiseido            | 7,984                         | 4.9%         | 4.3%           | 0.98        | n/a         |
| Natura              | 2,936                         | 15.4%        | 18.5%          | 0.94        | 6.6%        |
| L'Occitane          | 2,472                         | 8.9%         | (12.6%)        | 0.74        | 1.8%        |
| <b>Average</b>      |                               | <b>9.1%</b>  | <b>4.8%</b>    | <b>0.86</b> | <b>2.9%</b> |
| <b>Median</b>       |                               | <b>7.8%</b>  | <b>2.4%</b>    | <b>0.86</b> | <b>2.3%</b> |
| <b>Maximum</b>      |                               | <b>15.4%</b> | <b>27.2%</b>   | <b>0.98</b> | <b>6.6%</b> |
| <b>Minimum</b>      |                               | <b>7.0%</b>  | <b>(12.6%)</b> | <b>0.74</b> | <b>1.8%</b> |

FIG-64: LTGR according to EY (Bonacina and Mazzucchelli, 2016)

Furthermore, implied growth rate is in line with expected growth of several research specialist, such as Inkwood Research (2017), expecting the global beauty and personal care market to grow at 2.81% CAGR between 2018-2026. However, this underlies constant market share.

Lastly, the implied growth was compared with the long-term nominal GDP, weighted by Beiersdorf expected revenue share per region in 2023. The data was obtained from the International Monetary Fund (IMF). As real GDP is already adjusted by inflation, latter was added back to reflect nominal terms. The nominal GDP is generally accepted as upper boundary for a LTGR and amounts to 6.29%. Thus, the implied growth rate of 2.9% is within the acceptable range.

| Terminal Growth Rate                             | Inflation Rate (i) | Real GDP Growth (g) | Nominal GDP [i + g] | Revenue 2023 | in % of Group Revenue |
|--|--------------------|---------------------|---------------------|--------------|-----------------------|
| <b>Consumer [Revenue weighted]</b>               | -                  | -                   | <b>6.37%</b>        | <b>7,417</b> | <b>81.33%</b>         |
| Europe   | 2.50%              | 2.00%               | 4.50%               | 3,184        | 34.91%                |
| Western Europe                                   | 2.00%              | 1.80%               | 3.80%               | 2,537*       | 27.82%                |
| Eastern Europe                                   | 3.70%              | 2.50%               | 6.20%               | 647*         | 7.09%                 |
| America  | -                  | -                   | 5.95%               | 1,256        | 13.78%                |
| North America                                    | 2.30%              | 2.50%               | 4.80%               | 480*         | 5.27%                 |
| Latinamerica                                     | 3.30%              | 3.80%               | 7.10%               | 776*         | 8.51%                 |
| Africa/Asia/Australia**                          | 4.80%              | 3.87%               | 8.67%               | 2,977        | 32.64%                |
| <b>tesa [Revenue weighted]</b>                   | -                  | -                   | <b>5.91%</b>        | <b>1,703</b> | <b>18.67%</b>         |
| Europe   | 2.50%              | 2.00%               | 4.5%                | 958*         | 10.50%                |
| America**  | 2.80%              | 3.15%               | 6.0%                | 257*         | 2.82%                 |
| Africa/Asia/Australia**                          | 4.80%              | 3.87%               | 8.7%                | 488*         | 5.35%                 |
| <b>Beiersdorf all regions [Revenue weighted]</b> | -                  | -                   | <b>6.29%</b>        | <b>9,119</b> | <b>100.00%</b>        |

\* Share 2017 applied as proxy for subregions due to expected higher accuracy.

\*\* Simple average.

FIG-65: Beiersdorf's Revenue Weighted Nominal Growth Rate

#### 4.1.13 Discounted FCFF and Terminal Value

The FCFF is discounted to 01/01/2019 by the cost of equity (7.25%) for the explicit period from 2019 to 2023 leading to a present value of EURm 3,294.8. Next, FOM-10 was applied to compute the TV, using 2.9% as growth rate in perpetuity. After discounting the TV, its present value totaled EURm 14,900.3, equaling 81.9% of EV.

| in EURm  | 2019E          | 2020E          | 2021E          | 2022E          | 2023E           |
|--|----------------|----------------|----------------|----------------|-----------------|
| <b>Net sales</b>   | <b>7,542.8</b> | <b>7,895.4</b> | <b>8,277.0</b> | <b>8,694.2</b> | <b>9,119.4</b>  |
| <i>growth in %</i>   | <i>4.1%</i>    | <i>4.7%</i>    | <i>4.8%</i>    | <i>5.0%</i>    | <i>4.9%</i>     |
| <b>Consumer - Europe</b>   | <b>2,850.3</b> | <b>2,911.3</b> | <b>2,991.7</b> | <b>3,083.7</b> | <b>3,183.6</b>  |
| <i>growth in %</i>   | <i>0.9%</i>    | <i>2.1%</i>    | <i>2.8%</i>    | <i>3.1%</i>    | <i>3.2%</i>     |
| <b>Consumer - America</b>  | <b>1,110.0</b> | <b>1,136.3</b> | <b>1,171.5</b> | <b>1,212.1</b> | <b>1,256.3</b>  |
| <i>growth in %</i>   | <i>1.0%</i>    | <i>2.4%</i>    | <i>3.1%</i>    | <i>3.5%</i>    | <i>3.7%</i>     |
| <b>Consumer - AAA</b>  | <b>2,146.9</b> | <b>2,330.0</b> | <b>2,528.4</b> | <b>2,743.5</b> | <b>2,976.8</b>  |
| <i>growth in %</i>   | <i>8.6%</i>    | <i>8.5%</i>    | <i>8.5%</i>    | <i>8.5%</i>    | <i>8.5%</i>     |
| <b>Tesa</b>  | <b>1,435.5</b> | <b>1,517.8</b> | <b>1,585.5</b> | <b>1,654.9</b> | <b>1,702.7</b>  |
| <i>growth in %</i>   | <i>6.6%</i>    | <i>5.7%</i>    | <i>4.5%</i>    | <i>4.4%</i>    | <i>2.9%</i>     |
| <b>EBITDA</b>  | <b>1,341.5</b> | <b>1,414.0</b> | <b>1,487.5</b> | <b>1,565.2</b> | <b>1,643.1</b>  |
| <b>EBIT</b>  | <b>1,179.3</b> | <b>1,243.5</b> | <b>1,308.4</b> | <b>1,376.8</b> | <b>1,445.5</b>  |
| (-) Taxes  | (364.4)        | (381.4)        | (398.4)        | (416.1)        | (433.6)         |
| <i>Applied tax rate</i>  | <i>30.9%</i>   | <i>30.7%</i>   | <i>30.4%</i>   | <i>30.2%</i>   | <i>30.0%</i>    |
| <b>Unlevered Net Income</b>  | <b>815.0</b>   | <b>862.1</b>   | <b>910.0</b>   | <b>960.7</b>   | <b>1,011.8</b>  |
| (+) Depreciation/Impairment: <b>Tangible Assets (PPE)</b>                    | <b>145.8</b>   | <b>153.1</b>   | <b>160.8</b>   | <b>169.0</b>   | <b>177.3</b>    |
| (-) Capital expenditures: <b>Tangible Assets (PPE)</b>                       | (178.4)        | (199.3)        | (213.8)        | (228.6)        | (238.9)         |
| (+) Amortization/ Impairment: <b>Intangible Assets</b>                       | <b>16.3</b>    | <b>17.4</b>    | <b>18.3</b>    | <b>19.3</b>    | <b>20.3</b>     |
| (-) Capital expenditures: <b>Intangible Assets</b>                           | (20.0)         | (20.6)         | (21.4)         | (22.4)         | (23.4)          |
| (-) Change in net working capital (receivables, payables, inventories)       | (23.2)         | (32.6)         | (37.4)         | (42.1)         | (43.4)          |
| (-) Change in deferred tax assets/liabilities (incl. tax assets/liabilities) | (7.3)          | (7.9)          | (8.2)          | (8.8)          | (8.9)           |
| <b>Unlevered Free Cash Flow (FCFF)</b>                                       | <b>748.2</b>   | <b>772.2</b>   | <b>808.3</b>   | <b>847.1</b>   | <b>895.0</b>    |
| <b>Present Value of Cash Flows</b>   | <b>697.6</b>   | <b>671.3</b>   | <b>655.1</b>   | <b>640.2</b>   | <b>630.6</b>    |
| <i>Discount rate</i>   | <i>93.2%</i>   | <i>86.9%</i>   | <i>81.1%</i>   | <i>75.6%</i>   | <i>70.5%</i>    |
| <b>Terminal value to be discounted in 2024</b>                               | -              | -              | -              | -              | <b>21,146.3</b> |
| <i>Discount rate</i>   |                |                |                |                | <i>70.5%</i>    |
| <b>Present Value FCFF (2019-2023)</b>  | -              | -              | -              | -              | <b>3,294.8</b>  |
| <b>Present Value of Terminal Value</b>                                       | -              | -              | -              | -              | <b>14,900.3</b> |
| <b>NPV (FCFF + TV): Implied Enterprise Value</b>                             |                |                |                |                | <b>18,195.1</b> |
| <i>Terminal value as percentage of Enterprise Value</i>                      |                |                |                |                | <i>81.9%</i>    |

FIG-66: DCF-Valuation

#### 4.1.14 Equity-Bridge

The equity bridge depicts the translation from Enterprise Value (EV) to Equity Value (EQV). While the EV measures Beiersdorf's total value of core business operations, the EQV reflects the value for the shareholders. Thus, items from other investors (debt) or long-term funding sources (capital leases, unfunded pension) will be deducted, while non-operating assets, such as liquid securities will be added. A closer examination of Beiersdorf's balance sheet reveals following adjustable items:

| DCF Valuation: Beiersdorf - EQUITY BRIDGE (in EURm) |  | (01/01/2019)    | % of EV       |
|---|--|-----------------|---------------|
|   | NPV FCFF   | 3,294.8         | 18.1%         |
| (+)   | NPV Terminal Value   | 14,900.3        | 81.9%         |
| (=)   | <b>Enterprise Value (EV)</b>                                 | <b>18,195.1</b> | <b>100.0%</b> |
|   | <i>Implied EV/EBITDA '18</i>                                 | <i>14.3x</i>    |               |
|   | <i>Implied EV/EBITDA '19</i>                                 | <i>13.6x</i>    |               |
| (+)   | Cash and Cash Equivalents                                    | 901.0           | 5.0%          |
| (+)   | Current Securities   | 770.0           | 4.2%          |
| (+)   | Non-Current Securities                                       | 3,087.8         | 17.0%         |
| (+)   | Other Current Financial Assets (OCFA)                        | 144.4           | 0.8%          |
| (-)   | Long-term Debt - Non Current Liabilities (NCL)               | 4.0             | 0.0%          |
| (-)   | Short-term Debt - Other current financial liabilities (OCFL) | 109.0           | 0.6%          |
| (-)   | Employee Benefits - Unfunded Pension Fund                    | 677.6           | 3.7%          |
| (-)   | Other Debt-deemed Provisions                                 | 560.1           | 3.1%          |
| (-)   | Minorities (Non-Controlling-Interests)                       | 21.0            | 0.1%          |
| (=)   | <b>Equity Value (EQV)</b>                                    | <b>21,726.6</b> | <b>119.4%</b> |
| (/)   | Number of Shares Outstanding ('000)                          | 226,182         |               |
| (=)   | <b>Price per Share (in EUR)</b>                              | <b>96.06</b>    |               |

FIG-67: Equity Bridge

By the end of 2018, cash-like-items increased to EURm 4.903 (+12.6% to 31/12/2017) based on the high retention rate. While OCFA increased relative to revenue, NCL, OCFL and minorities remain unchanged as in past years. OCFA and OCFL appear highly liquid and unrelated to the core business, consequently, being adjusted in the equity bridge. Although Beiersdorf has pension obligations from defined benefit pension plans of EURm 1,591 in 2017, EURm 945 million have already been transferred into plan assets to a separate entity. The remaining unfunded obligations (2017: EURm 659) are recognized as pension provision. Pension Plans were forecasted for 2018 according to Beiersdorf's published assumptions regarding employee growth (+2.4%), salary growth (+1.5%) and inflation (+1.0%), reaching unfunded obligations of EURm 677.6. Additionally, provisions for personnel expenses (bonuses) and marketing expenses (marketing allowances) were deducted as they reflect claims on the company that could be immediately settled by excess cash. Non-controlling-interests represent a funding source, thus deducted, and are assumed to remain constant in 2018. After dividing the EQV by the number of shares, the estimated share price amounts EUR 96.06.

### 4.1.15 Sensitivity Analysis

The impact of deviations in two of the most crucial assumptions were tested in a sensitivity analysis. The cost of equity and perpetual growth were tested to changes of  $\pm 20$ p.p., resulting in a price range of EUR 85.62-111.20 per share. Furthermore, the underlying assumptions can be back-tested with implied EV-multiples (EV/EBITDA: 13.6x and EV/EBIT: 15.4x) after conducting the relative valuation.

| Sensitivity Analysis                    |                   |        |        |        |        |
|---|-------------------|--------|--------|--------|--------|
| <b>Enterprise Value (in EURm)</b>       |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 18,137            | 18,882 | 19,702 | 20,610 | 21,619 |
| 7.05%                                   | 17,485            | 18,166 | 18,912 | 19,734 | 20,643 |
| 7.25%                                   | 16,889            | 17,513 | 18,195 | 18,943 | 19,766 |
| 7.45%                                   | 16,340            | 16,915 | 17,541 | 18,224 | 18,973 |
| 7.65%                                   | 15,834            | 16,365 | 16,942 | 17,569 | 18,253 |
| <b>Implied Terminal EBITDA multiple</b> |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 13.9x             | 14.6x  | 15.3x  | 16.2x  | 17.1x  |
| 7.05%                                   | 13.3x             | 13.9x  | 14.6x  | 15.4x  | 16.2x  |
| 7.25%                                   | 12.7x             | 13.3x  | 13.9x  | 14.6x  | 15.4x  |
| 7.45%                                   | 12.2x             | 12.7x  | 13.3x  | 14.0x  | 14.7x  |
| 7.65%                                   | 11.7x             | 12.2x  | 12.8x  | 13.3x  | 14.0x  |
| <b>Implied EV/EBITDA 2019E multiple</b> |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 13.5x             | 14.1x  | 14.7x  | 15.4x  | 16.1x  |
| 7.05%                                   | 13.0x             | 13.5x  | 14.1x  | 14.7x  | 15.4x  |
| 7.25%                                   | 12.6x             | 13.1x  | 13.6x  | 14.1x  | 14.7x  |
| 7.45%                                   | 12.2x             | 12.6x  | 13.1x  | 13.6x  | 14.1x  |
| 7.65%                                   | 11.8x             | 12.2x  | 12.6x  | 13.1x  | 13.6x  |
| <b>Equity Value (in EURm)</b>           |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 21,669            | 22,413 | 23,234 | 24,141 | 25,151 |
| 7.05%                                   | 21,017            | 21,698 | 22,444 | 23,266 | 24,175 |
| 7.25%                                   | 20,420            | 21,045 | 21,727 | 22,474 | 23,297 |
| 7.45%                                   | 19,871            | 20,447 | 21,072 | 21,756 | 22,505 |
| 7.65%                                   | 19,365            | 19,897 | 20,473 | 21,100 | 21,785 |
| <b>Share Price (in EUR)</b>             |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 95.80             | 99.09  | 102.72 | 106.73 | 111.20 |
| 7.05%                                   | 92.92             | 95.93  | 99.23  | 102.86 | 106.88 |
| 7.25%                                   | 90.28             | 93.04  | 96.06  | 99.36  | 103.00 |
| 7.45%                                   | 87.86             | 90.40  | 93.17  | 96.19  | 99.50  |
| 7.65%                                   | 85.62             | 87.97  | 90.52  | 93.29  | 96.31  |
| <b>Implied EV/EBIT 2019E</b>            |                   |        |        |        |        |
|   | Perpetuity growth |        |        |        |        |
| CoE                                     | 2.50%             | 2.70%  | 2.90%  | 3.10%  | 3.30%  |
| 6.85%                                   | 15.4x             | 16.0x  | 16.7x  | 17.5x  | 18.3x  |
| 7.05%                                   | 14.8x             | 15.4x  | 16.0x  | 16.7x  | 17.5x  |
| 7.25%                                   | 14.3x             | 14.8x  | 15.4x  | 16.1x  | 16.8x  |
| 7.45%                                   | 13.9x             | 14.3x  | 14.9x  | 15.5x  | 16.1x  |
| 7.65%                                   | 13.4x             | 13.9x  | 14.4x  | 14.9x  | 15.5x  |

FIG-68: Sensitivity Analysis

Furthermore, a scenario analysis was conducted by stressing the market share by  $\pm 0.5$ p.p. and COGS by  $\pm 1.0$ p.p., leading to a share price of EUR 89.45-102.67 and EUR 91.85-100.27 respectively.

## 4.2 Relative Valuation Beiersdorf

As trading multiples vary per industry, the previously selected peer group was again separated into *Personal Care Players* for the consumer segment and *Adhesives Players* for the tesa segment. For the relative valuation, the four most widely spread multiples were selected. Each multiple has its advantageous and disadvantageous, thus, being carefully applied.

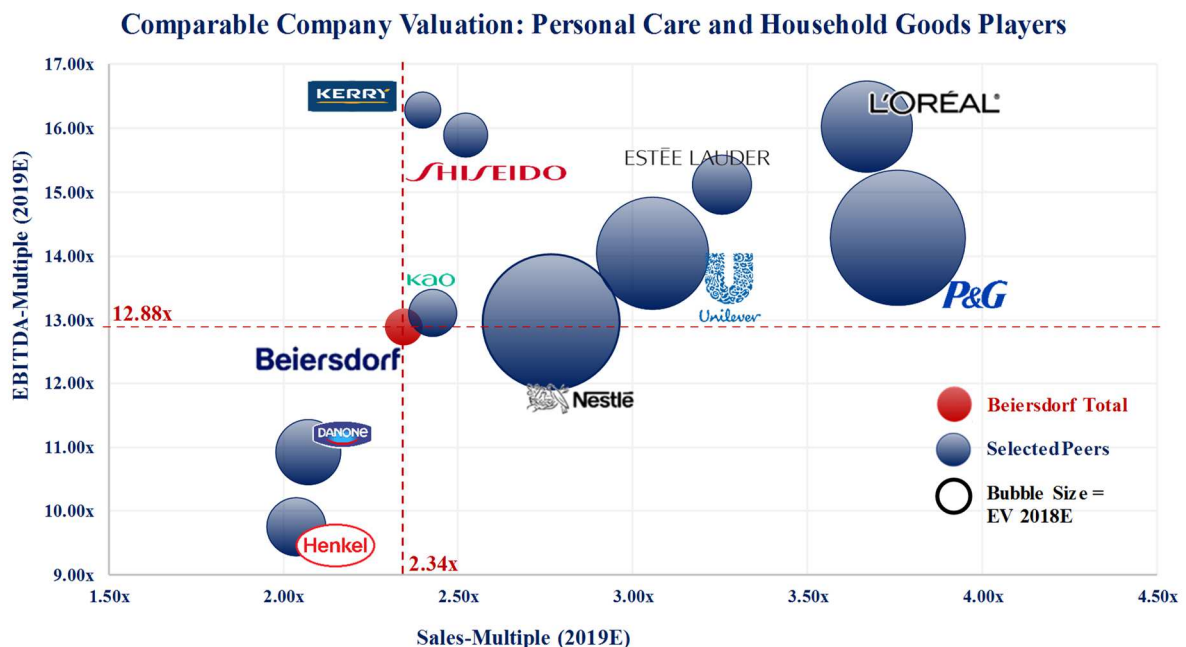
*EV/Revenue* directly compares a company's value to its sales and is often used in retail. Although not susceptible to accounting differences, this multiple neglects cost advantages or efficiencies in invested capital. To factor in capital efficiency, the *EV/EBIT*, which is often used for capital-intensive corporation as D&A are comprised in this ratio, was applied. However, the recognition of D&A often varies between companies due to differing accounting standards (exemplarily US-GAAP vs. IFRS). Thus, the pre D&A-ratio *EBITDA/EV* was additionally applied.

Furthermore, EBITDA is often treated as operating cash flow, reflecting the acquisition price for the operating cash flow of a company. For all mentioned EV-multiples, differences in the capital structure are taken into consideration (equity-bridge). The most common price multiple is the *price-to-earnings-ratio* (PER), relating the ratio directly to the share price and EQV. Despite the simplicity, this bottom-line multiple benefits from market proximity as future growth expectation are directly translated in the current share price.

Empirical evidence recommend applying forward-looking multiples rather than trailing multiples as they are more accurate predictors of value (Liu, Nissim, & Thomas, 2002). Consequently, the focus lies on estimated multiples for 2019.

Thus, the current EV of the peers was divided by the expected underlying figure, using the *SmartEstimate* from Thomson Reuters Eikon. The SmartEstimate does not simply average the estimations of major brokers but instead weights the estimations by the past forecast accuracy of the respective broker.

