Copenhagen Business School

MSc Accounting, Strategy and Control

Master Thesis

Valuation of Carlsberg A/S

A strategic and financial analysis of Carlsberg considering the effect of the operational restructuring program SAIL'22 on the company's operating performance and share price

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Abstract

The thesis answers the research question: *What is the estimated value per share of Carlsberg as of 31st December 2017 considering the restructuring initiative SAIL'22?* To answer the question, first a strategic analysis of the macro- and micro environment is conducted followed by a profitability analysis based on Carlsberg's historical performance. The analysis help to identify value drivers which are then taken into account when forecasting Carlsberg's future performance. Finally, this input is used to calculate the enterprise value applying the Discounted Cash Flow model as well as the Economic Value Added approach. During the course of the thesis a special focus is put on the company-wide operational restructuring program SAIL'22 that Carlsberg currently conducts. On the one hand, we consider the potential effects of SAIL'22 when assessing the business environment and when forecasting future performance. Measures within SAIL'22 aim to make the company more successful by driving sustainable growth and more efficient through streamlining processes throughout the value chain. By taking a closer look at the specific activities we derive the expectation that SAIL'22 will enhance an increase in revenue and a reduction in costs. On the other hand, we calculate the effect of the restructuring initiative on the shareholder value. A literature review about corporate restructuring identifies reasons restructurings are conducted and factors supporting a successful implementation and execution. The research further reveals different opinions on the effect of restructurings on the shareholder value. Expectations often deviate from concrete evidence regarding the success of restructuring activities. Main goal within SAIL'22 is to enhance shareholder value and therefore increase operating performance. We thus calculate the effect of SAIL'22 on the return on equity. To isolate the restructuring effect from uncontrollable macro-economic events that influence the company as well as from an increased performance that was expected before the introduction of SAIL'22, we apply a formula developed by Smart and Waldfogel (1994). Excluding all effects not related to SAIL'22, we receive a positive influence of the restructuring activities on Carlsberg's operating performance. Increased shareholder value is mostly reflected in the share price. Therefore, we analyze the development on and after the day of the announcement of SAIL'22. The decline of the share price on the day of the announcement reflects a rather negative perception of shareholders towards the restructuring initiative. This supports the result of our valuation: The DCF- and EVA-models estimate an enterprise value of DKK 173.442 million and a value per share of DKK 942,99. We thus conclude that the share price is currently undervalued. The underestimation is in line with the reluctant reaction of the share price and supports the assumption that the share price will increase with the preceding of SAIL'22 and the successful implementation of activities. An increase of the share price can already be seen: Since the day of the announcement the share price has increased from DKK 592 to DKK 745 per share in December 2017.

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I Abbreviations

am	Ante meridiem
APT	Arbitrage pricing theory
BVE	Book value of equity
CAPEX	Capital expenditure
CAPM	Capital asset pricing model
CEO	Chief executive officer
CoEC	Code of ethics and conducts
CRB	China resources beer (holdings) company limited
DCF	Discounted cash flow
DCFE	Discounted cash flow to the firm
DCFE	Discounted cash flow to equity
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortization
etc.	Et cetera
EU	European union
EVA	Economic value added
FTE	Full-time employees
IAS	International accounting standards
IC	Invested capital
i.e.	Id est
IFRS	International financial reporting standards
IRR	Internal rate of return
e.g.	Exempli gratia
GDP	Gross domestic product
MVE	Market value of equity
NAB	Non-alcoholic beer
NBC	Net borrowing costs
NIBD	Net interest bearing debt
NOPAT	Net operating profit after tax
pm	Post meridiem
PEST	Political, economic, sociocultural, technical
PPE	Property, plant and equipment
REROE	Restructuring effect on return on equity
R&D	Research and development

RTD	Ready-to-drink
ROIC	Return on invested capital
ROE	Return on equity
SKU	Stock keeping unit
SVP	Senior vice president
SWOT	Strengths, weaknesses, opportunities, threats
US	Unities States
VAT	Value-added tax
VRIO	Valuable, rare, inimitable, organized
VP	Vice president
WACC	Weighted average cost of capital
WHO	World health organization