FIG-69 shows the different multiples for the peers in the consumer segment. From the bubble sizes can be derived that valuation increases roughly with higher sales and EBITDA. Thus, considering Beiersdorf's relatively smaller size, one might risk an overvaluation.



*FIG-69: Multiples of Consumer Peer*

FIG-70 underlines the necessity of a segmentation split as tesa's competitors trade at a lower multiple than the personal care players. Furthermore, the small peer group and multiple spread limit the informative power of the multiples.

Comparable Company Valuation: Major Adhesives Players Worldwide

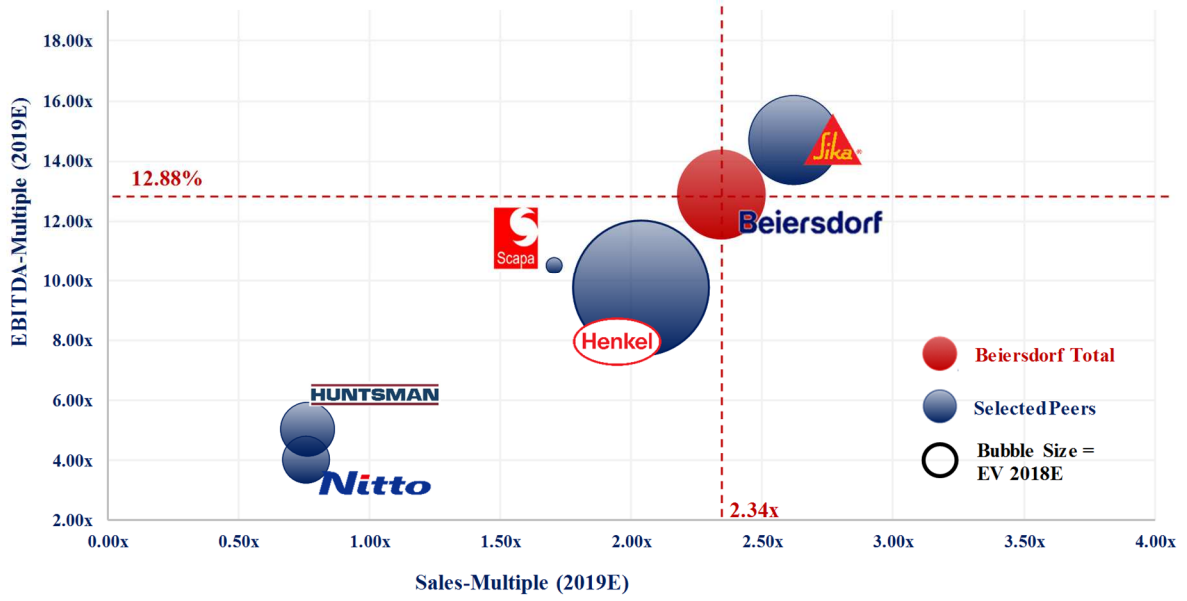


FIG-70: Multiples of tesa Peer

| #  | Company          | Ticker   | Country HQ     | Free Float (in %) | Sales 2018 (in EURm) | Market Cap (in EURm) | EV 2018 (in EURm) | EV / SALES |       |       | EV / EBITDA |       |       | EV / EBIT |       |       | Sales Growth CAGR |           | EBITDA margin |           | P/E    |       |      |
|--|------------------|----------|----------------|-------------------|----------------------|----------------------|-------------------|------------|-------|-------|-------------|-------|-------|-----------|-------|-------|-------------------|-----------|---------------|-----------|--------|-------|------|
|  |                  |          |                |                   |                      |                      |                   | 2018E      | 2019E | 2020E | 2018E       | 2019E | 2020E | 2018E     | 2019E | 2020E | 2015-2017         | 2018-2020 | 2015-2017     | 2018-2020 | CP     | PER   | EPS  |
|  | Beiersdorf AG    | BEIG.DE  | Germany        | 43.3%             | 7,222                | 22,958               | 17,692            | 2.4x       | 2.3x  | 2.2x  | 13.8x       | 12.9x | 12.0x | 15.7x     | 14.7x | 13.8x | 2.73%             | 4.43%     | 17.22%        | 18.20%    | 91.16  | 28.7x | 3.18 |
| <b>Comparable Companies: Personal Care and Household Goods Players</b> |                  |          |                |                   |                      |                      |                   |            |       |       |             |       |       |           |       |       |                   |           |               |           |        |       |      |
| 1  | Nestle SA        | NESN.S   | Switzerland    | 100%              | 81,180               | 216,440              | 232,560           | 2.9x       | 2.8x  | 2.7x  | 14.0x       | 13.0x | 12.2x | 17.4x     | 16.0x | 14.8x | -3.0%             | 4.1%      | 19.6%         | 21.3%     | 70.91  | 23.2x | 3.05 |
| 2  | Procter & Gamble | PG       | United States  | 100%              | 58,766               | 199,679              | 226,024           | 3.9x       | 3.8x  | 3.7x  | 15.1x       | 14.3x | 13.7x | 18.0x     | 17.0x | 16.2x | -1.4%             | 2.9%      | 26.7%         | 26.2%     | 80.15  | 22.3x | 3.59 |
| 3  | Unilever NV      | Unc.AS   | Netherlands    | 100%              | 51,083               | 134,262              | 155,976           | 3.1x       | 3.1x  | 2.9x  | 14.8x       | 14.0x | 12.9x | 16.8x     | 16.1x | 14.8x | 0.4%              | 2.4%      | 17.8%         | 21.8%     | 47.42  | 21.5x | 2.21 |
| 4  | L'Oreal SA       | OREP.PA  | France         | 42%               | 26,774               | 112,417              | 103,179           | 3.9x       | 3.7x  | 3.5x  | 17.1x       | 16.0x | 15.1x | 21.3x     | 19.8x | 18.5x | 3.5%              | 5.6%      | 22.2%         | 22.9%     | 201.20 | 30.1x | 6.67 |
| 5  | Danone SA        | DANO.PA  | France         | 99%               | 24,700               | 42,017               | 52,632            | 2.1x       | 2.1x  | 2.0x  | 11.4x       | 10.9x | 10.2x | 14.5x     | 13.6x | 12.5x | 4.9%              | 3.3%      | 17.0%         | 19.0%     | 61.51  | 17.9x | 3.43 |
| 6  | Estee Lauder     | EL       | United States  | 99%               | 12,610               | 41,161               | 43,768            | 3.5x       | 3.3x  | 3.1x  | 16.5x       | 15.1x | 13.8x | 20.4x     | 18.6x | 17.0x | 7.5%              | 6.2%      | 20.0%         | 21.6%     | 113.44 | 28.8x | 3.94 |
| 7  | Henkel AG        | HNKG_p.L | Germany        | 100%              | 20,035               | 39,250               | 42,457            | 2.1x       | 2.0x  | 2.0x  | 10.3x       | 9.8x  | 9.3x  | 12.1x     | 11.5x | 10.9x | 5.2%              | 3.3%      | 19.8%         | 20.9%     | 95.40  | 16.5x | 5.79 |
| 8  | Kao Corp         | 4452.T   | Japan          | 99%               | 11,835               | 31,602               | 29,255            | 2.5x       | 2.4x  | 2.3x  | 14.0x       | 13.1x | 12.4x | 17.8x     | 16.0x | 15.1x | -1.2%             | 3.6%      | 16.7%         | 18.5%     | 64.67  | 30.8x | 2.10 |
| 9  | Shiseido         | 4911.T   | Japan          | 95%               | 8,739                | 21,863               | 24,139            | 2.7x       | 2.5x  | 2.4x  | 18.5x       | 15.9x | 13.7x | n.m.      | n.m.  | n.m.  | 12.8%             | 6.6%      | 10.7%         | 16.0%     | 54.66  | n.m.  | 0.17 |
| 10   | Kerry Group      | KYGa.l   | Ireland        | 86%               | 6,567                | 15,206               | 16,714            | 2.5x       | 2.4x  | 2.3x  | 17.6x       | 16.3x | 15.2x | 21.7x     | 19.9x | 18.4x | 2.5%              | 5.6%      | 14.1%         | 14.7%     | 85.75  | 25.3x | 3.39 |
| <b>Total</b>   |                  |          |                |                   |                      |                      |                   |            |       |       |             |       |       |           |       |       |                   |           |               |           |        |       |      |
| first quartile (25th percentile)                                       |                  |          |                |                   | 12,029               | 33,514               | 32,555            | 2.5x       | 2.4x  | 2.3x  | 14.0x       | 13.0x | 12.2x | 16.8x     | 16.0x | 14.8x | -0.8%             | 3.3%      | 16.8%         | 18.6%     | 62.30  | 21.45 | 2.42 |
| third quartile (75th percentile)                                       |                  |          |                |                   | 45,006               | 128,801              | 142,776           | 3.4x       | 3.2x  | 3.0x  | 17.0x       | 15.7x | 13.8x | 20.4x     | 18.6x | 17.0x | 5.2%              | 5.6%      | 19.9%         | 21.7%     | 92.99  | 28.80 | 3.85 |
| mean   |                  |          |                |                   | 30,229               | 85,390               | 92,670            | 2.9x       | 2.8x  | 2.7x  | 14.9x       | 13.8x | 12.9x | 17.8x     | 16.5x | 15.4x | 3.1%              | 4.4%      | 18.4%         | 20.3%     | 87.51  | 24.06 | 3.43 |
| median   |                  |          |                |                   | 22,368               | 41,589               | 48,200            | 2.8x       | 2.6x  | 2.5x  | 14.9x       | 14.2x | 13.3x | 17.8x     | 16.1x | 15.1x | 3.0%              | 3.8%      | 18.7%         | 21.1%     | 75.53  | 23.25 | 3.41 |
| n.m. = non meaningful (multiples 200% > peer average)                  |                  |          |                |                   |                      |                      |                   |            |       |       |             |       |       |           |       |       |                   |           |               |           |        |       |      |
| <b>Comparable Companies: Major Adhesives Players Worldwide</b>         |                  |          |                |                   |                      |                      |                   |            |       |       |             |       |       |           |       |       |                   |           |               |           |        |       |      |
| 1  | Henkel AG        | HNKG_p.L | Germany        | 100%              | 20,035               | 39,250               | 42,457            | 2.1x       | 2.0x  | 2.0x  | 10.3x       | 9.8x  | 9.3x  | 12.1x     | 11.5x | 10.9x | 5.2%              | 3.3%      | 19.8%         | 20.9%     | 95.40  | 16.5x | 5.79 |
| 2  | Sika AG          | SIKA.S   | Switzerland    | 88%               | 6,281                | 15,643               | 18,029            | 2.8x       | 2.6x  | 2.4x  | 16.6x       | 14.7x | 13.2x | 19.9x     | 17.5x | 15.7x | 2.9%              | 7.1%      | 16.4%         | 17.7%     | 110.71 | 30.3x | 3.65 |
| 3  | Nitto Denko      | 6988.T   | Japan          | 99%               | 6,569                | 7,638                | 5,126             | 0.8x       | 0.8x  | 0.7x  | 4.1x        | 4.0x  | 3.8x  | n.m.      | n.m.  | n.m.  | 2.8%              | 2.5%      | 19.1%         | 19.0%     | 43.96  | 9.7x  | 4.51 |
| 4  | Huntsman         | HUN      | United States  | 85%               | 8,114                | 4,008                | 6,728             | 0.8x       | 0.8x  | 0.7x  | 4.9x        | 5.0x  | 4.7x  | 6.3x      | 6.4x  | 5.9x  | -3.6%             | 4.2%      | 14.5%         | 16.1%     | 16.82  | 7.6x  | 2.20 |
| 5  | Scapa Group      | SCPAL    | United Kingdom | 93%               | 346                  | 527                  | 646               | 1.9x       | 1.7x  | 1.6x  | 13.0x       | 10.5x | 9.7x  | 15.9x     | 12.8x | 11.6x | 3.2%              | 6.4%      | 12.2%         | 15.8%     | 3.41   | 17.7x | 0.19 |
| <b>Total</b>   |                  |          |                |                   |                      |                      |                   |            |       |       |             |       |       |           |       |       |                   |           |               |           |        |       |      |
| first quartile (25th percentile)                                       |                  |          |                |                   | 6,281                | 4,008                | 5,126             | 0.8x       | 0.8x  | 0.7x  | 4.9x        | 5.0x  | 4.7x  | 10.7x     | 10.2x | 9.7x  | 2.8%              | 3.3%      | 14.5%         | 16.1%     | 16.82  | 9.74  | 2.20 |
| third quartile (75th percentile)                                       |                  |          |                |                   | 8,114                | 15,643               | 18,029            | 2.1x       | 2.0x  | 2.0x  | 13.0x       | 10.5x | 9.7x  | 16.9x     | 14.0x | 12.6x | 3.2%              | 6.4%      | 19.1%         | 19.0%     | 95.40  | 17.66 | 4.51 |
| mean   |                  |          |                |                   | 8,269                | 13,413               | 14,597            | 1.7x       | 1.6x  | 1.5x  | 9.8x        | 8.8x  | 8.2x  | 13.6x     | 12.0x | 11.0x | 2.1%              | 4.7%      | 16.4%         | 17.9%     | 54.06  | 16.37 | 3.27 |
| median   |                  |          |                |                   | 6,569                | 7,638                | 6,728             | 1.9x       | 1.7x  | 1.6x  | 10.3x       | 9.8x  | 9.3x  | 14.0x     | 12.1x | 11.3x | 2.9%              | 4.2%      | 16.4%         | 17.7%     | 43.96  | 16.48 | 3.65 |

FIG-71: Trading Multiples Peers

| EV-Multiples             |               |                      |        |        |             |        |        |           |        |        | PER-Multiple       |                       |                  |               |        |
|--------------------------|---------------|----------------------|--------|--------|-------------|--------|--------|-----------|--------|--------|--------------------|-----------------------|------------------|---------------|--------|
| Multiple Valuation       |               | EV / SALES           |        |        | EV / EBITDA |        |        | EV / EBIT |        |        | Multiple Valuation | PER<br>2018E          |                  |               |        |
|                          |               | 2018E                | 2019E  | 2020E  | 2018E       | 2019E  | 2020E  | 2018E     | 2019E  | 2020E  |                    |                       |                  |               |        |
| Personal Care Players    | Multiples     | BEIG.DE:*            | 2.4x   | 2.3x   | 2.2x        | 13.8x  | 12.9x  | 12.0x     | 15.7x  | 14.7x  | 13.8x              | Personal Care Players | Multiples        | BEIG.DE:*     | 28.7x  |
|                          |               | 1st Quartile         | 2.5x   | 2.4x   | 2.3x        | 14.0x  | 13.0x  | 12.2x     | 16.8x  | 16.0x  | 14.8x              |                       |                  | 1st Quartile  | 21.5x  |
|                          |               | 3rd Quartile         | 3.4x   | 3.2x   | 3.0x        | 17.0x  | 15.7x  | 13.8x     | 20.4x  | 18.6x  | 17.0x              |                       |                  | 3rd Quartile  | 28.8x  |
|                          |               | mean                 | 2.9x   | 2.8x   | 2.7x        | 14.9x  | 13.8x  | 12.9x     | 17.8x  | 16.5x  | 15.4x              |                       |                  | mean          | 24.1x  |
|                          |               | median               | 2.8x   | 2.6x   | 2.5x        | 14.9x  | 14.2x  | 13.3x     | 17.8x  | 16.1x  | 15.1x              |                       |                  | median        | 23.2x  |
|                          | EV            | Sales; EBITDA; EBIT: | 5,901  | 6,107  | 6,378       | 1,016  | 1,073  | 1,131     | 904    | 955    | 1,007              | Personal Care Players | EQV              | Earnings:     | 611    |
|                          |               | 1st Quartile         | 14,860 | 14,700 | 14,634      | 14,189 | 13,948 | 13,823    | 15,164 | 15,233 | 14,886             |                       |                  | 1st Quartile  | 13,119 |
|                          |               | 3rd Quartile         | 19,882 | 19,579 | 19,371      | 17,261 | 16,839 | 15,574    | 18,461 | 17,721 | 17,077             |                       |                  | 3rd Quartile  | 17,611 |
|                          |               | mean                 | 17,226 | 17,079 | 17,089      | 15,179 | 14,848 | 14,536    | 16,074 | 15,749 | 15,457             |                       |                  | mean          | 14,709 |
|                          |               | median               | 16,527 | 16,150 | 16,115      | 15,176 | 15,199 | 15,023    | 16,071 | 15,417 | 15,161             |                       |                  | median        | 14,216 |
| Adhesives Players        | Multiples     | BEIG.DE:*            | 2.4x   | 2.3x   | 2.2x        | 13.8x  | 12.9x  | 12.0x     | 15.7x  | 14.7x  | 13.8x              | Adhesives Players     | Multiples        | BEIG.DE:*     | 28.7x  |
|                          |               | 1st Quartile         | 0.8x   | 0.8x   | 0.7x        | 4.9x   | 5.0x   | 4.7x      | 10.7x  | 10.2x  | 9.7x               |                       |                  | 1st Quartile  | 9.7x   |
|                          |               | 3rd Quartile         | 2.1x   | 2.0x   | 2.0x        | 13.0x  | 10.5x  | 9.7x      | 16.9x  | 14.0x  | 12.6x              |                       |                  | 3rd Quartile  | 17.7x  |
|                          |               | mean                 | 1.7x   | 1.6x   | 1.5x        | 9.8x   | 8.8x   | 8.2x      | 13.6x  | 12.0x  | 11.0x              |                       |                  | mean          | 16.4x  |
|                          |               | median               | 1.9x   | 1.7x   | 1.6x        | 10.3x  | 9.8x   | 9.3x      | 14.0x  | 12.1x  | 11.3x              |                       |                  | median        | 16.5x  |
|                          | EV            | Sales; EBITDA; EBIT: | 1,347  | 1,435  | 1,518       | 255    | 269    | 283       | 212    | 224    | 237                | Adhesives Players     | EQV              | Earnings:     | 148    |
|                          |               | 1st Quartile         | 1,052  | 1,099  | 1,130       | 1,243  | 1,354  | 1,332     | 2,265  | 2,290  | 2,289              |                       |                  | 1st Quartile  | 1,445  |
|                          |               | 3rd Quartile         | 2,841  | 2,924  | 3,003       | 3,310  | 2,829  | 2,754     | 3,596  | 3,131  | 2,989              |                       |                  | 3rd Quartile  | 2,621  |
|                          |               | mean                 | 2,244  | 2,264  | 2,291       | 2,492  | 2,367  | 2,312     | 2,884  | 2,700  | 2,611              |                       |                  | mean          | 2,429  |
|                          |               | median               | 2,515  | 2,448  | 2,503       | 2,620  | 2,622  | 2,644     | 2,977  | 2,721  | 2,667              |                       |                  | median        | 2,446  |
| Sum of all Parts - GROUP | EV            | Sum of Segments:     |        |        |             |        |        |           |        |        | TOTAL              | EQV                   | Sum of Segments: |               |        |
|                          |               | 1st Quartile         | 15,912 | 15,798 | 15,764      | 15,432 | 15,302 | 15,155    | 17,429 | 17,523 |                    |                       | 17,175           | 1st Quartile  | 14,563 |
|                          |               | 3rd Quartile         | 22,723 | 22,504 | 22,373      | 20,571 | 19,668 | 18,328    | 22,058 | 20,852 |                    |                       | 20,066           | 3rd Quartile  | 20,232 |
|                          |               | mean                 | 19,470 | 19,344 | 19,381      | 17,671 | 17,215 | 16,848    | 18,958 | 18,449 |                    |                       | 18,067           | mean          | 17,138 |
|                          |               | median               | 19,042 | 18,597 | 18,617      | 17,796 | 17,820 | 17,667    | 19,048 | 18,138 |                    |                       | 17,828           | median        | 16,662 |
|                          | EQV           | Bridge Components:   | 3,532  | 3,532  | 3,532       | 3,532  | 3,532  | 3,532     | 3,532  | 3,532  | 3,532              | TOTAL                 | Share Price      | # Shares (m): | 226.2  |
|                          |               | 1st Quartile         | 19,444 | 19,330 | 19,295      | 18,964 | 18,833 | 18,687    | 20,961 | 21,055 | 20,707             |                       |                  | 1st Quartile  | 64.39  |
|                          |               | 3rd Quartile         | 26,254 | 26,035 | 25,905      | 24,103 | 23,199 | 21,859    | 25,589 | 24,384 | 23,598             |                       |                  | 3rd Quartile  | 89.45  |
|                          |               | mean                 | 23,002 | 22,875 | 22,912      | 21,203 | 20,746 | 20,380    | 22,490 | 21,980 | 21,599             |                       |                  | mean          | 75.77  |
|                          |               | median               | 22,574 | 22,129 | 22,149      | 21,328 | 21,352 | 21,199    | 22,580 | 21,669 | 21,360             |                       |                  | median        | 73.67  |
| Share Price              | # Shares (m): | 226.2                | 226.2  | 226.2  | 226.2       | 226.2  | 226.2  | 226.2     | 226.2  | 226.2  | TOTAL              | Share Price           | # Shares (m):    | 226.2         |        |
|                          | 1st Quartile  | 85.97                | 85.46  | 85.31  | 83.84       | 83.27  | 82.62  | 92.67     | 93.09  | 91.55  |                    |                       | 1st Quartile     | 64.39         |        |
|                          | 3rd Quartile  | 116.07               | 115.11 | 114.53 | 106.56      | 102.57 | 96.64  | 113.14    | 107.81 | 104.33 |                    |                       | 3rd Quartile     | 89.45         |        |
|                          | mean          | 101.69               | 101.14 | 101.30 | 93.74       | 91.72  | 90.10  | 99.43     | 97.18  | 95.49  |                    |                       | mean             | 75.77         |        |
|                          | median        | 99.80                | 97.84  | 97.92  | 94.29       | 94.40  | 93.72  | 99.83     | 95.80  | 94.44  |                    |                       | median           | 73.67         |        |

\*For comparisons, BEIG.DE represents the current trading multiples for Beiersdorf according to Thomson Reuters Eikon

FIG-72: EV-Multiple Valuation Beiersdorf

After obtaining the multiples for each segment, a sum of all parts (SOAP) valuation was applied by adding up the segments. As simplification, the 2017 share per segment was used to separate EBITDA, EBIT and Net Income (FIG-72).