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1 Introduction

1.1 Research Aim and Research Question

Corporate restructurings became a prominent aspect of corporate behavior during the past decades when large corporations undertook radical changes in their business portfolio, financial or organizational structure (Bowman and Singh, 1990). With the announcement of restructuring activities, a company typically signals the need to create efficiencies, add value and improve operating performance (Lopez, Holder-Webb and Regier, 2005). A corporation also makes use of restructuring to differentiate from competition (Markides, 1995) or to cope with changing business environments, strategic or industry pressure (Donaldson, 1990; Brauer, 2006; Lin, Lee and Gibbs, 2008).

While the reasons for restructuring may be diverse the primary objective of those initiatives is to generate shareholder value (Brickley and Van Drunen, 1990). Whether restructuring is an appropriate mean to enhance operational effectiveness and thereby improve shareholder value triggered a widespread controversy among management, politicians, researchers and financial analysts. Some state that efficient organizations arise from restructuring initiatives whereas others argue that the operational disruption from such activities leads to more harm than good (Lopez, Holder-Webb and Regier, 2005). Previous studies which examine the restructuring effect on operating effectiveness led to mixed conclusions (e.g. Brickley and Van Drunen, 1990; Kross, Park and Ro, 1998; Carter, 2000; Atiase, Platt and Tse, 2004). Similarly, research has little knowledge about how market actors understand the restructuring announcements. Studies find mixed results when assessing the stock price performance of a company's restructuring announcement (e.g. Brickley and Van Drunen, 1990; Elliott and Hanna, 1996).

These different opinions and the lack of evidence from the literature on the effectiveness of restructurings as a mean to improve shareholder value have triggered our interest in examining the influence of restructurings on shareholders' value on a case company. A method to determine the value for shareholders is a company valuation. Company valuations take into account a company's past and current business environment as well as operating performance and thereby estimate future performance. Based on this expected future performance, the current value per share, i.e. the value for shareholders can be determined.

Therefore, we conduct a company valuation. Within the different parts of the valuation we will not only consider but also measure the influences on shareholders' value coming from restructuring activities.

We will conduct the valuation on the Danish brewing company Carlsberg A/S. In our case, Carlsberg serves as a suitable case company as the firm is currently implementing a corporate restructuring initiative called SAIL'22. More specifically, the company's restructuring can be classified as operational restructuring which is a specific form of corporate restructuring. Operational restructuring initiatives are characterized by changes within the company's operations (Lin, Lee and Gibbs, 2008). Explicitly, within Carlsberg's restructuring initiative SAIL'22 the company refocuses business activities on their most promising products to stay competitive and undertakes cost retrenchments by eliminating non-value adding activities and thereby improves efficiency across the value chain. Throughout the different parts of the thesis, we assess the influence the operational restructuring initiative SAIL'22 has on Carlsberg's competitiveness, operating performance and value per share. Our paper thus aims to determine the true value of Carlsberg taking into account the effects SAIL'22 has on the company value.

For this reason, the thesis engages in the **research question**: *What is the estimated value per share of Carlsberg as of 31st December 2017 considering the restructuring initiative SAIL'22?*

In order to give an answer to the research question, three sub-questions are derived:

1) What business environment does Carlsberg face and how does the restructuring initiative SAIL'22 contribute to the company's future performance?
2) How has Carlsberg's operating performance developed during the last five year and can an influence of the restructuring initiative SAIL'22 on operating performance be determined?
3) How does SAIL'22 influence our estimated enterprise value and is this in line with shareholders' perception of the company value reflected in the share price?

In the course of this thesis we will answer these three sub-questions. The specific structure and content of the thesis is briefly presented in the following section.

1.2 Structure of the Thesis

The thesis is structured as followed: Subsequently to the introduction, the second chapter first describes our methodical approach followed by the presentation and assessment of various models, theories and frameworks which are applied in the analysis. Our discussion aims to determine which models, theories and frameworks are most suitable to assess Carlsberg's business environment to analyze the company's potential and to calculate the company value.