For 2019's multiples, the share price derived from the median EV/Revenue-multiple of 2.47x amounts to EUR 97.84, the EV/EBITDA-multiple of 13.28x to EUR 94.40, EV/EBIT-multiple of 15.38x to EUR 95.80 and the PER of 21.93x to EUR 73.67 per share.

Additionally, a Comparable Transaction Analysis (CTA) was conducted by examining acquisitions between 01/01/2016 and 31/12/2018, using data from MergerMarket. FIG-73 depicts all transactions in the personal care market for companies with an EV over EURm 100 and a disclosed deal value. On average, a revenue-multiple of 4.0x, an EBITDA-multiple of 15.1x, and

an EBIT-multiple of 26.1x was paid. However, due to the discussed limitations of a control premium in transaction-based valuation (Chapter 2.3), below CTA will be neglected.

















































| Announced Date                            | Target Company   | Target Company Value Proposition   | Target Country  | % sought | Bidder Company   | Bidder Country   | EV (EURm) | Multiples       |                 |               |
|---|--|--|---|----------|--|--|-----------|-----------------|-----------------|---------------|
| 06-09-2017                                |  <b>ESPA</b><br>Natural Beauty<br>Inner Calm            | Developing, manufacturing, and delivering natural skincare products                        |    | 100%     |  THE HUT GROUP                |    | 109.4     | 4.3x<br>Revenue | n.m.<br>EBITDA  | n.m.<br>EBIT  |
| 20-01-2017                                |  <b>Viviscal</b><br>Advanced Hair Health                | Supplying products for hair restoration and vitamin supplements                            |    | 100%     |  GUTHRIE & GIBBY<br>CO., INC. |    | 150.0     | 3.6x<br>Revenue | n.a.<br>EBITDA  | n.a.<br>EBIT  |
| 28-09-2018                                |  <b>manuka health</b>                                   | Developing natural health, wellbeing and wound care products                               |    | 100%     |  Hong Leong                   |    | 228.5     | 3.7x<br>Revenue | n.m.<br>EBITDA  | n.a.<br>EBIT  |
| 08-10-2018                                |  <b>ADA COSMETIC</b>                                    | Producing and Suppling cosmetics for hotels (spa products, body care and natural products) |    | 100%     |  MOONLAKE CAPITAL             |    | 300.0     | 2.7x<br>Revenue | n.a.<br>EBITDA  | n.a.<br>EBIT  |
| 26-10-2017                                |  <b>ZOTOS</b>   | Manufacturing of professional hair care, hair color and styling products                   |    | 100%     |  Henkel                       |    | 412.8     | 2.1x<br>Revenue | n.a.<br>EBITDA  | 30.7x<br>EBIT |
| 17-10-2016                                |  <b>ghd</b><br>good hair day, every day                 | Providing personal care and hair care products   |    | 100%     |  COTY                         |    | 465.3     | 2.4x<br>Revenue | 16.1x<br>EBITDA | 26.5x<br>EBIT |
| 26-06-2017                                |  <b>THE BODY SHOP</b>                                 | Manufacturing of beauty care products  |  | 100%     |  naturaBRASIL               |  | 1,000.0   | 1.2x<br>Revenue | 13.3x<br>EBITDA | 29.3x<br>EBIT |
| 22-07-2016                                |  <b>it COSMETICS</b>                                  | Manufacturing cosmetics  |  | 100%     |  L'ORÉAL                    |  | 1,090.0   | 6.6x<br>Revenue | n.a.<br>EBITDA  | n.a.<br>EBIT  |
| 10-01-2017                                |  <b>VALEANT</b><br>Pharmaceuticals, Consumer Products | Cosmetics division (CeraVe, AcneFree and Ambi Skincare Brands) of VPI Inc.                 |  | 100%     |  L'ORÉAL                    |  | 1,228.2   | 7.7x<br>Revenue | n.a.<br>EBITDA  | n.a.<br>EBIT  |
| 01-06-2017                                |  <b>pdc brands</b><br>Beauty & Wellness               | Manufacturing perfumes, body lotion, body wash, shower gel and body spray products         |  | 100%     |  CVC<br>Capital Partners    |  | 1,269.0   | 3.8x<br>Revenue | 14.3x<br>EBITDA | n.a.<br>EBIT  |
| 25-09-2017                                |  <b>carverkorea</b><br>beauty innovator               | Manufacturing cosmetics (creams, facial masks and lotions)                                 |  | 95.4%    |  Unilever                   |  | 2,237.1   | 7.5x<br>Revenue | 17.5x<br>EBITDA | 17.8x<br>EBIT |
| 24-06-2016                                |  <b>Sun</b><br>Personal Care                          | Producing laundry detergents, soaps and household products                                 |  | 100%     |  Henkel                     |  | 3,231.6   | 2.3x<br>Revenue | 14.3x<br>EBITDA | n.a.<br>EBIT  |
| n.a.: not announced, n.m.: not meaningful |  |  |   |          |  |  |           |                 |                 |               |
| <b>Minimum</b>                            |  |  |   |          |  |  |           | 1.2x<br>Revenue | 13.3x<br>EBITDA | 17.8x<br>EBIT |
| <b>Maximum</b>                            |  |  |   |          |  |  |           | 7.7x<br>Revenue | 17.5x<br>EBITDA | 30.7x<br>EBIT |
| <b>Mean</b>                               |  |  |   |          |  |  |           | 4.0x<br>Revenue | 15.1x<br>EBITDA | 26.1x<br>EBIT |
| <b>Median</b>                             |  |  |   |          |  |  |           | 3.7x<br>Revenue | 14.3x<br>EBITDA | 27.9x<br>EBIT |

FIG-73: CTA Personnel Care

### 4.3 Valuation Summary

On December 28<sup>th</sup>, 2018, Beiersdorf's share closed at EUR 91.16. According to above valuation, the share price of the conducted DCF-method amounts to EUR 96.06, representing an upside potential of +5.4%. For the 2019 median forward-multiples, EV/Sales estimates a share price of EUR 97.84 (+7.3%), EV/EBITDA estimates EUR 94.40 (+3.6%), and EV/EBIT estimates a price per share of EUR 95.80 (+5.1%). Through the bottom-line PER-multiple a price of EUR 73.67 is obtained, reflecting a downside of -19.2%. Latter result most probably deviates due to the neglect of Beiersdorf's capital structure and positive net liquidity.

| Valuation Range for Beiersdorf Share Price [BEIG.DE]    |              |                   |
|---|--------------|-------------------|
| Method  |              | Upside / Downside |
| <b>Closing Share Price [28. Dec 2018]</b>               | <b>91.16</b> | <b>-</b>          |
| <b>DCF - Method</b>                                     | <b>96.06</b> | <b>5.4%</b>       |
| <b>EV/Sales Multiple (2018 &amp; 2019 median)</b>       | <b>98.82</b> | <b>8.4%</b>       |
| Forward 2018E - median                                  | 99.80        | 9.5%              |
| Forward 2019E - median                                  | 97.84        | 7.3%              |
| <b>EV/EBITDA - Multiple (2018 &amp; 2019 median)</b>    | <b>94.35</b> | <b>3.5%</b>       |
| Forward 2018E   | 94.29        | 3.4%              |
| Forward 2019E   | 94.40        | 3.6%              |
| <b>EV/EBIT - Multiple (2018 &amp; 2019 median)</b>      | <b>97.82</b> | <b>7.3%</b>       |
| Forward 2018E   | 99.83        | 9.5%              |
| Forward 2019E   | 95.80        | 5.1%              |
| <b>PER - Multiple (median)</b>                          | <b>73.67</b> | <b>-19.2%</b>     |
| <b>Median Share Price - Forward 2019E</b>               | <b>96.06</b> | <b>5.4%</b>       |
| <b>Median Share Price - Forward 2019E (without PER)</b> | <b>95.93</b> | <b>6.3%</b>       |

FIG-74: Comparison of Valuation Techniques

After dropping the unsuitable PER-multiple, a price range of EUR 94.40-97.84 with a median of EUR 95.93 is reached.

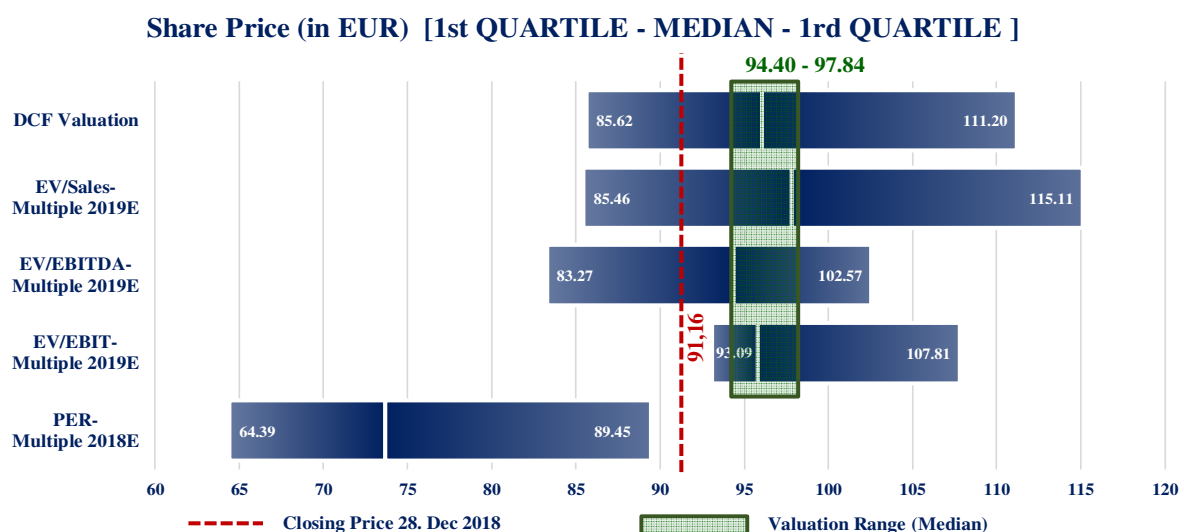
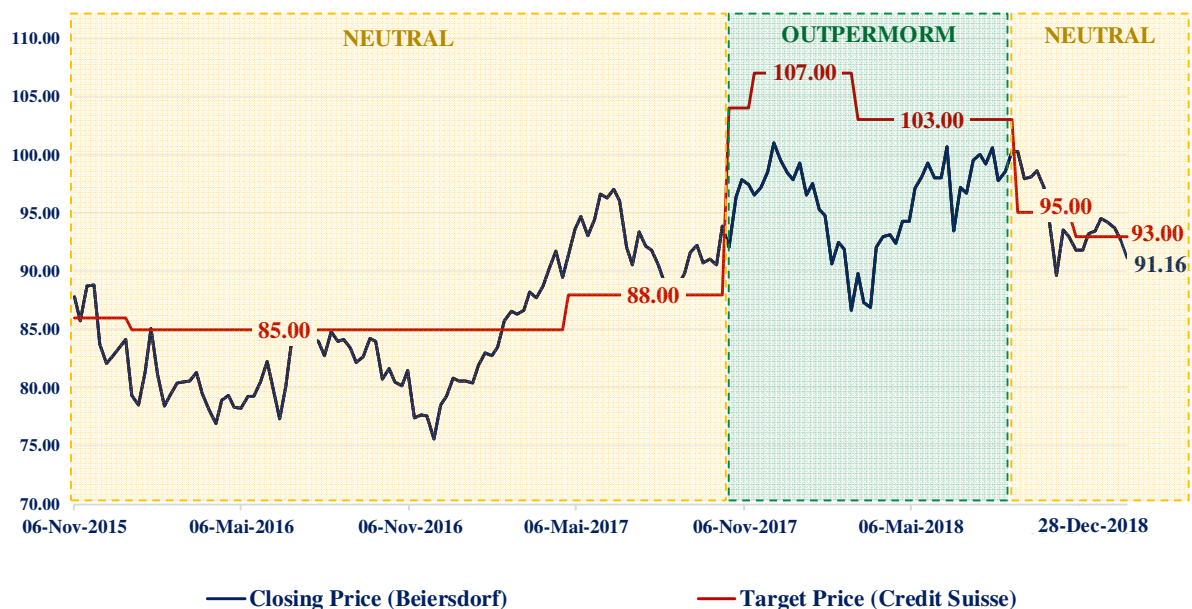


FIG-75: Graphical Valuation Comparison

## 5 Comparison with Investment Bank

A comparison with an equity research of a major investment bank was conducted, using the report from Credit Suisse (CS), published on 31/08/2018. Credit Suisse determined a fair value per share of EUR 95.00, while the traded price on 28/08/2018 amounted EUR 101.10. Thereby, CS decreased its “outperform” recommendation with a target price of EUR 103.00 to a neutral recommendation due to valuing cash holdings at a 50% discount. This discount is justified by the conservative payout policy of Beiersdorf and the diluting contribution to future shareholder return as cash is neither reinvested, nor paid out. FIG-76 depicts the historical trading price versus CS’ target price, showing that CS has even decreased the target price to EUR 93.00 on 31/10/2018 and confirmed this price on 14/01/2019.

**CURRENT SHARE PRICE vs. CREDIT SUISSE TARGET PRICE**



*FIG-76: Beiersdorf's Closing Price vs. Credit Suisse*

Next, the underlying assumptions of CS’ valuation were compared. CS used the APV-method and consequently the cost of equity as discount rate. Latter exceeds with 8.0% the cost of equity in this thesis. Whereas the revenue CAGR in the explicit period is very similar ( $\Delta -0.05\text{p.p.}$  compared to this thesis), CS assumes continuously increasing EBIT-margins, reaching an average of 16.4% ( $\Delta +0.62\text{p.p.}$ ). Additionally, a lower LTGR is implied ( $\Delta -0.40\text{p.p.}$ ). Primarily due to the higher EBIT-margin, CS reaches a higher EV of EURm 20,306 ( $\Delta \text{EURm } +2,111$ ). However, as CS is treating cash and securities with a 50% discount and does not recognize other provisions, a similar EQV is reached ( $\Delta \text{EURm } -0,079$ ) as depicted in FIG-75.

| Differences in Major Assumptions            |               |               |
|---|---------------|---------------|
|   | Credit Suisse | This Thesis   |
| <b>Estimated Fair Price per Share (EUR)</b> | <b>95.00</b>  | <b>96.06</b>  |
| Underlying Valuation Date                   | 31.08.2018    | 01.01.2019    |
| Date of Compared Traded Share Price         | 28.08.2018    | 28.12.2018    |
| Method                                      | APV           | DCF           |
| Compared Traded Share Price (EUR)           | 101.10        | 91.16         |
| Upside/Downside                             | -6.0%         | +5.4%         |
| Recommendation                              | HOLD          | HOLD          |
| Explicit Forecast Period (Years)            | 4.5 (2022)    | 5 (2023)      |
| Cost of Equity                              | 8.00%         | 7.25%         |
| WACC  | -             | 7.25%         |
| Long-Run Tax Rate                           | 30%           | 30%           |
| 5-Year Revenue CAGR                         | 4.81%         | 4.86%         |
| Perpetuity Growth Rate                      | 2.5%          | 2.9%          |
| 5-Year EBIT Margin (average)                | 16.4%         | 15.8%         |
| Present Value FCFE                          | -             | 3,295         |
| Present Value of TV                         | -             | 14,900        |
| Enterprise Value (EURm)                     | 20,306        | 18,195        |
| Cash and Cash Equivalents (EURm)            | 2,177         | 4,903         |
| Debt (EURm)                                 | -113          | -113          |
| Other Adjustments (EURm)                    | -722          | -1,259        |
| <b>Equity Value (EURm)</b>                  | <b>21,648</b> | <b>21,727</b> |

FIG-77: Differing Assumptions (Credit Suisse vs. Thesis)

Lastly, the hold recommendation of CS was compared to the general recommendations of analysts (FIG-78). Whereas the average target price of all major analysts amounts to EUR 99.07 in August 2018, the target price decreased to EUR 97.30 in January 2019. In August 2018, 60% of all 30 analysts address a hold recommendation, confirming the recommendation of CS' analyst Pieter Vorster not be an outlier.

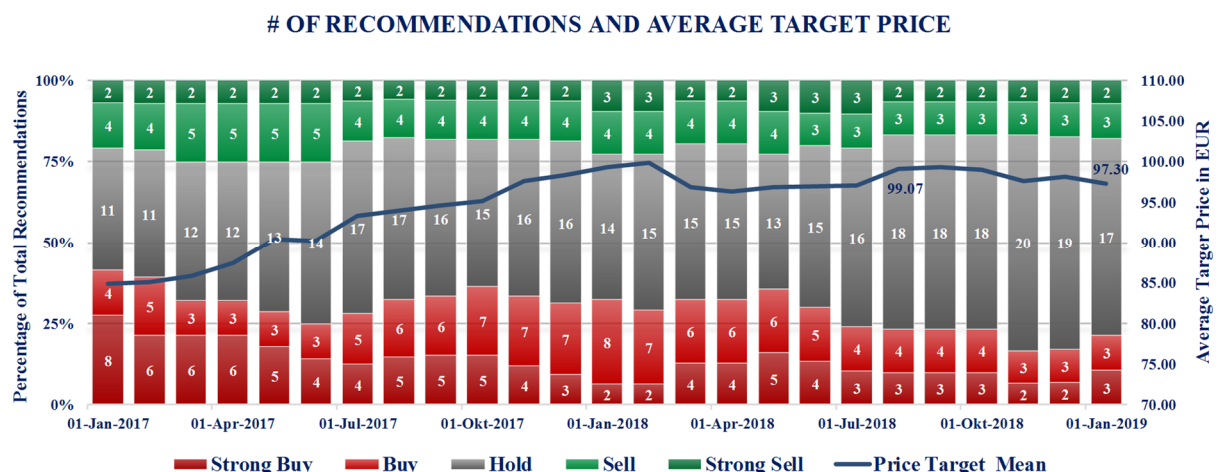


FIG-78: Major Analysts Recommendations (Thomson Reuters Eikon)

## 6 Conclusion

In this thesis, the intrinsic and relative valuation approaches were applied to estimate the fair value of Beiersdorf. According to the DCF-method, a median share price of EUR 96.06 per share is obtained with an acceptable range of EUR 85.62-111.20 after stressing the assumptions for cost of equity and perpetual growth rate. The forward-looking multiple valuation complements this assessment by indicating a price of EUR 97.84 for the EV/Sales-multiple, EUR 94.40 for the EV/EBITDA-multiple, and EUR 95.80 for the EV/EBIT-multiple in respect to Beiersdorf's peers. Thus, the median price of the DCF- and multiple valuation accounts for EUR 95.93 with a range of EUR 94.40-97.84.

Compared with a current trading price of EUR 91.16 (28/12/2018), an investor would be exposed to an upside potential of +3.6% (EUR 94.40) to +7.3 (EUR 97.84). As the current price is slightly above the estimated range, a hold recommendation is addressed, which is in line with the equity research of Credit Suisse. However, it should be noted that the net cash pile account for EUR 15.71 per share. Due to its "locked-like" nature, investors could consider a discount.

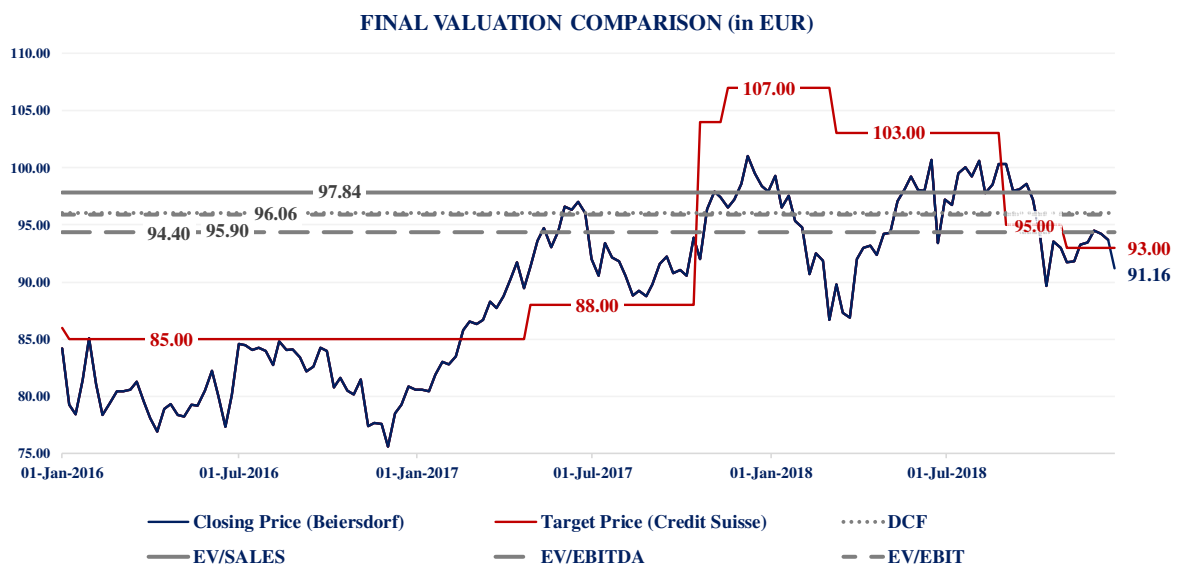


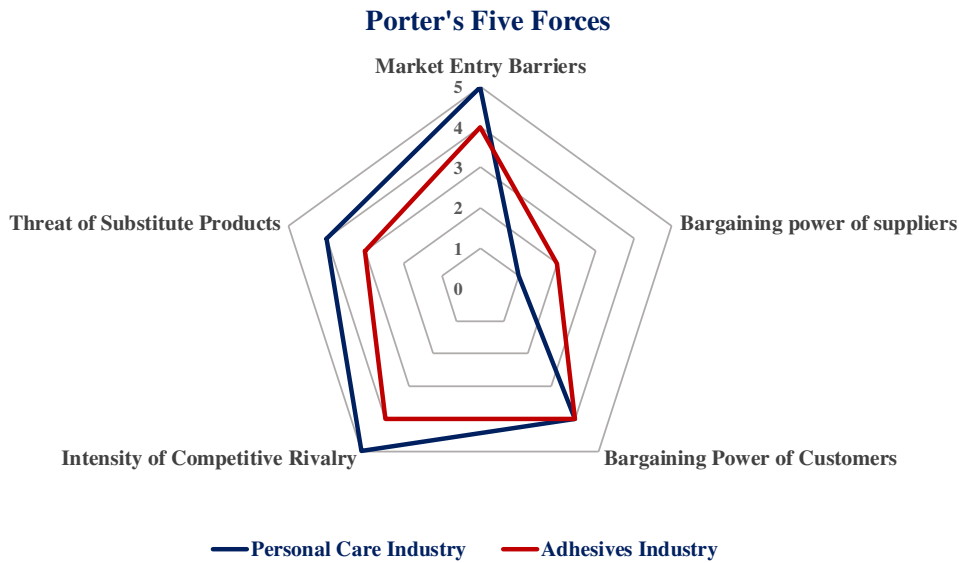
FIG-79: Valuation Summary

## Appendix

### Appendix-1: Fama-French three-factor model (FFM)

An extension of the CAPM model represents the Fama-French three-factor model (FFM) that can alternatively be used to determine the cost of equity (Fama & French, 1993). Additional to the market risk expressed in the CAPM model, Fama and French incorporate two supplementary factors to reflect a portfolio's exposure to size risk and value risk in terms of market capitalization and book-to-market ratio respectively. Fama and French assessed the tendency that value stocks outperform growth stocks and small-cap stocks outperform large-cap stocks (Pinto et al., 2010). Therefore, this outperforming tendency is adjusted in the FFM to better predict market returns. Although the FFM has greater explanatory power than the one-factor model CAPM and is recommended by academics when estimating expected return, its increased complexity leads to little diffusion in practical valuation (Bartholdy & Peare, 2005; Zabarankin, Pavlikov, & Uryasev, 2014).

## Appendix-2: Porter's Five Forces



|   | Personal Care Industry  | Adhesives Industry   |
|---|---|--|
| <b>Market Entry Barriers</b>            | <b>Very High:</b> New Players would have to invest much in brand awareness and customer loyalty as well as to establish relationships with drug stores and supermarkets. However, new players could rise up in the Asian markets. | <b>High:</b> New Players would incur in high R&D investments, would face longer testing-periods prior admission and regulatory/legal restrictions, primarily for adhesives in the automotive industry. |
| <b>Bargaining Power of Suppliers</b>    | <b>Very Low:</b> Beiersdorf manufactures its products and only relies on basic raw materials (chemicals, packaging), which are offered by several players.  | <b>Low:</b> Resources and components are not scarce and offered by many players. Further, Beiersdorf has a high vertical value-added chain.  |
| <b>Bargaining Power of Customers</b>    | <b>High:</b> Beiersdorf only sells a minor share through its own distribution channels and, thus, relies on few drugstores, food chains and eCommerce players, who can exercise high pressure due to delisting.                   | <b>High:</b> Major customers are individual automotive and other industrial large cap-players that can increase pressure easily due to the amount of alternative suppliers.                            |
| <b>Intensity of Competitive Rivalry</b> | <b>Very High:</b> Major players such as L'Oréal, P&G or Unilever manufacture similar products and compete intensively for listings and promotions via lower prices.   | <b>High:</b> Private players benefit from the ability to adapt quickly to market trends, whereas, large corporates (3M) have the capital to invest in R&D.   |
| <b>Threat of Substitute Products</b>    | <b>High:</b> Although Beiersdorf has many loyal customers, substitute personal care and beauty products easily meet the same needs of Beiersdorf's end customers.   | <b>Medium:</b> Threat is limited due to high R&D costs and long-term contracts, however, existing players could start manufacturing similar products in long-term.                                     |

### Appendix-3: Company History and Milestones

The company was founded by the pharmacist Paul C. Beiersdorf in Hamburg, Germany, on the date of the patent certificate for the manufacture of coated medical patches in 1882. In 1890, the pharmacist and businessman Oscar Troplowitz bought the company and expanded it rapidly. In 1909 the lip balm Labello was launched and in 1911 Troplowitz developed a skin cream based on a stable oil-in-water emulsion, naming it Nivea (Latin: snow).

By 1914, the company has settled business relations in 34 countries, already generating 42 percent of revenue abroad. After Troplowitz died in 1918, the company's legal form was transformed into a stock corporation and went public in 1928 on the Hamburg Stock Exchange. Meanwhile, Beiersdorf launched the brands Hansaplast (1922), the first adhesive plaster with gauze pads, and Nivea-Cream in the iconic blue-white tin (1925). In 1936, tesa was introduced as an umbrella brand for self-adhesive technology, launching the innovative transparent adhesive tape.

During World War II, the Nivea brand was expropriated by many countries, lost several trademarks and most of the production facilities and administrative buildings in Hamburg were destroyed. After repurchasing lost licenses and trademarks, the company recuperated quickly and managed to expand worldwide, reaching 10,000 employees by 1972.

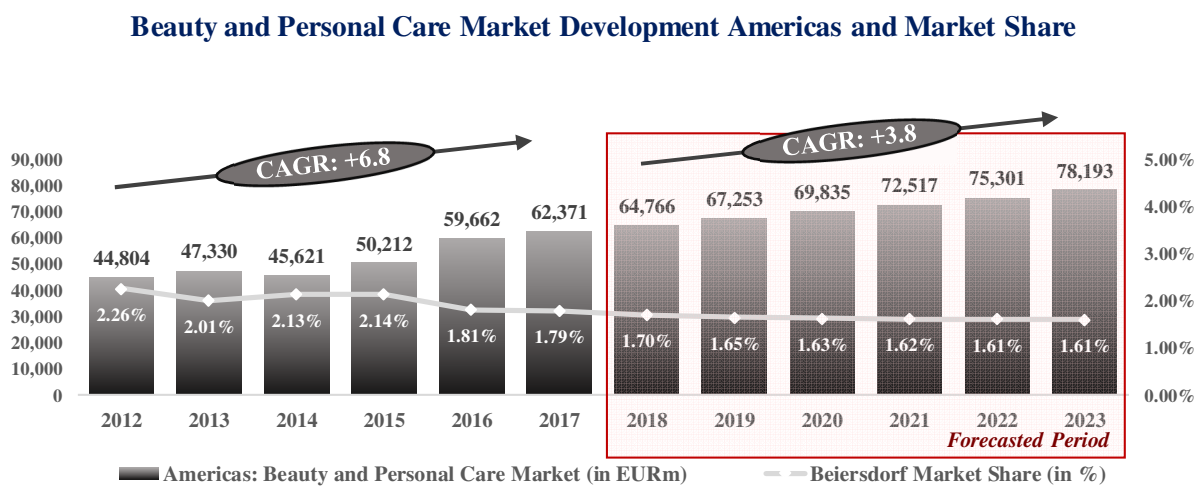
After increasing the product portfolio of Nivea (by categories such as shower, men, hair care) and launching new brands internally (8x4), the company acquired the Swiss anti-aging-cream pioneer La Prairie (1991) and German cosmetics company Florena (2002).

To support the local industry, the heirs of Max Herz (Tchibo-Holding) acquired 1974 a 25 percent stake in Beiersdorf and started to get involved strategically. In 1981, Beiersdorf implemented a strategic realignment, introducing a divisional organization separated by the three core competencies of skin care, wound care and adhesive technology. To adjust more flexible to market requirements, the adhesive technology division gained organizational scope by establishing a separate entity, "tesa AG".

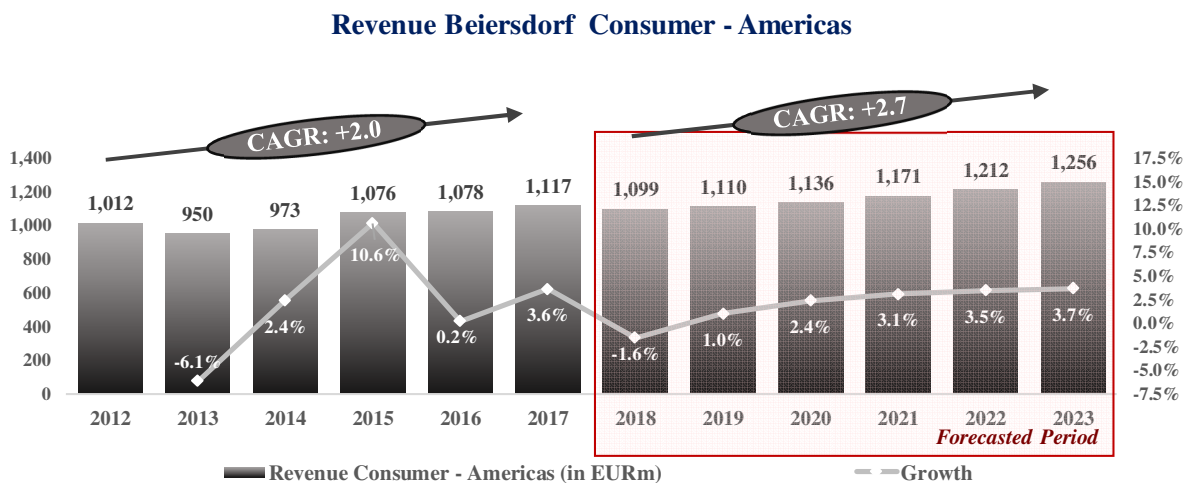
In 2003, a 2-year takeover battle with American competitor Procter&Gamble over Allianz' share package of 19.6 percent in Beiersdorf ceased. Beiersdorf, the government of Hamburg and current investors feared that Procter&Gamble was simply interested in patents and brands. Therefore, the resident Tchibo-Holding (Herz family and later maxingvest AG) increased its stake from 30.3 to 49.9 percent.

To strengthen market penetration in Asia, Beiersdorf acquired an 85% stake in one of the leading Chinese hair care companies, C-Bons Hair Care in 2007. In December 2008, Beiersdorf joined the German DAX and has been led by Stefan Heidenreich as CEO in 2012, who has doubled the share price during his time as executive. In October 2018, Beiersdorf’s supervisory board appointed Stefan De Loecker to follow Heidenreich as CEO in January 2019.

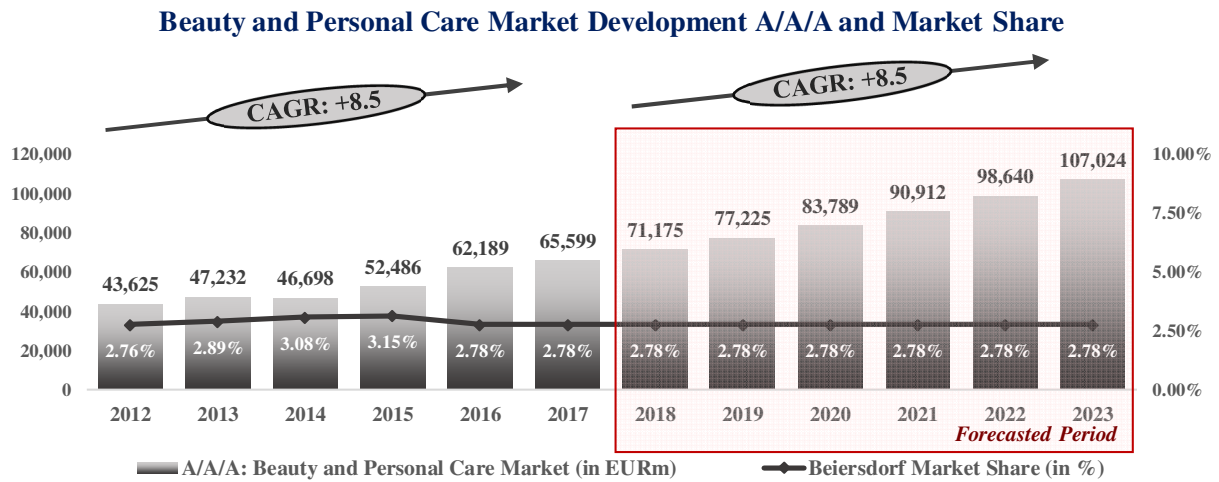
**Appendix-4: Beauty and Personal Care Market Development Americas (2012-2023)**



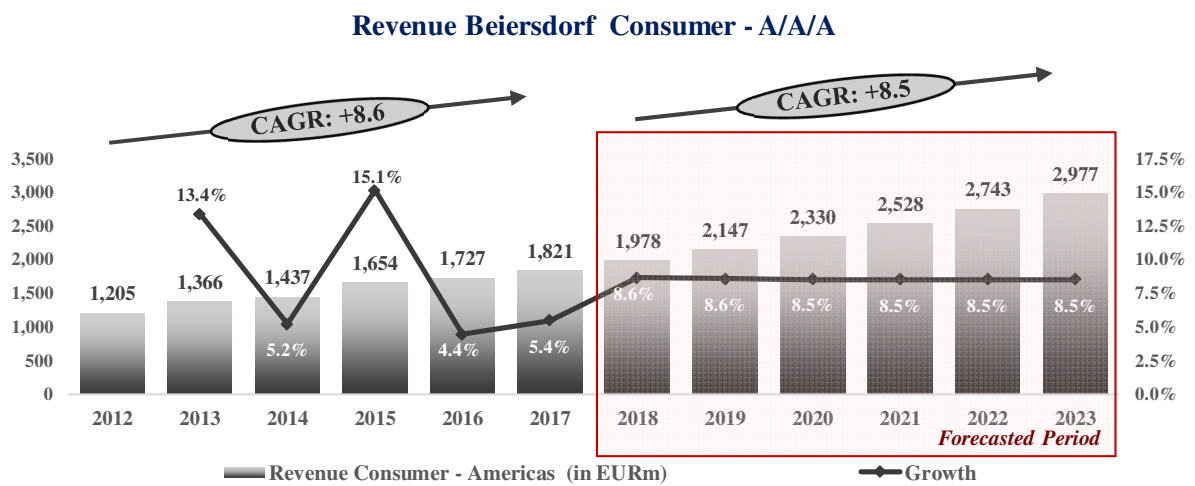
**Appendix-5: Consumer Revenue in Americas (2012-2023)**



### Appendix-6: Beauty and Personal Care Market Development A/A/A (2012-2023)



### Appendix-7: Consumer Revenue in A/A/A (2012-2023)



### Appendix-8: Adhesives Markets Development

| Adhesive Technologies |        |        |        |        |        |        |        |        |        |        |        |        |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| EURm                  | 2012A  | 2013A  | 2014A  | 2015A  | 2016A  | 2017A  | 2018E  | 2019E  | 2020E  | 2021E  | 2022E  | 2023E  |
| <b>Total Market</b>   | 60,000 | 60,593 | 61,192 | 61,796 | 62,407 | 64,814 | 67,471 | 70,912 | 74,458 | 77,510 | 80,766 | 83,027 |
| <i>growth in %</i>    | -      | 1.0%   | 1.0%   | 1.0%   | 1.0%   | 3.9%   | 4.1%   | 5.1%   | 5.0%   | 4.1%   | 4.2%   | 2.8%   |

## Appendix-9: Consumer Markets Development per Category

| All Categories                   |         |         |         |         |         |         | Relevant Categories for Beiersdorf |         |         |         |         |         |         |
|----------------------------------|---------|---------|---------|---------|---------|---------|------------------------------------|---------|---------|---------|---------|---------|---------|
| Total - Beauty and Personal Care |         |         |         |         |         |         | Total - Beauty and Personal Care   |         |         |         |         |         |         |
| EURm                             | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | EURm                               | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    |
| Total Market                     | 333,451 | 354,485 | 345,372 | 385,416 | 450,325 | 460,070 | Total Market                       | 230,285 | 244,676 | 238,286 | 264,848 | 308,060 | 314,343 |
| growth in %                      |         | 6.3%    | -2.6%   | 11.6%   | 16.8%   | 2.2%    | growth in %                        |         | 6.2%    | -2.6%   | 11.1%   | 16.3%   | 2.0%    |
| Skin Care                        | 78,665  | 84,064  | 82,219  | 91,742  | 108,446 | 112,595 | Skin Care                          | 78,665  | 84,064  | 82,219  | 91,742  | 108,446 | 112,595 |
| Hair Care                        | 54,121  | 57,171  | 55,213  | 60,991  | 69,910  | 70,175  | Hair Care                          | 54,121  | 57,171  | 55,213  | 60,991  | 69,910  | 70,175  |
| Color Cosmetics                  | 40,344  | 43,078  | 42,189  | 47,760  | 57,476  | 59,670  | Color Cosmetics                    |         |         |         |         |         |         |
| Fragrances                       | 33,607  | 35,751  | 34,615  | 39,328  | 45,762  | 45,697  | Fragrances                         |         |         |         |         |         |         |
| Oral Care                        | 29,216  | 30,981  | 30,282  | 33,480  | 39,027  | 40,361  | Oral Care                          |         |         |         |         |         |         |
| Bath and Shower                  | 27,778  | 29,341  | 28,286  | 31,187  | 36,346  | 37,100  | Bath and Shower                    | 27,778  | 29,341  | 28,286  | 31,187  | 36,346  | 37,100  |
| Men's grooming                   | 33,983  | 35,970  | 35,095  | 39,282  | 45,459  | 46,085  | Men's grooming                     | 33,983  | 35,970  | 35,095  | 39,282  | 45,459  | 46,085  |
| Deodorants                       | 14,841  | 15,779  | 15,669  | 17,584  | 19,874  | 19,863  | Deodorants                         | 14,841  | 15,779  | 15,669  | 17,584  | 19,874  | 19,863  |
| Baby and Child                   | 10,557  | 11,315  | 11,090  | 12,453  | 14,590  | 15,003  | Baby and Child                     | 10,557  | 11,315  | 11,090  | 12,453  | 14,590  | 15,003  |
| Sun Care                         | 6,891   | 7,388   | 7,254   | 7,843   | 9,040   | 9,132   | Sun Care                           | 6,891   | 7,388   | 7,254   | 7,843   | 9,040   | 9,132   |
| Depilatories                     | 3,449   | 3,648   | 3,460   | 3,765   | 4,395   | 4,391   | Depilatories                       | 3,449   | 3,648   | 3,460   | 3,765   | 4,395   | 4,391   |