In the next chapter a common understanding of restructuring is derived from the variety of definitions in the literature followed by a definition of the more specific concept of operational restructuring. Further, reasons for the implementation of restructuring initiatives and factors influencing the success of operational restructuring are explained. Additionally, two types of performance measures that aim to evaluate the restructuring effect, namely accounting-based and market-based measures, are presented.

In the fourth chapter our case company Carlsberg is presented. This chapter aims to give an insight into the company's history, corporate governance, markets, products and business model and fosters the understanding of the company for the subsequent analysis.

The following section comprises a strategic analysis of Carlsberg. To enable a holistic understanding of the Group's environment we analyze the macro-economic environment in the first step, followed by an industry analysis and an internal analysis. We summarize our findings in the SWOT analysis. In the last step, we lay out implications of the restructuring initiative SAIL'22 on Carlsberg's future performance.

The strategic analysis is followed by a financial analysis in chapter six where firstly the balance sheet and income statement are reformulated and subsequently a profitability analysis is conducted. Furthermore, the restructuring effect on accounting performance measures is calculated by applying the framework presented in chapter three.

In the first part of the next chapter, a pro forma income statement, balance sheet and cash flow statement for the determined forecasting period are developed. Our underlying assumptions for the forecasting are based on the results of the strategic analysis and especially the assessment of the restructuring initiative is taken into account. Furthermore, the results of the profitability analysis are considered.

Part eight of the thesis answers our research question by conducting a valuation of Carlsberg. To this end, a number of input variables are calculated. The company value is determined by applying the Discounted Cash Flow to the Firm model as well as the Economic Value Added approach. To assess the results the valuation is followed by a sensitivity analysis. The chapter concludes with the assessment of restructuring effects on Carlsberg's share price.

Our thesis concludes with a summary of our findings as well as reflections on limitations and an outline of further research possibilities.

2 Methodology

This chapter introduces in the first part our underlying research paradigm as well as our research approach. Then, we give reasons for the choice of specific models in conducting our strategic analysis and valuation.

2.1 Research Design

2.1.1 Research Paradigm

Our underlying research paradigm is based on the *post-positivism*. This paradigm follows the positive paradigm and challenges the traditional assumption of the absolute truth of knowledge underlying the positivism (Creswell, 2003). Post-positivism in fact recognizes that there is no absolute truth, hence research is not able to establish perfect and infallible evidence. This is why the paradigm assumes that research underlies the process of building theories and then refining or abandoning them for claims more strongly warranted (Phillips and Burbules, 2000).

This difference about the assumptions of truth between the positivism and post-positivism can be made clear when comparing research in social science to those in natural science. Unlike natural science, where an entity can be well defined and characterized by laws and thus behavior can be predicted both in time and environment, in social science an object, for example a company, is characterized by less predictable behavior in any given time or environment. This is due to the fact, that companies are rather heterogenic as they come in different sizes, find themselves in a different competitive environment and are influenced by unforeseeable macro-economic factors. Furthermore, natural science is able to reproduce past results as it is able to reconstruct the past environment, whereas social science is subject to numerous factors out of an entity's control (Kvale and Brinkmann, 2009). Thus, we are of the opinion that the application of post-positivism in our thesis better accounts for the unpredictable environment and makes an appropriate assumption about the truth.

The collection of data, observations and information as well as the assumption of rational considerations is instrumental to the research process. The research aims to evolve relevant and true statements, statements that serve to interpret considered situation or that help to illustrate causal relationships. Furthermore, the objectivity assumption is crucial to the paradigm as researchers are asked to inspect their methods and conclusion for bias (Phillips and Burbules, 2000).