| North America - Beauty and Personal Care |        |        |        |        |        |        | North America - Beauty and Personal Care |        |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|--------|--|--------|--------|--------|--------|--------|--------|
| EURm                                     | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | EURm                                     | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
| Total Market                             | 67,575 | 71,069 | 68,358 | 75,151 | 88,895 | 92,232 | Total Market                             | 44,804 | 47,330 | 45,621 | 50,212 | 59,662 | 62,371 |
| growth in %                              |        | 5.2%   | -3.8%  | 9.9%   | 18.3%  | 3.8%   | growth in %                              |        | 5.6%   | -3.6%  | 10.1%  | 18.8%  | 4.3%   |
| Skin Care                                | 12,803 | 13,560 | 13,208 | 14,495 | 17,147 | 18,023 | Skin Care                                | 12,803 | 13,560 | 13,208 | 14,495 | 17,147 | 18,023 |
| Hair Care                                | 10,603 | 11,384 | 11,103 | 12,395 | 15,137 | 16,115 | Hair Care                                | 10,603 | 11,384 | 11,103 | 12,395 | 15,137 | 16,115 |
| Color Cosmetics                          | 9,988  | 10,385 | 9,930  | 10,926 | 12,859 | 13,068 | Color Cosmetics                          |        |        |        |        |        |        |
| Fragrances                               | 6,717  | 6,921  | 6,634  | 7,253  | 8,443  | 8,667  | Fragrances                               |        |        |        |        |        |        |
| Oral Care                                | 6,065  | 6,433  | 6,172  | 6,760  | 7,931  | 8,126  | Oral Care                                |        |        |        |        |        |        |
| Bath and Shower                          | 6,706  | 6,875  | 6,641  | 7,344  | 8,553  | 8,876  | Bath and Shower                          | 6,706  | 6,875  | 6,641  | 7,344  | 8,553  | 8,876  |
| Men's grooming                           | 6,314  | 6,697  | 6,311  | 6,855  | 8,061  | 8,295  | Men's grooming                           | 6,314  | 6,697  | 6,311  | 6,855  | 8,061  | 8,295  |
| Deodorants                               | 3,153  | 3,254  | 3,175  | 3,581  | 4,276  | 4,459  | Deodorants                               | 3,153  | 3,254  | 3,175  | 3,581  | 4,276  | 4,459  |
| Baby and Child                           | 2,278  | 2,402  | 2,308  | 2,508  | 2,954  | 3,043  | Baby and Child                           | 2,278  | 2,402  | 2,308  | 2,508  | 2,954  | 3,043  |
| Sun Care                                 | 1,580  | 1,719  | 1,587  | 1,672  | 1,954  | 2,022  | Sun Care                                 | 1,580  | 1,719  | 1,587  | 1,672  | 1,954  | 2,022  |
| Depilatories                             | 1,367  | 1,440  | 1,288  | 1,361  | 1,580  | 1,539  | Depilatories                             | 1,367  | 1,440  | 1,288  | 1,361  | 1,580  | 1,539  |

| Europe - Beauty and Personal Care |        |        |        |        |        |        | Europe - Beauty and Personal Care |        |        |        |        |        |        |
|-----------------------------------|--------|--------|--------|--------|--------|--------|-----------------------------------|--------|--------|--------|--------|--------|--------|
| EURm                              | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | EURm                              | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
| Total Market                      | 75,441 | 77,407 | 73,474 | 80,603 | 91,864 | 95,657 | Total Market                      | 49,956 | 51,137 | 48,396 | 52,882 | 59,535 | 61,953 |
| growth in %                       |        | 2.6%   | -5.1%  | 9.7%   | 14.0%  | 4.1%   | growth in %                       |        | 2.4%   | -5.4%  | 9.3%   | 12.6%  | 4.2%   |
| Skin Care                         | 15,176 | 15,476 | 14,679 | 16,210 | 17,911 | 19,295 | Skin Care                         | 15,176 | 15,476 | 14,679 | 16,210 | 17,911 | 19,295 |
| Hair Care                         | 10,942 | 11,244 | 10,636 | 11,546 | 12,634 | 13,143 | Hair Care                         | 10,942 | 11,244 | 10,636 | 11,546 | 12,634 | 13,143 |
| Color Cosmetics                   | 10,053 | 10,226 | 9,632  | 10,540 | 12,158 | 12,519 | Color Cosmetics                   |        |        |        |        |        |        |
| Fragrances                        | 8,827  | 9,183  | 8,818  | 9,795  | 11,587 | 12,308 | Fragrances                        |        |        |        |        |        |        |
| Oral Care                         | 6,605  | 6,861  | 6,628  | 7,386  | 8,583  | 8,878  | Oral Care                         |        |        |        |        |        |        |
| Bath and Shower                   | 9,488  | 9,685  | 9,138  | 9,928  | 11,408 | 11,629 | Bath and Shower                   | 9,488  | 9,685  | 9,138  | 9,928  | 11,408 | 11,629 |
| Men's grooming                    | 5,614  | 5,769  | 5,431  | 5,910  | 6,819  | 6,949  | Men's grooming                    | 5,614  | 5,769  | 5,431  | 5,910  | 6,819  | 6,949  |
| Deodorants                        | 3,424  | 3,534  | 3,366  | 3,675  | 4,230  | 4,299  | Deodorants                        | 3,424  | 3,534  | 3,366  | 3,675  | 4,230  | 4,299  |
| Baby and Child                    | 2,338  | 2,397  | 2,268  | 2,482  | 2,874  | 2,923  | Baby and Child                    | 2,338  | 2,397  | 2,268  | 2,482  | 2,874  | 2,923  |
| Sun Care                          | 2,073  | 2,114  | 2,011  | 2,196  | 2,592  | 2,634  | Sun Care                          | 2,073  | 2,114  | 2,011  | 2,196  | 2,592  | 2,634  |
| Depilatories                      | 901    | 918    | 867    | 936    | 1,067  | 1,081  | Depilatories                      | 901    | 918    | 867    | 936    | 1,067  | 1,081  |

| Asia Pacific- Beauty and Personal Care |        |        |        |        |        |        | Asia Pacific- Beauty and Personal Care |        |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|--------|--|--------|--------|--------|--------|--------|--------|
| EURm                                   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | EURm                                   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
| Total Market                           | 62,449 | 67,647 | 67,016 | 75,456 | 89,620 | 94,709 | Total Market                           | 43,625 | 47,232 | 46,698 | 52,486 | 62,189 | 65,599 |
| growth in %                            |        | 8.3%   | -0.9%  | 12.6%  | 18.8%  | 5.7%   | growth in %                            |        | 8.3%   | -1.1%  | 12.4%  | 18.5%  | 5.5%   |
| Skin Care                              | 15,334 | 16,503 | 16,057 | 17,661 | 20,573 | 21,338 | Skin Care                              | 15,334 | 16,503 | 16,057 | 17,661 | 20,573 | 21,338 |
| Hair Care                              | 10,357 | 11,106 | 11,084 | 12,568 | 15,125 | 16,301 | Hair Care                              | 10,357 | 11,106 | 11,084 | 12,568 | 15,125 | 16,301 |
| Color Cosmetics                        | 8,173  | 8,874  | 8,845  | 9,995  | 11,946 | 12,707 | Color Cosmetics                        |        |        |        |        |        |        |
| Fragrances                             | 2,478  | 2,667  | 2,628  | 2,980  | 3,538  | 3,696  | Fragrances                             |        |        |        |        |        |        |
| Oral Care                              | 8,173  | 8,874  | 8,845  | 9,995  | 11,946 | 12,707 | Oral Care                              |        |        |        |        |        |        |
| Bath and Shower                        | 7,992  | 8,558  | 8,349  | 9,367  | 10,977 | 11,419 | Bath and Shower                        | 7,992  | 8,558  | 8,349  | 9,367  | 10,977 | 11,419 |
| Men's grooming                         | 4,868  | 5,414  | 5,424  | 6,144  | 7,306  | 7,703  | Men's grooming                         | 4,868  | 5,414  | 5,424  | 6,144  | 7,306  | 7,703  |
| Deodorants                             | 1,065  | 1,194  | 1,230  | 1,444  | 1,773  | 1,897  | Deodorants                             | 1,065  | 1,194  | 1,230  | 1,444  | 1,773  | 1,897  |
| Baby and Child                         | 2,228  | 2,508  | 2,584  | 3,080  | 3,780  | 4,103  | Baby and Child                         | 2,228  | 2,508  | 2,584  | 3,080  | 3,780  | 4,103  |
| Sun Care                               | 1,433  | 1,556  | 1,570  | 1,760  | 2,089  | 2,218  | Sun Care                               | 1,433  | 1,556  | 1,570  | 1,760  | 2,089  | 2,218  |
| Depilatories                           | 349    | 392    | 399    | 463    | 565    | 620    | Depilatories                           | 349    | 392    | 399    | 463    | 565    | 620    |

| Other - Beauty and Personal Care |         |         |         |         |         |         | Other - Beauty and Personal Care |        |        |        |         |         |         |
|----------------------------------|---------|---------|---------|---------|---------|---------|----------------------------------|--------|--------|--------|---------|---------|---------|
| EURm                             | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | EURm                             | 2012   | 2013   | 2014   | 2015    | 2016    | 2017    |
| Total Market                     | 127,987 | 138,362 | 136,525 | 154,206 | 179,947 | 177,471 | Total Market                     | 91,899 | 98,976 | 97,570 | 109,268 | 126,675 | 124,420 |
| growth in %                      |         | 8.1%    | -1.3%   | 13.0%   | 16.7%   | -1.4%   | growth in %                      |        | 7.7%   | -1.4%  | 12.0%   | 15.9%   | -1.8%   |
| Skin Care                        | 35,352  | 38,524  | 38,275  | 43,376  | 52,815  | 53,939  | Skin Care                        | 35,352 | 38,524 | 38,275 | 43,376  | 52,815  | 53,939  |
| Hair Care                        | 22,218  | 23,437  | 22,390  | 24,482  | 27,013  | 24,615  | Hair Care                        | 22,218 | 23,437 | 22,390 | 24,482  | 27,013  | 24,615  |
| Color Cosmetics                  | 12,130  | 13,593  | 13,782  | 16,299  | 20,512  | 21,376  | Color Cosmetics                  |        |        |        |         |         |         |
| Fragrances                       | 15,584  | 16,980  | 16,535  | 19,300  | 22,194  | 21,026  | Fragrances                       |        |        |        |         |         |         |
| Oral Care                        | 8,374   | 8,813   | 8,637   | 9,339   | 10,566  | 10,649  | Oral Care                        |        |        |        |         |         |         |
| Bath and Shower                  | 3,592   | 4,223   | 4,157   | 4,548   | 5,408   | 5,176   | Bath and Shower                  | 3,592  | 4,223  | 4,157  | 4,548   | 5,408   | 5,176   |
| Men's grooming                   | 17,187  | 18,090  | 17,929  | 20,373  | 23,273  | 23,138  | Men's grooming                   | 17,187 | 18,090 | 17,929 | 20,373  | 23,273  | 23,138  |
| Deodorants                       | 7,199   | 7,797   | 7,899   | 8,885   | 9,595   | 9,209   | Deodorants                       | 7,199  | 7,797  | 7,899  | 8,885   | 9,595   | 9,209   |
| Baby and Child                   | 3,713   | 4,008   | 3,929   | 4,382   | 4,982   | 4,933   | Baby and Child                   | 3,713  | 4,008  | 3,929  | 4,382   | 4,982   | 4,933   |
| Sun Care                         | 1,805   | 1,999   | 2,085   | 2,216   | 2,405   | 2,258   | Sun Care                         | 1,805  | 1,999  | 2,085  | 2,216   | 2,405   | 2,258   |
| Depilatories                     | 832     | 898     | 906     | 1,005   | 1,183   | 1,151   | Depilatories                     | 832    | 898    | 906    | 1,005   | 1,183   | 1,151   |

## Appendix-10: Tangible Assets and Depreciation

| CAPEX and D&A  |        |        |        |        |        |        | CAGR                   | Forecast |          |          |          |          |          | CAGR                   |
|--|--------|--------|--------|--------|--------|--------|------------------------|----------|----------|----------|----------|----------|----------|------------------------|
| in EURm  | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2012 - 2017            | 2018     | 2019     | 2020     | 2021     | 2022     | 2023     | 2018 - 2023            |
| <b>SALES</b>   | 6,040  | 6,141  | 6,285  | 6,686  | 6,752  | 7,056  | 3.16%                  | 7,247.61 | 7,542.78 | 7,895.40 | 8,277.01 | 8,694.21 | 9,119.41 | 4.70%                  |
| growth in %  |        | 1.7%   | 2.3%   | 6.4%   | 1.0%   | 4.5%   | 3.18%                  | 2.7%     | 4.1%     | 4.7%     | 4.8%     | 5.0%     | 4.9%     |                        |
| <b>Net PPE (at the end of the year)</b>              | 685    | 785    | 964    | 1,054  | 1,046  | 1,026  | 8.42%                  | 1,084    | 1,117    | 1,163    | 1,216    | 1,276    | 1,337    | 4.28%                  |
| in % of sales  | 11.3%  | 12.8%  | 15.3%  | 15.8%  | 15.5%  | 14.5%  | 13.3%                  | 15.0%    | 14.8%    | 14.7%    | 14.7%    | 14.7%    | 14.7%    | 14.8%                  |
| change in %  |        | 14.6%  | 22.8%  | 9.3%   | -0.8%  | -1.9%  | 8.81%                  | 5.7%     | -3.0%    | 4.1%     | -4.6%    | 4.9%     | 4.8%     | 4.52%                  |
| <b>Land, land rights, and Building</b>               | 314    | 298    | 345    | 456    | 439    | 433    | Average '12-17: 6.5%   | 458      | 470      | 488      | 510      | 535      | 561      | Average '18-23: 6.2%   |
| in % of sales  | 5.2%   | 4.9%   | 5.5%   | 6.8%   | 6.5%   | 6.1%   | -0.34%                 | 6.32%    | 6.23%    | 6.19%    | 6.17%    | 6.16%    | 6.15%    |                        |
| change in %  |        | -0.3%  | 0.6%   | 1.3%   | -0.3%  | -0.4%  | Average '12-17: -0.11% | -0.17%   | -0.09%   | -0.04%   | -0.02%   | -0.01%   | -0.01%   |                        |
| <b>Technical equipment and machinery</b>             | 194    | 200    | 228    | 303    | 298    | 304    | Average '12-17: 4.4%   | 316      | 327      | 341      | 357      | 375      | 393      | Average '18-23: 4.3%   |
| in % of sales  | 3.2%   | 3.3%   | 3.6%   | 4.5%   | 4.4%   | 4.3%   | -0.11%                 | 4.36%    | 4.33%    | 4.4%     | 4.31%    | 4.31%    | 4.31%    |                        |
| change in %  |        | 0.0%   | 0.4%   | 0.9%   | -0.1%  | -0.1%  | Average '12-17: 2.6%   | -0.06%   | -0.03%   | -0.01%   | -0.01%   | 0.00%    | 0.00%    |                        |
| <b>Office and other equipment</b>                    | 115    | 127    | 160    | 181    | 182    | 174    | Average '12-17: -0.12% | 186      | 191      | 199      | 208      | 218      | 228      | Average '18-23: 2.5%   |
| in % of sales  | 1.9%   | 2.1%   | 2.5%   | 2.7%   | 2.7%   | 2.5%   | 1.7%                   | 2.56%    | 2.53%    | 2.52%    | 2.51%    | 2.51%    | 2.50%    |                        |
| change in %  |        | 0.2%   | 0.5%   | 0.2%   | 0.0%   | -0.2%  | Average '12-17: -0.04% | -0.06%   | -0.03%   | -0.02%   | -0.01%   | 0.00%    | 0.00%    |                        |
| <b>Advance payments and assets under constructic</b> | 62     | 160    | 231    | 114    | 127    | 115    | Average '12-17: 1.7%   | 125      | 129      | 135      | 141      | 148      | 155      | Average '18-23: 1.7%   |
| in % of sales  | 1.0%   | 2.6%   | 3.7%   | 1.7%   | 1.9%   | 1.6%   | -0.04%                 | 1.72%    | 1.71%    | 1.71%    | 1.70%    | 1.70%    | 1.70%    |                        |
| change in %  |        | 1.6%   | 1.1%   | -2.0%  | 0.2%   | -0.3%  |                        | -0.02%   | -0.01%   | 0.00%    | 0.00%    | 0.00%    | 0.00%    |                        |
| <b>Check: D&amp;A according to CF</b>                | TRUE   | TRUE   | TRUE   | TRUE   | TRUE   | TRUE   | 2.18%                  | 139      | 146      | 153      | 161      | 169      | 177      | 4.97%                  |
| <b>D&amp;A</b>                                       | 122    | 92     | 97     | 118    | 136    | 133    | 11.8%                  | 12.8%    | 13.1%    | 13.2%    | 13.2%    | 13.2%    | 13.3%    | 13.1%                  |
| in % of Net PPE                                      | 17.8%  | 11.7%  | 10.1%  | 11.2%  | 13.0%  | 13.0%  | -1.2%                  | 1.0%     | 0.2%     | 0%       | 0%       | 0%       | 0%       | 0.2%                   |
| change in %  |        | -6.1%  | -1.7%  | 1.1%   | 1.8%   | 0.0%   | Average '12-17: 4.9%   | 23       | 24       | 25       | 26       | 27       | 29       | Average '18-23: 5.1%   |
| <b>Land, land rights, and Building</b>               | 20     | 20     | 18     | 21     | 22     | 22     | Average '12-17: 17.0%  | 5.02%    | 5.08%    | 5.11%    | 5.12%    | 5.13%    | 5.13%    | Average '18-23: 18.1%  |
| in % of Net PPE                                      | 6.4%   | 6.7%   | 5.2%   | 4.6%   | 5.0%   | 5.1%   | 1.29%                  | 0.12%    | 0.06%    | 0.03%    | 0.01%    | 0.01%    | 0.00%    |                        |
| change in %  |        | 0.3%   | -1.5%  | -0.6%  | 0.4%   | 0.1%   | Average '12-17: 31.3%  | 0.12%    | 0.06%    | 0.03%    | 0.01%    | 0.01%    | 0.00%    |                        |
| <b>Technical equipment and machinery</b>             | 54     | 34     | 39     | 45     | 56     | 53     | Average '12-17: 2.30%  | 56       | 59       | 62       | 65       | 68       | 72       | Average '18-23: 33.2%  |
| in % of Net PPE                                      | 27.8%  | 17.0%  | 17.1%  | 14.9%  | 18.8%  | 17.4%  | 0.0%                   | 17.67%   | 17.99%   | 18.16%   | 18.24%   | 18.28%   | 18.30%   |                        |
| change in %  |        | -10.8% | 0.1%   | -2.3%  | 3.9%   | -1.4%  | 0.0%                   | 0.65%    | 0.32%    | 0.16%    | 0.08%    | 0.04%    | 0.02%    |                        |
| <b>Office and other equipment</b>                    | 45     | 40     | 40     | 52     | 58     | 58     | Average '12-17: 0.0%   | 60       | 63       | 66       | 70       | 73       | 77       | Average '18-23: 0.0%   |
| in % of Net PPE                                      | 39.1%  | 31.5%  | 25.0%  | 28.7%  | 31.9%  | 33.3%  | 0.0%                   | 32.46%   | 33.04%   | 33.32%   | 33.47%   | 33.54%   | 33.58%   |                        |
| change in %  |        | -7.6%  | -6.5%  | 3.7%   | 3.1%   | 1.5%   | 0.0%                   | 1.15%    | 0.58%    | 0.29%    | 0.14%    | 0.07%    | 0.04%    |                        |
| <b>Advance payments and assets under constructic</b> | 3      | -2     | 0      | 0      | 0      | 0      | Average '12-17: 0.0%   | 0        | 0        | 0        | 0        | 0        | 0        | Average '18-23: 0.0%   |
| in % of Net PPE                                      | 4.8%   |        | 0.0%   | 0.0%   | 0.0%   | 0.0%   | 0.0%                   | 0.00%    | 0.00%    | 0.00%    | 0.00%    | 0.00%    | 0.00%    |                        |
| change in %  |        |        | 0.0%   | 0.0%   | 0.0%   | 0.0%   | 0.0%                   | 0.00%    | 0.00%    | 0.00%    | 0.00%    | 0.00%    | 0.00%    |                        |
| <b>CAPEX-Calculation</b>                             | 186    | 217    | 283    | 241    | 153    | 157    | -3.33%                 | 197      | 178      | 199      | 214      | 229      | 239      | 3.89%                  |
| in % of D&A  | 152.5% | 235.9% | 291.8% | 204.2% | 112.5% | 118.0% | 1.82                   | 1.42     | 1.22     | 1.30     | 1.33     | 1.35     | 1.35     | 1.33                   |
| growth in %  |        | 83.4%  | 55.9%  | -87.5% | -91.7% | 5.5%   | -0.07                  | 25.7%    | -9.6%    | 11.7%    | 7.3%     | 6.9%     | 4.5%     | 7.8%                   |
| <b>Land, land rights, and Building</b>               | 55     | 10     | 63     | 74     | 5      | 12     | Average '12-17: 1.43   | 48       | 36       | 44       | 48       | 52       | 54       | Average '18-23: 182.7% |
| in % of D&A  | 2.75   | 0.50   | 3.50   | 3.52   | 0.23   | 0.55   | -1.49                  | 2.08     | 1.51     | 1.75     | 1.84     | 1.90     | 1.89     |                        |
| growth in %  |        | -2.25  | 3.00   | 0.02   | -3.30  | 0.32   | Average '12-17: 0.77   | 0.64     | -0.56    | 0.23     | 0.09     | 0.07     | -0.01    |                        |
| <b>Technical equipment and machinery</b>             | 30     | 29     | 49     | 57     | 33     | 24     | Average '12-17: -0.41  | 68       | 70       | 76       | 81       | 86       | 90       | Average '18-23: 123.1% |
| in % of D&A  | 0.56   | 0.85   | 1.26   | 1.27   | 0.59   | 0.45   | 0.87                   | 1.22     | 1.18     | 1.23     | 1.24     | 1.26     | 1.25     |                        |
| growth in %  |        | 0.30   | 0.40   | 0.01   | -0.68  | -0.14  | Average '12-17: -0.26  | 0.45     | -0.03    | 0.05     | 0.02     | 0.01     | -0.01    |                        |
| <b>Office and other equipment</b>                    | 41     | 44     | 64     | 48     | 50     | 47     |                        | 72       | 68       | 74       | 79       | 83       | 87       | Average '18-23: 113.3% |
| in % of D&A  | 0.91   | 1.10   | 1.60   | 0.92   | 0.86   | 0.81   |                        | 1.19     | 1.08     | 1.12     | 1.13     | 1.14     | 1.14     |                        |
| growth in %  |        | 0.19   | 0.50   | -0.68  | -0.06  | -0.05  |                        | 0.33     | -0.11    | 0.03     | 0.01     | 0.01     | 0.00     |                        |
| <b>Advance payments and assets under constructic</b> | 60     | 134    | 107    | 62     | 65     | 74     |                        | 10       | 4        | 6        | 6        | 7        | 7        | Average '18-23: 0.0%   |
| in % of D&A  | 0.97   | -67.00 |        |        |        |        |                        |          |          |          |          |          |          |                        |
| growth in %  |        | -67.97 |        |        |        |        |                        |          |          |          |          |          |          |                        |

Appendix-11: Intangible Assets and Amortization

| CAPEX and D&A                             |       |        |        |         |       |       | CAGR                  | Forecast  |        |        |        |        |        | CAGR                   |
|---|-------|--------|--------|---------|-------|-------|-----------------------|---|--------|--------|--------|--------|--------|------------------------|
| in EURm                                   | 2012  | 2013   | 2014   | 2015    | 2016  | 2017  | 2012 - 2017           | 2018  | 2019   | 2020   | 2021   | 2022   | 2023   | 2018 - 2023            |
| <b>SALES</b>                              | 6,040 | 6,141  | 6,285  | 6,686   | 6,752 | 7,056 | 3.16%                 | 7,248   | 7,543  | 7,895  | 8,277  | 8,694  | 9,119  | 4.70%                  |
| growth in %                               |       | 1.7%   | 2.3%   | 6.4%    | 1.0%  | 4.5%  | 3.18%                 | 2.7%  | 4.1%   | 4.7%   | 4.8%   | 5.0%   | 4.9%   |                        |
| <b>Net IA (at the end of the year)</b>    | 185   | 176    | 119    | 119     | 119   | 140   | -5.42%                | 132   | 135    | 139    | 142    | 145    | 148    | 2.34%                  |
| in % of sales                             | 3.1%  | 2.9%   | 1.9%   | 1.8%    | 1.8%  | 2.0%  | 1.9%                  | 1.8%  | 1.8%   | 1.8%   | 1.7%   | 1.7%   | 1.6%   | 1.7%                   |
| change in %                               |       | -4.9%  | -32.4% |         |       | 17.6% | -3.92%                | -6.0%   | 2.8%   | 2.4%   | 2.2%   | 2.2%   | 2.1%   | 0.96%                  |
| <b>Finite-lived intangible assets</b>     | 31    | 25     | 37     | 33      | 35    | 55    | Average '12-17: 0.6%  | 47  | 50     | 54     | 57     | 60     | 63     | Average '18-23: 0.7%   |
| in % of sales                             | 0.5%  | 0.4%   | 0.6%   | 0.5%    | 0.5%  | 0.8%  | 0.09%                 | 0.64%   | 0.67%  | 0.68%  | 0.68%  | 0.69%  | 0.69%  |                        |
| change in %                               |       | -0.1%  | 0.2%   | -0.1%   | 0.0%  | 0.3%  |                       | 0.05%   | 0.02%  | 0.01%  | 0.01%  | 0.00%  | 0.00%  |                        |
| <b>Indefinite-lived intangible assets</b> | 88    | 88     | 21     | 21      | 21    | 21    | Average '12-17: 0.3%  | 21  | 21     | 21     | 21     | 21     | 21     |                        |
| in % of sales                             | 1.5%  | 1.4%   | 0.3%   | 0.3%    | 0.3%  | 0.3%  | -0.28%                | <i>Indefinite-lived intangible assets include the Chinese hair care brands that were acquired when the shares of BDF Hair Care China Group were purchased. These have been recognized with an indefinite useful life since it is planned to continue using them from an unlimited period. The annual Impairment test did not result in any adjustment to the carrying amount of the trademarks.</i> |        |        |        |        |        |                        |
| change in %                               |       | 0.0%   | -1.1%  | 0.0%    | 0.0%  | 0.0%  |                       | <i>Goodwill largely comes mainly (75%) from the goodwill attributable to Beiersdorf AG Switzerland. The impairment tests performed on the goodwill did not reveal any evidence of impairment. As in the previous years, no internally generated intangible assets were recognized in the fiscal years (IAS 38 was not met for the development projects).</i>  |        |        |        |        |        |                        |
| <b>Goodwill</b>                           | 66    | 63     | 61     | 65      | 63    | 64    | Average '12-17: 0.9%  | 64  | 64     | 64     | 64     | 64     | 64     |                        |
| in % of sales                             | 1.1%  | 1.0%   | 1.0%   | 1.0%    | 0.9%  | 0.9%  | -0.03%                |   |        |        |        |        |        |                        |
| change in %                               |       | -0.1%  |        | 0.0%    | 0.0%  | 0.0%  |                       |   |        |        |        |        |        |                        |
| <i>Check: D&amp;A according to CF</i>     |       |        |        |         |       |       |                       |   |        |        |        |        |        |                        |
|   | TRUE  | TRUE   | TRUE   | TRUE    | TRUE  | TRUE  |                       |   |        |        |        |        |        |                        |
| <b>D&amp;A</b>                            | 30    | 14     | 82     | 11      | 12    | 17    | -13.24%               | 15  | 16     | 17     | 18     | 19     | 20     | 5.97%                  |
| in % of Net PPE                           | 16.2% | 8.0%   | 68.9%  | 9.2%    | 10.1% | 12.1% | 25.1%                 | 11.5%   | 12.1%  | 12.5%  | 12.9%  | 13.4%  | 13.7%  | 12.7%                  |
| change in %                               |       | -8.3%  | 61.0%  | -59.7%  | 0.8%  | 2.1%  | 13.0%                 | -13.5%  | 0.5%   | 0%     | 0%     | 0%     | 0%     | -1.9%                  |
| <b>Finite-lived intangible assets</b>     | 8     | 14     | 12     | 11      | 12    | 17    | Average '12-17: 32.8% | 15  | 16     | 17     | 18     | 19     | 20     | Average '18-23: 32.4%  |
| in % of Net PPE                           | 25.8% | 56.0%  | 32.4%  | 33.3%   | 34.3% | 30.9% | -0.51%                | 32.59%  | 32.46% | 32.40% | 32.37% | 32.35% | 32.34% |                        |
| change in %                               |       | 30.2%  |        | 0.9%    | 1.0%  | -3.4% |                       | -0.25%  | -0.13% | -0.06% | -0.03% | -0.02% | -0.01% |                        |
| <b>Indefinite-lived intangible assets</b> | 7     | 0      | 67     | 0       | 0     | 0     | Average '12-17: 0.0%  | 0   | 0      | 0      | 0      | 0      | 0      |                        |
| in % of Net PPE                           | 8.0%  | 0.0%   | 319.0% | 0.0%    | 0.0%  | 0.0%  | 0.00%                 |   |        |        |        |        |        |                        |
| change in %                               |       | -8.0%  | 319.0% | -319.0% | 0.0%  | 0.0%  |                       |   |        |        |        |        |        |                        |
| <b>Goodwill</b>                           | 15    | 0      | 3      | 0       | 0     | 0     | Average '12-17: 0.0%  | 0   | 0      | 0      | 0      | 0      | 0      |                        |
| in % of Net PPE                           | 22.7% | 0.0%   | 4.9%   | 0.0%    | 0.0%  | 0.0%  | 0.00%                 |   |        |        |        |        |        |                        |
| change in %                               |       | -22.7% | 4.9%   | -4.9%   | 0.0%  | 0.0%  |                       |   |        |        |        |        |        |                        |
| <b>CAPEX-Calculation</b>                  | 7     | 10     | 18     | 8       | 9     | 38    | 40.26%                | 7   | 20     | 21     | 21     | 22     | 23     | 27.80%                 |
| in % of D&A                               | 0.23  | 0.71   | 0.22   | 0.73    | 0.75  | 2.24  | 98.3%                 | 0.45  | 1.22   | 1.19   | 1.17   | 1.16   | 1.15   | 1.06                   |
| growth in %                               |       | 0.48   | -0.49  | 0.51    | 0.02  | 1.49  | 0.40                  | -82.0%  | 191.6% | 3.2%   | 3.8%   | 4.8%   | 4.1%   | 20.9%                  |
| <b>Finite-lived intangible assets</b>     | 7     | 10     | 18     | 8       | 9     | 31    | Average '12-17: 1.10  | 7   | 20     | 21     | 21     | 22     | 23     | Average '18-23: 105.7% |
| in % of D&A                               | 0.88  | 0.71   | 1.50   | 0.73    | 0.75  | 1.82  | 0.28                  | 0.45  | 1.22   | 1.19   | 1.17   | 1.16   | 1.15   |                        |
| growth in %                               |       | -0.16  | 0.79   | -0.77   | 0.02  | 1.07  |                       | -0.65   | 0.77   | -0.04  | -0.02  | -0.01  | -0.01  |                        |
| <b>Indefinite-lived intangible assets</b> | 0     | 0      | 0      | 0       | 0     | 0     | Average '12-17: 0.0%  | 0   | 0      | 0      | 0      | 0      | 0      |                        |
| growth in %                               |       |        |        |         |       |       |                       |   |        |        |        |        |        |                        |
| <b>Goodwill</b>                           | 0     | 0      | 0      | 0       | 0     | 7     | Average '12-17: 0.0%  | 0   | 0      | 0      | 0      | 0      | 0      |                        |
| growth in %                               |       |        |        |         |       |       |                       |   |        |        |        |        |        |                        |

## Appendix-12: Sales Forecast per Region

| GLOBAL<br>in EURm               |              |              |              |              |              |              | Consumer Revenue FC |              |              |              |              |              | CAGR<br>2012 - 2017 | REVENUE: CONSUMER BY REGION |  |  |  |  |  | CAGR<br>2018 - 2023 |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------|--------------|--------------|--------------|--------------|--------------|---------------------|-----------------------------|--|--|--|--|--|---------------------|
|                                 | 2012         | 2013         | 2014         | 2015         | 2016         | 2017         |                     | 2018         | 2019         | 2020         | 2021         | 2022         | 2023                |                             |  |  |  |  |  |                     |
| <b>REVENUE - TOTAL</b>          | <b>6,040</b> | <b>6,141</b> | <b>6,285</b> | <b>6,686</b> | <b>6,752</b> | <b>7,056</b> | <b>3.16%</b>        | <b>7,248</b> | <b>7,543</b> | <b>7,895</b> | <b>8,277</b> | <b>8,694</b> | <b>9,119</b>        | <b>4.70%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | 1.67%        | 2.34%        | 6.38%        | 0.99%        | 4.50%        | 3.18%               | 2.72%        | 4.07%        | 4.67%        | 4.83%        | 5.04%        | 4.89%               | 4.70%                       |  |  |  |  |  |                     |
| <i>Share Consumer Goods</i>     | 83.6%        | 83.1%        | 82.9%        | 82.9%        | 83.0%        | 82.2%        | 83.0%               | 81.4%        | 81.0%        | 80.8%        | 80.8%        | 81.0%        | 81.3%               | 81.1%                       |  |  |  |  |  |                     |
| <i>Share Tesa</i>               | 16.4%        | 16.9%        | 17.1%        | 17.1%        | 17.0%        | 17.8%        | 17.0%               | 18.6%        | 19.0%        | 19.2%        | 19.2%        | 19.0%        | 18.7%               | 18.9%                       |  |  |  |  |  |                     |
| <b>REVENUE - Consumer Goods</b> | <b>5,048</b> | <b>5,103</b> | <b>5,209</b> | <b>5,546</b> | <b>5,606</b> | <b>5,799</b> | <b>2.81%</b>        | <b>5,901</b> | <b>6,107</b> | <b>6,378</b> | <b>6,692</b> | <b>7,039</b> | <b>7,417</b>        | <b>4.68%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | 1.09%        | 2.08%        | 6.47%        | 1.08%        | 3.44%        |                     | 1.76%        | 3.50%        | 4.43%        | 4.92%        | 5.20%        | 5.36%               | Average:                    |  |  |  |  |  |                     |
| <b>Europe Devison</b>           | <b>2,831</b> | <b>2,787</b> | <b>2,799</b> | <b>2,816</b> | <b>2,801</b> | <b>2,861</b> | <b>0.21%</b>        | <b>2,824</b> | <b>2,850</b> | <b>2,911</b> | <b>2,992</b> | <b>3,084</b> | <b>3,184</b>        | <b>2.43%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | -1.55%       | 0.43%        | 0.61%        | -0.53%       | 2.14%        | Average:            | -1.3%        | 0.94%        | 2.14%        | 2.76%        | 3.08%        | 3.24%               | Average:                    |  |  |  |  |  |                     |
| <i>in % of CONSUMER revenue</i> | 56.08%       | 54.61%       | 53.73%       | 50.78%       | 49.96%       | 49.34%       | 52.42%              | 47.9%        | 46.67%       | 45.65%       | 44.71%       | 43.81%       | 42.92%              | 45.27%                      |  |  |  |  |  |                     |
| <b>America Devison</b>          | <b>1,012</b> | <b>950</b>   | <b>973</b>   | <b>1,076</b> | <b>1,078</b> | <b>1,117</b> | <b>1.99%</b>        | <b>1,099</b> | <b>1,110</b> | <b>1,136</b> | <b>1,171</b> | <b>1,212</b> | <b>1,256</b>        | <b>2.71%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | -6.13%       | 2.42%        | 10.59%       | 0.19%        | 3.62%        | Average:            | -1.6%        | 0.98%        | 2.37%        | 3.09%        | 3.46%        | 3.65%               | Average:                    |  |  |  |  |  |                     |
| <i>in % of CONSUMER revenue</i> | 20.0%        | 18.62%       | 18.68%       | 19.40%       | 19.23%       | 19.26%       | 19.21%              | 18.6%        | 18.18%       | 17.82%       | 17.51%       | 17.22%       | 16.94%              | 17.71%                      |  |  |  |  |  |                     |
| <b>A/A/A Devison</b>            | <b>1,205</b> | <b>1,366</b> | <b>1,437</b> | <b>1,654</b> | <b>1,727</b> | <b>1,821</b> | <b>8.61%</b>        | <b>1,978</b> | <b>2,147</b> | <b>2,330</b> | <b>2,528</b> | <b>2,743</b> | <b>2,977</b>        | <b>8.52%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | 0.00%        | 5.20%        | 15.10%       | 4.41%        | 5.44%        | Average:            | 8.6%         | 8.55%        | 8.53%        | 8.51%        | 8.51%        | 8.50%               | Average:                    |  |  |  |  |  |                     |
| <i>in % of CONSUMER revenue</i> | 23.9%        | 26.77%       | 27.59%       | 29.82%       | 30.81%       | 31.40%       | 28.38%              | 33.5%        | 35.15%       | 36.53%       | 37.78%       | 38.97%       | 40.14%              | 37.02%                      |  |  |  |  |  |                     |
| <b>REVENUE - Tesa</b>           | <b>992</b>   | <b>1,038</b> | <b>1,076</b> | <b>1,140</b> | <b>1,146</b> | <b>1,257</b> | <b>4.85%</b>        | <b>1,347</b> | <b>1,435</b> | <b>1,518</b> | <b>1,585</b> | <b>1,655</b> | <b>1,703</b>        | <b>4.80%</b>                |  |  |  |  |  |                     |
| <i>growth rate</i>              | -            | 4.64%        | 3.66%        | 5.95%        | 0.53%        | 9.69%        | 4.89%               | 7.14%        | 6.59%        | 5.73%        | 4.46%        | 4.38%        | 2.89%               | 4.81%                       |  |  |  |  |  |                     |