As illustrated with the comparison of natural and social science, social science faces the difficulty of reproduction, quantification and equivocality. Therefore, the prediction of future behavior of a

company and the influence of different value drivers are a challenge we are facing during the valuation process of Carlsberg. We believe the post-positivist paradigm where data collection and observations of our case company are crucial to derive an objective result contributes to our research approach. With this precautions, we are well aware that it cannot be determined if our valuation is correct, however we instead propose a fair value which is supported by quality assurance provided by discussion and reflection of our result.

2.1.2 Research Approach

Our research can be described as *explanatory case study*. As we aim to explain a causal relationship between variables by studying a situation or problem, namely we study Carlsberg's strategic environment and financial performance to analyze the effect of the operational restructuring initiative on the company value.

Our research follows a *deductive approach*. Deductive research is characterized by the development of a theory and hypothesis followed by the design of a research strategy to test the hypothesis. During the design of the research strategy it is important that the concept can be expressed in operational terms. After testing the hypothesis, the outcome is examined and conclusions can be drawn (Saunders, Lewis and Thornhill, 2006).

We apply the deductive approach in the following way. In the first step, we use the literature to get an overview on forms of restructuring. We focus our research especially on operational restructuring as our chosen case company undertakes this form of restructuring. In our literature approach, we identify two types of measures how to evaluate the restructuring effect which we will apply in our analysis to draw conclusions.

2.2 Research Methods

2.2.1 Data Collection Techniques

Data used for our analysis and the subsequent valuation are based on information available until April, 2nd 2018 whereas the content of the sources excludes information after December 31st 2017 as we examine the enterprise value as of this date. We only use information that can be publicly retrieved. The data about our case company Carlsberg is mostly primary data published by Carlsberg. This data includes the company's published annual reports from 2012 to 2017, a prospectus, internal relations presentations and the company homepage. Further data about Carlsberg and their environment comprises secondary data and is retrieved from statistical

databases, namely Euromonitor, Bloomberg and Marketline. Additionally, we make use of newspaper articles to complete our understanding of the company.

To get an overview of the literature on operational restructuring as well as valuation methods we use academic journal articles and books.

Our thesis follows a cross-sectional study. It represents a snapshot of our case company at the end of 2017, as our research aim is to evaluate the enterprise value at a specific point in time and assess the restructuring effect of the company's performance until then.

2.2.2 Credibility of Research Findings

Reliability engages in the question whether our data collection or analysis results are consistent findings, i.e. whether they are reproducible (Saunders, Lewis and Thornhill, 2006). As previously described, our data solely relies on output from data bases and publicly available reports and articles. Therefore, our data can be reproduced at any time. Furthermore, with the same data on hand from our data collection, our results would lead to the same results as our understanding of the data would remain the same.
However, we are subject to constraints and the information needed in the thesis does not comprise all information available. Furthermore, the proceeding of time could reveal new information which could change our findings. Despite the two limitations, we believe that our research is reliable.

Validity contains the question whether a method actually investigates what it claims to and whether a conclusion can be drawn using this specific method (Saunders, Lewis and Thornhill, 2016). To ensure validity we only use sources of high quality during our data collection process. However, using a lot of data provided by Carlsberg could have biased our view on the company and lead to a more positive assessment of the company's performance and forecasting. Moreover, the applied models in our analysis are chosen deliberately. The choice of models underlies discussion and reflection as we consider this as an effective mean to obtain quality. The chosen models will be further discussed in the following section.

2.3 Choice of Models

As a starting point for our company valuation, we conduct a strategic analysis. The aim of the strategic analysis is to investigate the economics of Carlsberg at a qualitative level so that the following financial analysis and forecasting are grounded on the company's business reality. Further, it helps understanding the nature of the company's business environment as well as identifying the firm's profit drivers and key risks so that we are able to fully understand the firm's historical

performance and make realistic forecasts of future performance. Overall, the strategic analysis is useful in guiding the financial analysis (Palepu, Bernard and Healy, 1996).
Johnson, Scholes and Whittington (2008) characterize the environment of a company as a series of layers.