## Appendix-13: Income Statement: Sales to EBIT

| RE-STATEd INCOME STATEMENT                 |               |               |               |               |               |               | CAGR                        | RE-STATEd INCOME STATEMENT |               |               |               |               |               | CAGR         |
|--|---------------|---------------|---------------|---------------|---------------|---------------|-----------------------------|----------------------------|---------------|---------------|---------------|---------------|---------------|--------------|
| in EURm                                    | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          | 2012 - 2017                 | 2018                       | 2019          | 2020          | 2021          | 2022          | 2023          | 2018 - 2023  |
| <b>REVENUE - TOTAL</b>                     | <b>6,040</b>  | <b>6,141</b>  | <b>6,285</b>  | <b>6,686</b>  | <b>6,752</b>  | <b>7,056</b>  | <b>3.16%</b>                | <b>7,248</b>               | <b>7,543</b>  | <b>7,895</b>  | <b>8,277</b>  | <b>8,694</b>  | <b>9,119</b>  | <b>4.70%</b> |
| <i>growth rate</i>                         | -             | 1.67%         | 2.34%         | 6.38%         | 0.99%         | 4.50%         | 3.18%                       | 2.72%                      | 4.07%         | 4.67%         | 4.83%         | 5.04%         | 4.89%         | 4.70%        |
| <i>Share Consumer Goods</i>                | 83.6%         | 83.1%         | 82.9%         | 82.9%         | 83.0%         | 82.2%         | 83.0%                       | 81.4%                      | 81.0%         | 80.8%         | 80.8%         | 81.0%         | 81.3%         | 81.1%        |
| <i>Share Tesa</i>                          | 16.4%         | 16.9%         | 17.1%         | 17.1%         | 17.0%         | 17.8%         | 17.0%                       | 18.6%                      | 19.0%         | 19.2%         | 19.2%         | 19.0%         | 18.7%         | 18.9%        |
| <b>COGS</b>                                | <b>-2,217</b> | <b>-2,255</b> | <b>-2,367</b> | <b>-2,785</b> | <b>-2,774</b> | <b>-2,910</b> | <b>5.59%</b>                | <b>-3,038</b>              | <b>-3,185</b> | <b>-3,345</b> | <b>-3,513</b> | <b>-3,694</b> | <b>-3,876</b> | <b>4.99%</b> |
| <i>growth rate</i>                         | -             | 1.71%         | 4.97%         | 17.66%        | -0.39%        | 4.90%         | average last 3Y:<br>-41.33% | 4.41%                      | 4.81%         | 5.04%         | 5.02%         | 5.13%         | 4.94%         | -            |
| <i>in % of revenue</i>                     | -36.7%        | -36.7%        | -37.7%        | -41.7%        | -41.1%        | -41.2%        | -1.19%                      | -41.9%                     | -42.2%        | -42.4%        | -42.4%        | -42.5%        | -42.5%        | -            |
| <i>Change in %</i>                         | -             | -0.02%        | -0.94%        | -3.99%        | 0.57%         | -0.16%        | -                           | -0.6%                      | -0.3%         | -0.1%         | -0.1%         | 0.0%          | 0.0%          | -            |
| <b>GROSS PROFIT</b>                        | <b>3,823</b>  | <b>3,886</b>  | <b>3,918</b>  | <b>3,901</b>  | <b>3,978</b>  | <b>4,146</b>  | <b>1.64%</b>                | <b>4,209</b>               | <b>4,358</b>  | <b>4,550</b>  | <b>4,764</b>  | <b>5,001</b>  | <b>5,244</b>  | <b>4.49%</b> |
| <i>growth rate</i>                         | -             | 1.65%         | 0.82%         | -0.43%        | 1.97%         | 4.22%         | -                           | -                          | 3.54%         | 4.40%         | 4.70%         | 4.97%         | 4.86%         | -            |
| <i>in % of revenue</i>                     | 63.3%         | 63.3%         | 62.3%         | 58.3%         | 58.9%         | 58.8%         | -                           | 58.1%                      | 57.78%        | 57.63%        | 57.55%        | 57.52%        | 57.50%        | -            |
| <b>OPERATING EXPENSES</b>                  |               |               |               |               |               |               |                             |                            |               |               |               |               |               |              |
| <b>Marketing and selling expenses</b>      | <b>-2,539</b> | <b>-2,605</b> | <b>-2,604</b> | <b>-2,430</b> | <b>-2,407</b> | <b>-2,471</b> | <b>-0.54%</b>               | <b>-2,508</b>              | <b>-2,570</b> | <b>-2,669</b> | <b>-2,787</b> | <b>-2,921</b> | <b>-3,061</b> | <b>4.07%</b> |
| <i>growth rate</i>                         | -             | 2.60%         | -0.04%        | -6.68%        | -0.95%        | 2.66%         | -                           | -                          | 2.47%         | 3.85%         | 4.42%         | 4.83%         | 4.79%         | -            |
| <i>in % of revenue</i>                     | -42.0%        | -42.4%        | -41.4%        | -36.3%        | -35.6%        | -35.0%        | -35.67%                     | -34.6%                     | -34.1%        | -33.8%        | -33.7%        | -33.6%        | -33.6%        | -            |
| <i>Change in %</i>                         | -             | -0.38%        | 0.99%         | 5.09%         | 0.70%         | 0.63%         | 2.14%                       | 1.1%                       | 0.5%          | 0.3%          | 0.1%          | 0.1%          | 0.0%          | -            |
| <b>Research and development expenses</b>   | <b>-159</b>   | <b>-154</b>   | <b>-168</b>   | <b>-183</b>   | <b>-188</b>   | <b>-196</b>   | <b>4.27%</b>                | <b>-202</b>                | <b>-211</b>   | <b>-221</b>   | <b>-232</b>   | <b>-243</b>   | <b>-255</b>   | <b>4.83%</b> |
| <i>growth rate</i>                         | -             | -3.14%        | 9.09%         | 8.93%         | 2.73%         | 4.26%         | -                           | -                          | 4.40%         | 4.84%         | 4.92%         | 5.08%         | 4.91%         | -            |
| <i>in % of revenue</i>                     | -2.6%         | -2.5%         | -2.7%         | -2.7%         | -2.8%         | -2.8%         | -2.77%                      | -2.8%                      | -2.8%         | -2.8%         | -2.8%         | -2.8%         | -2.8%         | -            |
| <i>Change in %</i>                         | -             | 0.12%         | -0.17%        | -0.06%        | -0.05%        | 0.01%         | -0.03%                      | 0.0%                       | 0.0%          | 0.0%          | 0.0%          | 0.0%          | 0.0%          | -            |
| <b>General and administrative expenses</b> | <b>-311</b>   | <b>-312</b>   | <b>-330</b>   | <b>-366</b>   | <b>-364</b>   | <b>-395</b>   | <b>4.90%</b>                | <b>-402</b>                | <b>-420</b>   | <b>-441</b>   | <b>-463</b>   | <b>-487</b>   | <b>-511</b>   | <b>4.91%</b> |
| <i>growth rate</i>                         | -             | 0.32%         | 5.77%         | 10.91%        | -0.55%        | 8.52%         | -                           | -                          | 4.62%         | 4.95%         | 4.97%         | 5.11%         | 4.92%         | -            |
| <i>in % of revenue</i>                     | -5.1%         | -5.1%         | -5.3%         | -5.5%         | -5.4%         | -5.6%         | -5.49%                      | -5.5%                      | -5.6%         | -5.6%         | -5.6%         | -5.6%         | -5.6%         | -            |
| <i>Change in %</i>                         | -             | 0.07%         | -0.17%        | -0.22%        | 0.08%         | -0.21%        | -0.12%                      | -0.1%                      | 0.0%          | 0.0%          | 0.0%          | 0.0%          | 0.0%          | -            |
| <b>Other operating income</b>              | <b>182</b>    | <b>171</b>    | <b>183</b>    | <b>186</b>    | <b>174</b>    | <b>178</b>    | <b>-0.44%</b>               | <b>186</b>                 | <b>191</b>    | <b>198</b>    | <b>207</b>    | <b>217</b>    | <b>228</b>    | <b>4.18%</b> |
| <i>growth rate</i>                         | -             | -6.04%        | 7.02%         | 1.64%         | -6.45%        | 2.30%         | -                           | -                          | 2.76%         | 4.00%         | 4.50%         | 4.87%         | 4.81%         | -            |
| <i>in % of revenue</i>                     | 3.0%          | 2.8%          | 2.9%          | 2.8%          | 2.6%          | 2.5%          | 2.63%                       | 2.6%                       | 2.5%          | 2.5%          | 2.5%          | 2.5%          | 2.5%          | -            |
| <i>Change in %</i>                         | -             | -0.23%        | 0.13%         | -0.13%        | -0.20%        | -0.05%        | -0.13%                      | -0.1%                      | 0.0%          | 0.0%          | 0.0%          | 0.0%          | 0.0%          | -            |
| <b>Other operating expenses</b>            | <b>-298</b>   | <b>-166</b>   | <b>-203</b>   | <b>-146</b>   | <b>-178</b>   | <b>-174</b>   | <b>-10.20%</b>              | <b>-167</b>                | <b>-169</b>   | <b>-174</b>   | <b>-181</b>   | <b>-190</b>   | <b>-199</b>   | <b>3.55%</b> |
| <i>growth rate</i>                         | -             | -44.30%       | 22.29%        | -28.08%       | 21.92%        | -2.25%        | -                           | -                          | 1.19%         | 3.19%         | 4.08%         | 4.66%         | 4.70%         | -            |
| <i>in % of revenue</i>                     | -4.9%         | -2.7%         | -3.2%         | -2.2%         | -2.6%         | -2.5%         | -2.43%                      | -2.3%                      | -2.2%         | -2.2%         | -2.2%         | -2.2%         | -2.2%         | -            |
| <i>Change in %</i>                         | -             | 2.23%         | -0.53%        | 1.05%         | -0.45%        | 0.17%         | 0.25%                       | 0.1%                       | 0.1%          | 0.0%          | 0.0%          | 0.0%          | 0.0%          | -            |
| <b>OPERATING RESULT = EBIT</b>             | <b>698</b>    | <b>820</b>    | <b>796</b>    | <b>962</b>    | <b>1,015</b>  | <b>1,088</b>  | <b>9.28%</b>                | <b>1,117</b>               | <b>1,179</b>  | <b>1,244</b>  | <b>1,308</b>  | <b>1,377</b>  | <b>1,445</b>  | <b>5.30%</b> |
| <i>growth rate</i>                         | -             | 17.48%        | -2.93%        | 20.85%        | 5.51%         | 7.19%         | -                           | -                          | 5.62%         | 5.44%         | 5.22%         | 5.23%         | 4.99%         | -            |
| <i>in % of revenue</i>                     | 0             | 13.35%        | 12.67%        | 14.39%        | 15.03%        | 15.42%        | -                           | 0                          | 15.64%        | 15.75%        | 15.81%        | 15.84%        | 15.85%        | -            |

## Appendix-14: Income Statement: EBIT to Profit after Tax

| RE-STATEd INCOME STATEMENT                     |        |        |        |        |        |        | CAGR                | RE-STATEd INCOME STATEMENT |        |        |        |        |        | CAGR        |
|--|--------|--------|--------|--------|--------|--------|---------------------|----------------------------|--------|--------|--------|--------|--------|-------------|
| in EURm  | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2012 - 2017         | 2018                       | 2019   | 2020   | 2021   | 2022   | 2023   | 2018 - 2023 |
| <b>REVENUE - TOTAL</b>                         | 6,040  | 6,141  | 6,285  | 6,686  | 6,752  | 7,056  | 3.16%               | 7,248                      | 7,543  | 7,895  | 8,277  | 8,694  | 9,119  | 4.70%       |
| <b>OPERATING RESULT = EBIT</b>                 | 698    | 820    | 796    | 962    | 1,015  | 1,088  | 9.28%               | 1,117                      | 1,179  | 1,244  | 1,308  | 1,377  | 1,445  | 5.30%       |
| growth rate                                    | -      | 17.48% | -2.93% | 20.85% | 5.51%  | 7.19%  | -                   | -                          | 5.62%  | 5.44%  | 5.22%  | 5.23%  | 4.99%  | -           |
| in % of revenue                                | 0      | 13.35% | 12.67% | 14.39% | 15.03% | 15.42% | -                   | 0                          | 15.64% | 15.75% | 15.81% | 15.84% | 15.85% | -           |
| <b>FINANCIAL RESULT</b>                        | 11.0   | -5.0   | 15.0   | 6.0    | 25.0   | -66.0  | -243.10%            | 11.3                       | 15.6   | 20.0   | 24.5   | 29.3   | 34.5   | 25.04%      |
| in % of revenue                                | 0.18%  | -0.08% | 0.24%  | 0.09%  | 0.37%  | -0.9%  | -0.02%              | 0.16%                      | 0.21%  | 0.25%  | 0.30%  | 0.34%  | 0.38%  | 0.27%       |
| <b>Interest income</b>                         | 37     | 23     | 32     | 25     | 30     | 35     | Average: 1.0%       | 48                         | 54     | 60     | 67     | 74     | 81     | 11.04%      |
| in % of cash and securities                    | 1.5%   | 0.9%   | 1.2%   | 0.8%   | 0.8%   | 0.8%   | 1.0%                | 1.0%                       | 1.0%   | 1.0%   | 1.0%   | 1.0%   | 1.0%   | -           |
| <b>Interest expense</b>                        | -9     | -6     | -7     | -14    | -4     | -8     | Average: -7.2%      | -8                         | -8     | -8     | -8     | -8     | -8     | 0.00%       |
| in % of financial liabilities                  | -8.8%  | -5.5%  | -5.1%  | -12.7% | -3.7%  | -7.1%  | -7.2%               | -7.2%                      | -7.2%  | -7.2%  | -7.2%  | -7.2%  | -7.2%  | -           |
| <b>Net pension result</b>                      | -12    | -12    | -12    | -13    | -13    | -12    | Average: -2.3%      | -16                        | -17    | -18    | -20    | -21    | -23    | 7.21%       |
| in % of pensions                               | -3.1%  | -3.1%  | -1.9%  | -2.3%  | -1.8%  | -1.8%  | -2.3%               | -2.3%                      | -2.3%  | -2.3%  | -2.3%  | -2.3%  | -2.3%  | -           |
| <b>Other financial result</b>                  | -5     | -10    | 2      | 8      | 12     | -81    | Average: -0.2%      | -13                        | -13    | -14    | -15    | -15    | -16    | 4.70%       |
| in % of revenue                                | -0.1%  | -0.2%  | 0.0%   | 0.1%   | 0.2%   | -1.1%  | -0.2%               | -0.2%                      | -0.2%  | -0.2%  | -0.2%  | -0.2%  | -0.2%  | -           |
| <b>PROFIT BEFORE TAX</b>                       | 709    | 815    | 811    | 968    | 1,040  | 1,022  | 7.59%               | 1,128                      | 1,195  | 1,264  | 1,333  | 1,406  | 1,480  | 5.58%       |
| growth rate                                    | -      | 14.95% | -0.49% | 19.36% | 7.44%  | -1.73% | -                   | 10.36%                     | 5.95%  | 5.74%  | 5.49%  | 5.49%  | 5.25%  | -           |
| in % of revenue                                | 11.74% | 13.27% | 12.90% | 14.48% | 15.40% | 14.48% | -                   | 15.56%                     | 15.84% | 16.00% | 16.10% | 16.17% | 16.23% | -           |
| <b>Income taxes</b>                            | -258   | -272   | -274   | -297   | -313   | -333   | -31.12%             | -351                       | -369   | -388   | -406   | -425   | -444   | -           |
| growth rate                                    | -      | 5.43%  | 0.74%  | 8.39%  | 5.39%  | 6.39%  | -                   | 5.40%                      | 5.19%  | 4.97%  | 4.72%  | 4.72%  | 4.47%  | -           |
| in % of profit before tax                      | -36.4% | -33.4% | -33.8% | -30.7% | -30.1% | -32.6% | -31.1%              | -31.1%                     | -30.9% | -30.7% | -30.4% | -30.2% | -30.0% | -0.22%      |
| <b>PROFIT AFTER TAX</b>                        | 451    | 543    | 537    | 671    | 727    | 689    | 8.85%               | 777                        | 826    | 876    | 927    | 981    | 1,036  | 5.93%       |
| growth rate                                    | -      | 20.40% | -1.10% | 24.95% | 8.35%  | -5.23% | -                   | 12.75%                     | 6.30%  | 6.08%  | 5.83%  | 5.83%  | 5.59%  | -           |
| in % of revenue                                | 7.5%   | 8.84%  | 8.54%  | 10.04% | 10.77% | 9.76%  | 2017: -17.00%       | 10.7%                      | 10.95% | 11.09% | 11.20% | 11.28% | 11.36% | -           |
| <b>Non-controlling interests</b>               | -9.00  | -9.00  | -8.00  | -11.00 | -18.00 | -17.00 | -                   | -17.00                     | -17.00 | -17.00 | -17.00 | -17.00 | -17.00 | 0.00%       |
| <b>ATTRIBUTABLE TO EQUITY HOLDERS</b>          | 442    | 534    | 529    | 660    | 709    | 672    | 8.74%               | 760                        | 809    | 859    | 910    | 964    | 1,019  | 6.04%       |
| growth rate                                    | -      | 20.81% | -0.94% | 24.76% | 7.42%  | -5.22% | -                   | 13.07%                     | 6.44%  | 6.21%  | 5.95%  | 5.94%  | 5.69%  | -           |
| in % of revenue                                | 7.32%  | 8.70%  | 8.42%  | 9.87%  | 10.50% | 9.52%  | -                   | 10.48%                     | 10.72% | 10.88% | 11.00% | 11.09% | 11.17% | -           |
| <b>Basic/diluted earnings per share (in €)</b> | 1.96   | 2.35   | 2.33   | 2.91   | 3.13   | 2.96   | # of shares: 226.18 | 3.36                       | 3.58   | 3.80   | 4.02   | 4.26   | 4.51   | 6.04%       |
| growth rate                                    | -      | 19.90% | -0.85% | 24.89% | 7.56%  | -5.43% | -                   | 13.49%                     | 6.44%  | 6.21%  | 5.95%  | 5.94%  | 5.69%  | -           |

## Appendix-15: EBIT and EBITDA Normalization

| RE-STATED INCOME STATEMENT                     |       |        |        |        |        |        | CAGR        | RE-STATED INCOME STATEMENT |        |        |        |        |        | CAGR        |
|--|-------|--------|--------|--------|--------|--------|-------------|----------------------------|--------|--------|--------|--------|--------|-------------|
| in EURm  | 2012  | 2013   | 2014   | 2015   | 2016   | 2017   | 2012 - 2017 | 2018                       | 2019   | 2020   | 2021   | 2022   | 2023   | 2018 - 2023 |
| <b>REVENUE - TOTAL</b>                         | 6,040 | 6,141  | 6,285  | 6,686  | 6,752  | 7,056  | 3.16%       | 7,248                      | 7,543  | 7,895  | 8,277  | 8,694  | 9,119  | 4.70%       |
| <b>OPERATING RESULT = EBIT</b>                 | 698   | 820    | 796    | 962    | 1,015  | 1,088  | 9.28%       | 1,117                      | 1,179  | 1,244  | 1,308  | 1,377  | 1,445  | 5.30%       |
| <i>growth rate</i>                             | -     | 17.48% | -2.93% | 20.85% | 5.51%  | 7.19%  | -           | -                          | 5.62%  | 5.44%  | 5.22%  | 5.23%  | 4.99%  | -           |
| <i>in % of revenue</i>                         | 0     | 13.35% | 12.67% | 14.39% | 15.03% | 15.42% | -           | 0                          | 15.64% | 15.75% | 15.81% | 15.84% | 15.85% | -           |
| <b>EBITDA Bridge &amp; Normalization</b>       |       |        |        |        |        |        |             |                            |        |        |        |        |        |             |
| <b>Operating Income</b>                        | 698   | 820    | 796    | 962    | 1,015  | 1,088  | 9.3%        | 1,117                      | 1,179  | 1,244  | 1,308  | 1,377  | 1,445  | 5.3%        |
| <i>in % of revenue</i>                         | 11.6% | 13.4%  | 12.7%  | 14.4%  | 15.0%  | 15.4%  | 13.7%       | 15.4%                      | 15.6%  | 15.8%  | 15.8%  | 15.8%  | 15.9%  | 15.7%       |
| + Non-Recurring Items/unusual expense (income) | 52    | 18     | 65     | -18    | 27     | 3      |             |                            |        |        |        |        |        |             |
| + Interest Exp. Net Operating                  |       | 2      | 8      | 15     | 7      | 5      |             |                            |        |        |        |        |        |             |
| <b>= Norm. EBIT</b>                            | 750   | 840    | 869    | 959    | 1,049  | 1,096  | 7.9%        | 1,117                      | 1,179  | 1,244  | 1,308  | 1,377  | 1,445  | 5.3%        |
| <i>in % of revenue</i>                         | 12.4% | 13.7%  | 13.8%  | 14.3%  | 15.5%  | 15.5%  | 14.2%       | 15.4%                      | 15.6%  | 15.8%  | 15.8%  | 15.8%  | 15.9%  | 15.7%       |
| + Depreciation                                 | 122   | 92     | 97     | 118    | 136    | 133    |             | 139                        | 146    | 153    | 161    | 169    | 177    |             |
| + Amortortiztion of Intengibles                | 30    | 14     | 82     | 11     | 12     | 17     |             | 15                         | 16     | 17     | 18     | 19     | 20     |             |
| <b>= Norm. EBITDA</b>                          | 902   | 946    | 1,048  | 1,088  | 1,197  | 1,246  | 6.7%        | 1,271                      | 1,341  | 1,414  | 1,487  | 1,565  | 1,643  | 5.3%        |
| <i>in % of revenue</i>                         | 14.9% | 15.4%  | 16.7%  | 16.3%  | 17.7%  | 17.7%  | 16.4%       | 17.5%                      | 17.8%  | 17.9%  | 18.0%  | 18.0%  | 18.0%  | 17.9%       |
| <b>= Reported EBITDA</b>                       | 850   | 926    | 975    | 1,091  | 1,163  | 1,238  | 7.8%        | 1,271                      | 1,341  | 1,414  | 1,487  | 1,565  | 1,643  | 5.3%        |
| <i>in % of revenue</i>                         | 14.1% | 15.1%  | 15.5%  | 16.3%  | 17.2%  | 17.5%  | 16.0%       | 17.5%                      | 17.8%  | 17.9%  | 18.0%  | 18.0%  | 18.0%  | 17.9%       |

## Appendix-16: Margin Development

|                       | RE-STATED INCOME STATEMENT |       |       |       |       |       | AVERAGE<br>2012 - 2017 | RE-STATED INCOME STATEMENT |       |       |       |       |       | AVERAGE<br>2018 - 2023 |
|-----------------------|----------------------------|-------|-------|-------|-------|-------|------------------------|----------------------------|-------|-------|-------|-------|-------|------------------------|
|                       | 2012                       | 2013  | 2014  | 2015  | 2016  | 2017  |                        | 2018                       | 2019  | 2020  | 2021  | 2022  | 2023  |                        |
| <b>Profitability</b>  |                            |       |       |       |       |       |                        |                            |       |       |       |       |       |                        |
| Gross Margin          | 63.3%                      | 63.3% | 62.3% | 58.3% | 58.9% | 58.8% | 60.8%                  | 58.1%                      | 57.8% | 57.6% | 57.6% | 57.5% | 57.5% | 57.7%                  |
| Operating Margin      | 11.6%                      | 13.4% | 12.7% | 14.4% | 15.0% | 15.4% | 13.7%                  | 15.4%                      | 15.6% | 15.8% | 15.8% | 15.8% | 15.9% | 15.7%                  |
| EBIT Margin (norm.)   | 12.4%                      | 13.7% | 13.8% | 14.3% | 15.5% | 15.5% | 14.2%                  | 15.4%                      | 15.6% | 15.8% | 15.8% | 15.8% | 15.9% | 15.7%                  |
| EBITDA Margin (norm.) | 14.9%                      | 15.4% | 16.7% | 16.3% | 17.7% | 17.7% | 16.4%                  | 17.5%                      | 17.8% | 17.9% | 18.0% | 18.0% | 18.0% | 17.9%                  |
| Pretax Margin         | 11.7%                      | 13.3% | 12.9% | 14.5% | 15.4% | 14.5% | 13.7%                  | 15.6%                      | 15.8% | 16.0% | 16.1% | 16.2% | 16.2% | 16.0%                  |
| Net Margin            | 7.5%                       | 8.8%  | 8.5%  | 10.0% | 10.8% | 9.8%  | 9.2%                   | 10.7%                      | 10.9% | 11.1% | 11.2% | 11.3% | 11.4% | 11.1%                  |

## Appendix-17: Balance Sheet: Assets

| Balance Sheet                  |       |       |       |       |       |       | CAGR        | Balance Sheet FC |       |        |        |        |        | CAGR        |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------------|------------------|-------|--------|--------|--------|--------|-------------|
| in EURm                        | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2012 - 2017 | 2018             | 2019  | 2020   | 2021   | 2022   | 2023   | 2018 - 2023 |
| <b>Assets</b>                  |       |       |       |       |       |       |             |                  |       |        |        |        |        |             |
| <b>NON-CURRENT ASSETS</b>      | 1,717 | 1,900 | 2,340 | 2,685 | 3,297 | 3,926 | 18.0%       | 4,533            | 5,170 | 5,844  | 6,561  | 7,325  | 8,138  | 12.4%       |
| Intangible assets              | 185   | 176   | 119   | 119   | 119   | 140   | -5.4%       | 132              | 135   | 139    | 142    | 145    | 148    | 2.3%        |
| PPE                            | 685   | 785   | 964   | 1,054 | 1,046 | 1,026 | 8.4%        | 1,084            | 1,117 | 1,163  | 1,216  | 1,276  | 1,337  | 4.3%        |
| Non-current securities         | 712   | 804   | 1,059 | 1,318 | 1,891 | 2,532 | 28.9%       | 3,088            | 3,677 | 4,290  | 4,939  | 5,627  | 6,363  | 15.6%       |
| Other non-current assets       | 2     | 2     | 3     | 3     | 29    | 23    | 63.0%       | 23               | 23    | 23     | 23     | 23     | 23     | 0.0%        |
| Deferred tax assets            | 133   | 133   | 195   | 191   | 212   | 205   | 9.0%        | 207              | 218   | 229    | 241    | 254    | 266    | 5.2%        |
| <b>CURRENT ASSETS</b>          | 3,879 | 3,898 | 3,990 | 4,188 | 4,276 | 4,279 | 2.0%        | 4,350            | 4,465 | 4,602  | 4,746  | 4,903  | 5,061  | 3.1%        |
| Inventories                    | 734   | 733   | 786   | 772   | 739   | 854   | 3.1%        | 883              | 921   | 965    | 1,012  | 1,063  | 1,115  | 4.8%        |
| Trade receivables              | 1,064 | 1,102 | 1,275 | 1,258 | 1,293 | 1,326 | 4.5%        | 1,372            | 1,434 | 1,503  | 1,578  | 1,658  | 1,739  | 4.9%        |
| Other current financial assets | 112   | 96    | 108   | 115   | 143   | 151   | 6.2%        | 144              | 150   | 157    | 165    | 173    | 182    | 4.7%        |
| Income tax receivables         | 86    | 55    | 113   | 100   | 108   | 108   | 4.7%        | 108              | 111   | 119    | 125    | 132    | 139    | 5.1%        |
| Other current assets           | 123   | 137   | 170   | 167   | 163   | 169   | 6.6%        | 172              | 178   | 186    | 195    | 205    | 215    | 4.6%        |
| Current securities             | 926   | 791   | 562   | 858   | 958   | 770   | -3.6%       | 770              | 770   | 770    | 770    | 770    | 770    | 0.0%        |
| Cash and cash equivalents      | 834   | 984   | 976   | 918   | 872   | 901   | 1.6%        | 901              | 901   | 901    | 901    | 901    | 901    | 0.0%        |
| <b>TOTAL ASSETS</b>            | 5,596 | 5,798 | 6,330 | 6,873 | 7,573 | 8,205 | 7.95%       | 8,884            | 9,635 | 10,446 | 11,308 | 12,227 | 13,199 | 8.24%       |

## Appendix-18: Balance Sheet: Equity and Liabilities

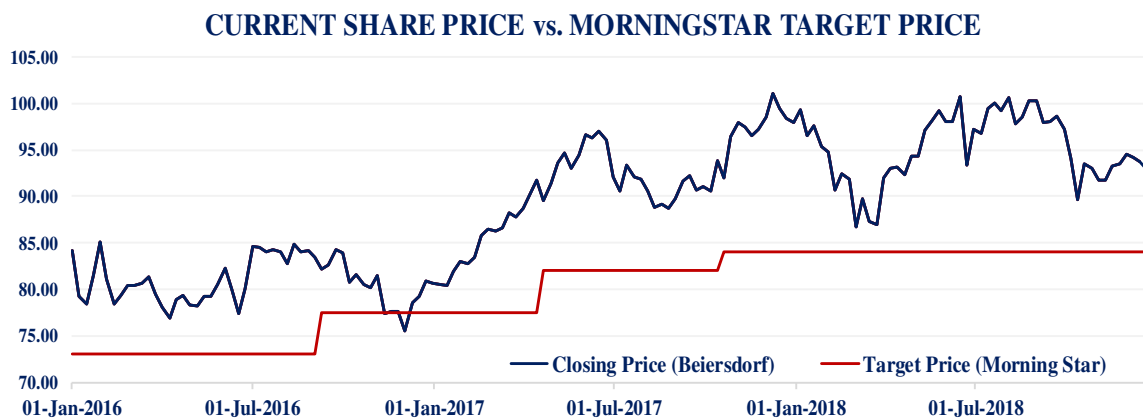
| Balance Sheet                   |       |       |       |       |       |       | CAGR        | Balance Sheet FC |       |        |        |        |        | CAGR        |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------------|------------------|-------|--------|--------|--------|--------|-------------|
| in EURm                         | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2012 - 2017 | 2018             | 2019  | 2020   | 2021   | 2022   | 2023   | 2018 - 2023 |
| <b>Equity &amp; Liabilities</b> |       |       |       |       |       |       |             |                  |       |        |        |        |        |             |
| <b>Equity</b>                   | 3,143 | 3,405 | 3,640 | 4,201 | 4,677 | 5,125 | 10.3%       | 5,702            | 6,293 | 6,925  | 7,598  | 8,313  | 9,077  | 9.7%        |
| Shareholder Equity              | 3,131 | 3,393 | 3,629 | 4,188 | 4,656 | 5,104 | 10.3%       | 5,681            | 6,272 | 6,904  | 7,577  | 8,292  | 9,056  | 9.8%        |
| Share capital                   | 252   | 252   | 252   | 252   | 252   | 252   | 0.0%        | 252              | 252   | 252    | 252    | 252    | 252    | 0.0%        |
| Additional paid-in capital      | 47    | 47    | 47    | 47    | 47    | 47    | 0.0%        | 47               | 47    | 47     | 47     | 47     | 47     | 0.0%        |
| Retained earnings               | 2,839 | 3,209 | 3,413 | 3,955 | 4,416 | 4,969 | 11.8%       | 5,546            | 6,137 | 6,769  | 7,442  | 8,157  | 8,921  | 10.0%       |
| Accumulated OCI                 | -7    | -115  | -83   | -66   | -59   | -164  | 87.9%       | -164             | -164  | -164   | -164   | -164   | -164   | 0.0%        |
| Non-controlling interests       | 12    | 12    | 11    | 13    | 21    | 21    | 11.8%       | 21               | 21    | 21     | 21     | 21     | 21     | 0.0%        |
| <b>Liabilities</b>              | 2,453 | 2,393 | 2,690 | 2,672 | 2,896 | 3,080 | 4.7%        | 3,182            | 3,342 | 3,521  | 3,710  | 3,914  | 4,122  | 5.3%        |
| <b>Non-current liabilities</b>  | 612   | 612   | 773   | 746   | 860   | 860   | 7.0%        | 863              | 918   | 979    | 1,046  | 1,119  | 1,194  | 6.7%        |
| Provisions for pensions         | 381   | 388   | 627   | 574   | 706   | 659   | 11.6%       | 678              | 723   | 776    | 833    | 895    | 960    | 7.2%        |
| Other non-current provisions    | 90    | 82    | 73    | 81    | 96    | 121   | 6.1%        | 105              | 109   | 114    | 120    | 126    | 132    | 4.7%        |
| Non-current liabilities         | 11    | 5     | 1     | 1     | 1     | 4     | -18.3%      | 4                | 4     | 4      | 4      | 4      | 4      | 0.0%        |
| Other non-current liabilities   | 4     | 3     | 3     | 2     | 2     | 2     | -12.9%      | 2                | 2     | 2      | 2      | 2      | 2      | 0.0%        |
| Deffered tax liabilities        | 126   | 134   | 69    | 88    | 55    | 74    | -10.1%      | 75               | 79    | 83     | 87     | 92     | 96     | 5.2%        |
| <b>Current liabilities</b>      | 1,841 | 1,781 | 1,917 | 1,926 | 2,036 | 2,220 | 3.8%        | 2,318            | 2,424 | 2,541  | 2,664  | 2,795  | 2,928  | 4.8%        |
| Other current provisions        | 506   | 527   | 466   | 419   | 440   | 427   | -3.3%       | 455              | 474   | 496    | 520    | 546    | 573    | 4.7%        |
| Income tax liabilities          | 105   | 87    | 130   | 145   | 146   | 162   | 9.1%        | 166              | 175   | 185    | 194    | 204    | 215    | 5.3%        |
| Trade payables                  | 1,036 | 973   | 1,022 | 1,152 | 1,244 | 1,420 | 6.5%        | 1,491            | 1,567 | 1,648  | 1,732  | 1,821  | 1,912  | 5.1%        |
| Other current financial liabili | 91    | 104   | 135   | 109   | 108   | 109   | 3.7%        | 109              | 109   | 109    | 109    | 109    | 109    | 0.0%        |
| Other current liabilities       | 103   | 90    | 164   | 101   | 98    | 102   | -0.2%       | 98               | 100   | 104    | 109    | 114    | 120    | 4.2%        |
| <b>TOTAL EQUITY AND LIABI</b>   | 5,596 | 5,798 | 6,330 | 6,873 | 7,573 | 8,205 | 7.95%       | 8,884            | 9,635 | 10,446 | 11,308 | 12,227 | 13,199 | 8.24%       |

## Appendix-19: Net Working Capital and Deferred Taxes

| Working Capital [Investment (-) / Divestment (+) in WC]           |       |         |        |        |        |         | CAGR             | Forecast               |       |       |       |       |       | CAGR        |       |       |       |       |       |       |
|---|-------|---------|--------|--------|--------|---------|------------------|------------------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------|-------|-------|-------|
|   | 2012  | 2013    | 2014   | 2015   | 2016   | 2017    | 2012 - 2017      | 2018                   | 2019  | 2020  | 2021  | 2022  | 2023  | 2018 - 2023 |       |       |       |       |       |       |
| Net Working Capital (NWC)   | 762   | 862     | 1,039  | 878    | 788    | 760     | -0.05%           | 764                    | 788   | 820   | 858   | 900   | 943   | 4.29%       |       |       |       |       |       |       |
| Change in NWC in %  |       | 13.1%   | 20.5%  | -15.5% | -10.3% | -3.6%   | average:         | 0.6%                   | 3.0%  | 4.1%  | 4.6%  | 4.9%  | 4.8%  | average:    |       |       |       |       |       |       |
| Change in NWC (abs.)  |       | 100     | 177    | -161   | -90    | -28     | 0                | 4                      | 23    | 33    | 37    | 42    | 43    | 31          |       |       |       |       |       |       |
| <i>Only Trade Receivables, Inventories and accounts payables:</i> |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Cash Conversion Cycle (CCC)                                       | 15    | 27      | 38     | 19     | 3      | -2      | -169.71%         | 764                    | 788   | 820   | 858   | 900   | 943   | 4.29%       |       |       |       |       |       |       |
| Change in CCC in %  |       | 82.8%   | 41.3%  | -49.9% | -81.7% | -169.6% | average:         | -31946.1%              | 3.0%  | 4.1%  | 4.6%  | 4.9%  | 4.8%  | average:    |       |       |       |       |       |       |
| Deferred Tax Assets/Liabilities                                   | -47   | 14      | 115    | 124    | 184    | 144     | -225.10%         | 148                    | 155   | 163   | 171   | 180   | 189   | -5320.77%   |       |       |       |       |       |       |
| Change in NWC in %  |       | -129.8% | 721.4% | 7.8%   | 48.4%  | -21.7%  | average:         | 2.8%                   | 4.9%  | 5.1%  | 5.0%  | 5.1%  | 4.9%  | average:    |       |       |       |       |       |       |
| Change in DTA / DTL (abs.)  |       | 61      | 101    | 9      | 60     | -40     | 38               | 4                      | 7     | 8     | 8     | 9     | 9     | 8           |       |       |       |       |       |       |
| <b>Trade Receivables</b>  |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Trade Receivables   | 1,064 | 1,102   | 1,275  | 1,258  | 1,293  | 1,326   | 4.50%            | 1,372                  | 1,434 | 1,503 | 1,578 | 1,658 | 1,739 | 4.86%       |       |       |       |       |       |       |
| growth in %   |       | 3.6%    | 15.7%  | -1.3%  | 2.8%   | 2.6%    | average past 3Y: | 3.5%                   | 4.5%  | 4.2%  | 4.9%  | 5.1%  | 4.9%  | average:    |       |       |       |       |       |       |
| DSO (Days Sales Outstanding) - Revenue                            | 64.3  | 65.5    | 74.0   | 68.7   | 69.9   | 68.6    | 68.59            | 69.11                  | 69.4  | 69.5  | 69.6  | 69.6  | 69.6  | 69.46       |       |       |       |       |       |       |
| growth in %   |       | 1.9%    | 13.0%  | -7.3%  | 1.8%   | -1.9%   | average:         | 0.76%                  | 0.38% | 0.19% | 0.09% | 0.05% | 0.02% | 0.25%       |       |       |       |       |       |       |
| <b>Inventories</b>  |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Inventories   | 734   | 733     | 786    | 772    | 739    | 854     | 3.07%            | Decreasing Factor: 50% |       |       |       |       |       | 883         | 921   | 965   | 1,012 | 1,063 | 1,115 | 4.79% |
| growth in %   |       | -0.1%   | 7.2%   | -1.8%  | -4.3%  | 15.6%   | average past 2Y: | 3.4%                   | 4.3%  | 4.8%  | 4.9%  | 5.1%  | 4.9%  | average:    |       |       |       |       |       |       |
| <b>DIH (Days' Inventory on Hand) - COGS</b>                       |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| DIH (Days' Inventory on Hand) - COGS                              | 120.8 | 118.6   | 121.2  | 101.2  | 97.2   | 107.1   | 107.12           | 106.1                  | 105.5 | 105.3 | 105.1 | 105.1 | 105.0 | 105.35      |       |       |       |       |       |       |
| growth in %   |       | -1.8%   | 2.2%   | -16.5% | -3.9%  | 10.2%   | average:         | -1.0%                  | -0.5% | -0.2% | -0.1% | -0.1% | 0.0%  | -0.33%      |       |       |       |       |       |       |
| <b>Accounts Payable</b>   |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Accounts Payable  | 1,036 | 973     | 1,022  | 1,152  | 1,244  | 1,420   | 6.51%            | Decreasing Factor: 50% |       |       |       |       |       | 1,491       | 1,567 | 1,648 | 1,732 | 1,821 | 1,912 | 5.10% |
| growth in %   |       | -6.1%   | 5.0%   | 12.7%  | 8.0%   | 14.1%   | average past 2Y: | 5.0%                   | 5.1%  | 5.2%  | 5.1%  | 5.2%  | 5.0%  | average:    |       |       |       |       |       |       |
| <b>DPO (Days Payable Outstanding) - COGS</b>                      |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| DPO (Days Payable Outstanding) - COGS                             | 170.6 | 157.5   | 157.6  | 151.0  | 163.7  | 178.1   | 178.11           | 179.1                  | 179.6 | 179.8 | 179.9 | 180.0 | 180.0 | 179.73      |       |       |       |       |       |       |
| growth in %   |       | -7.7%   | 0.1%   | -4.2%  | 8.4%   | 8.8%    | average:         | 0.5%                   | 0.3%  | 0.1%  | 0.1%  | 0.0%  | 0.0%  | 0.18%       |       |       |       |       |       |       |
| <b>Deferred Tax Assets</b>  |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Deferred Tax Assets   | 189   | 188     | 308    | 291    | 320    | 313     | 10.62%           | Decreasing Factor: 25% |       |       |       |       |       | 315         | 331   | 348   | 366   | 386   | 405   | 5.17% |
| growth in %   |       | -0.5%   | 63.8%  | -5.5%  | 10.0%  | -2.2%   | average past 2Y: | 0.5%                   | 5.2%  | 5.3%  | 5.2%  | 5.2%  | 5.0%  | average:    |       |       |       |       |       |       |
| <b>% of EBITDA</b>  |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| % of EBITDA   | 21.0% | 19.9%   | 29.5%  | 26.7%  | 26.7%  | 25.1%   | 25.1%            | 24.8%                  | 24.7% | 24.6% | 24.6% | 24.6% | 24.6% | 24.7%       |       |       |       |       |       |       |
| growth in percentage points                                       |       | -1.1%   | 9.6%   | -2.7%  | 0.0%   | -1.6%   | average:         | -0.4%                  | -0.1% | 0.0%  | 0.0%  | 0.0%  | 0.0%  | -0.08%      |       |       |       |       |       |       |
| <b>Deferred Tax Liabilities</b>                                   |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| Deferred Tax Liabilities  | 265   | 221     | 199    | 233    | 201    | 236     | -2.29%           | Decreasing Factor: 25% |       |       |       |       |       | 241         | 254   | 268   | 282   | 296   | 311   | 5.27% |
| growth in %   |       | -16.6%  | -10.0% | 17.1%  | -13.7% | 17.4%   | average past 2Y: | 2.0%                   | 5.5%  | 5.4%  | 5.2%  | 5.2%  | 5.0%  | average:    |       |       |       |       |       |       |
| <b>% of EBITDA</b>  |       |         |        |        |        |         |                  |                        |       |       |       |       |       |             |       |       |       |       |       |       |
| % of EBITDA   | 29.4% | 23.4%   | 19.0%  | 21.4%  | 16.8%  | 18.9%   | 18.9%            | 18.9%                  | 18.9% | 18.9% | 18.9% | 18.9% | 18.9% | 18.9%       |       |       |       |       |       |       |
| growth in percentage points                                       |       | -6.0%   | -4.3%  | 2.4%   | -4.6%  | 2.1%    | average:         | 0.0%                   | 0.0%  | 0.0%  | 0.0%  | 0.0%  | 0.0%  | 0.00%       |       |       |       |       |       |       |

## Appendix-20: Comparison with Morningstar

A comparison with an equity research of a major investment bank was conducted, using the half-year report 2018 from Morningstar, published on 12/08/2018. Morningstar determined a fair value per share of EUR 84.00, while traded price on 17/09/2018 amounted EUR 98.04. Although Morningstar states that investors might receive a risk-adjusted return below fair value, the target price just remains in the lower boundary of a hold recommendation. FIG-80 depicts historical trading price versus Morningstar's target price, showing that Morningstar remains historically under the current share price.



*FIG-80: Beiersdorf's Closing Price vs. Morningstar*

Next, the underlying assumptions of Morningstar's valuation were compared to this thesis'. Whereas WACC and revenue growth were similar, the impactful perpetual growth rate differs. However, latter is not only balanced out by the deviating EBIT-margins but also by Morningstar's longer explicit period (15 years). Thus, a similar EQV was reached. However, the final EV deviates due to different treatment of long-term securities and other provisions. Especially, cash and cash equivalents is with only EURm 1,052 versus EURm 4,903 much lower than in this theses, which lead to a deviating target price of EUR 84.00 vs. EUR 96.06.

| <b>Differences in Major Assumptions</b>     |                    |                    |
|---|--------------------|--------------------|
|   | <b>Morningstar</b> | <b>This Thesis</b> |
| <b>Estimated Fair Price per Share (EUR)</b> | <b>84.00</b>       | <b>96.06</b>       |
| <b>Underlying Valuation Date</b>            | 01.07.2018         | 01.01.2019         |
| <b>Date of Compared Traded Share Price</b>  | 17.09.2018         | 28.12.2018         |
| <b>Method</b>                               | DCF                | DCF                |
| <b>Compared Traded Share Price (EUR)</b>    | 98.04              | 91.16              |
| <b>Upside/Downside</b>                      | -14.3%             | +5.4%              |
| <b>Recommendation</b>                       | HOLD               | HOLD               |
| <b>Explicit Forecast Period (Years)</b>     | 15                 | 5 (2023)           |
| <b>Cost of Equity</b>                       | 7.50%              | 7.25%              |
| <b>WACC</b>                                 | 7.40%              | 7.25%              |
| <b>Long-Run Tax Rate</b>                    | 25%                | 30%                |
| <b>5-Year Revenue CAGR</b>                  | 4.80%              | 4.86%              |
| <b>Perpetuity Growth Rate</b>               | 2.0%               | 2.9%               |
| <b>5-Year EBIT Margin (average)</b>         | 16.4%              | 15.8%              |
| <b>Present Value FCFF</b>                   | 3,078              | 3,295              |
| <b>Present Value of TV</b>                  | 15,168             | 14,900             |
| <b>Enterprise Value (EURm)</b>              | <b>18,245</b>      | <b>18,195</b>      |
| <b>Cash and Cash Equivalents (EURm)</b>     | 1,052              | 4,903              |
| <b>Debt (EURm)</b>                          | -113               | -113               |
| <b>Other Adjustments (EURm)</b>             | -485               | -1,259             |
| <b>Equity Value (EURm)</b>                  | <b>18,700</b>      | <b>21,727</b>      |

*FIG-81: Differing Assumptions (Morningstar vs. Thesis)*

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