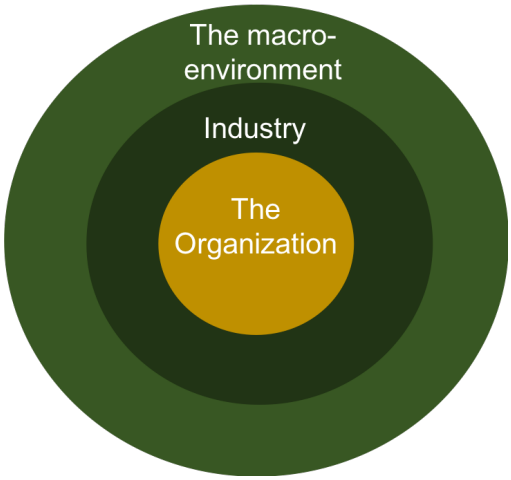

Figure 1: Layers of the business environment; own creation based on Johnson, Scholes and Whittington (2008)

We follow this model because it provides a clear and structured overview of the components a strategic analysis should entail.

The outer layer in the model is the macro environment, including environmental factors that impact every company's cash flow potential and risk. We use the PEST framework to analyze these environmental influences. The model structurally indicates a broad range of external factors that impact the company's performance, including political, economic, sociocultural, technological, environmental and legal factors (Petersen and Plenborg, 2012). PESTEL or PESTLIED are modifications of the original model and add factors such as environment, laws or ethics (Johnson, Scholes and Whittington, 2008). Since these aspects are covered in the original PEST model already, we choose to use the original version of the model. We combine legal and political factors and include environmental or 'green' factors into the economical, technological as well as sociocultural trends.

The sector or industry in which Carlsberg operates, forms the next layer. It is made up by firms that offer similar products (Johnson, Scholes and Whittington, 2008). An industry analysis is useful to understand the attractiveness of the industry and the possibility to earn returns (Petersen and Plenborg, 2012).
We choose 'Porter's Five Forces' framework because it gives a holistic understanding of the industry and goes beyond the classical definition of competition by not only taking into account rivals but also

customers, suppliers, potential entrants and substitute products. This helps to thoroughly understand the company's competitive situation (Porter, 2008).

The core layer of the model examines the company and its resources and capabilities. Within this layer, company-specific factors that affect the ability to gain a competitive advantage relative to peers are analyzed (Petersen & Plenborg, 2012).
Firstly, we choose to apply a value chain analysis developed by Porter to gather information about how the company creates value. We use this model as it takes all value creating activities, namely all primary activities like inbound logistics, operations, outbound logistics, marketing & sales and service which are directly involved in the value creation but also support activities that assist the primary activities into account. Therefore, the application of this model helps understanding the entire process of the value creation (Porter, 1985).
Secondly, we use the VRIO framework to summarize our findings from the value chain analysis and evaluate whether the different activities throughout the value chain are valuable to Carlsberg and therefore provide a competitive advantage (Rothaermel, 2015).

We use the SWOT analysis to summarize our key strategic drivers based on the external and internal analysis (Petersen & Plenborg, 2012). The SWOT analysis identifies a company's strengths and weaknesses which we derive from our internal analysis and the analysis of competitive advantage as well as threats and opportunities which we derive from our PEST analysis. The SWOT analysis is very helpful for our further analysis, especially when understanding the needs of Carlsberg and the reasons for the introduction of a restructuring initiative.

Valuation

Petersen and Plenborg (2012) describe four approaches when determining a company's value. Besides the present value approach, relative valuation using multiples, the liquidation approach and the contingent claim valuation approach are possible[1] (Petersen and Plenborg, 2012).
In the following, we will explain why we choose present value models, why we will focus on calculating the enterprise value and why we decide to apply the discounted cash flow (DCF) and economic value added (EVA) model.

This thesis will use the present value approach to calculate the value of Carlsberg's shares. Present value models are based on discounting future income streams and cash flows. A survey conducted by Petersen et al. (2006) shows that present value models are the most commonly used models by

[1] Overview of valuation approaches in appendix 1

practitioners. Although relative valuation has the advantage of including the opinions of many investors, it is very difficult to find perfectly comparable peer companies for Carlsberg. Companies like Heineken, AB InBev or China Resources Beer (Holdings) Company Limited (CRB) operate in the same industry and produce similar products with mostly similar stages in the product lifecycle and are therefore the closest comparable possible. However, they do not operate in exactly the same geographic region as Carlsberg and differ in size in terms of revenue. Therefore, the companies are too different to compare them directly and receive unbiased values. Especially because Carlsberg is currently operating under special circumstances as it implements a restructuring, a comparison would not yield meaningful results. Consistently, we choose not to calculate the company value through relative valuation. Additionally, we prefer the present value approach as it relies on our estimations and expectations rather than on market prices that reflect investor's opinions (Petersen and Plenborg, 2012).

The measures within the current restructuring initiative SAIL'22 are preventive and aim at increasing and not only ensuring shareholder value in future. In general, Carlsberg is already a profitable company with almost constant positive profit margins. In 2016, the after-tax profit margin amounts 9,31 percent, in 2017 4,34 percent. The demand for beer has been constantly high and if there are not immense changes in Carlsberg's operations, brand image or consumer demand, a liquidation of the company is highly unlikely. Therefore, we did not consider the liquidation approach either, as this method is best suited when going concern is questioned and alternative use of assets would yield a higher return (Petersen and Plenborg, 2012).

We decide to first focus on the calculation of the enterprise value because it includes the factor of financial leverage (Damodaran, 2018A). Carlsberg aims at reducing its financial leverage within the strategic choice *Enhancing Shareholder Value* during the SAIL'22 initiative. Further, the enterprise value includes the value for debt- as well as equity-holders. Therefore, we consider the free cash flow to the firm within the DCF model. From having the enterprise value, it is very easy to calculate the equity value and share price.

There are several advantages that make us prefer the DCF and EVA model over the adjusted present value model.

Both models we use require inputs that are usually based on many different sources and are time consuming to develop, for example the weighted average cost of capital. However, this cost of capital rate adjusts to company specific-risk. Thus, it reflects uncertainty and makes the models useful tools to generate reliable results (Petersen and Plenborg, 2012).

The DCF model is a widely popular present value approach and comes with the best academic credentials (Damodaran, 2015). It determines the company value by discounting the present value of future free cash flows based on actual cash flows und thus is unaffected by accounting items such as earnings and less exposed to manipulation and therefore of higher quality (Petersen and Plenborg, 2012; Penman, 2010). Additionally, the DCF valuation is based upon the fundamentals of assets and is thus less exposed to moods and opinions in the market (Damodaran, 2012).
The DCF approach is forward looking and hence includes future expectations. Since we analyze the macro-economy, industry and business in detail and focus on the effects the restructuring initiative SAIL'22 has on Carlsberg future profitability, the method suits our focus very well.
Although the assumption of a constant growth rate to infinity might be unrealistic, it prevents us from having to estimate cash flows until infinity. Additionally, the assumption made in Gordon's Growth model that the underlying growth rate fluctuates around a long-term mean is widely accepted and thus makes a sustainable, long-term growth rate a valid estimate of future growth (Petersen and Plenborg, 2012). However, the DCF model might fail to recognize generated value that does not include cash flows, especially in the short-run (Penman, 2010).

Therefore, we additionally apply the Economic Value Added Model. This model is based on accounting items and residual wealth and mainly recognizes generated profit compared to the cost of capital for shareholders. EVA explains why a value estimate deviates from the book value of equity and thereby makes it easier to communicate value estimates to laymen (Petersen and Plenborg, 2012).

Summing up, the combination of the DCF and EVA model to calculate the enterprise value as well as the share price fulfills all criteria of an ideal valuation in our case: They are allowing us to make calculations as precise as possible as they include unbiased cash flows, company-specific risks and long-term value creation. Hence, they enable us to make our own, realistic and objective assumptions and they are user friendly as their output is understandable (Petersen and Plenborg, 2012).

3 Operational Restructuring

This section introduces the concept of operational restructuring. First, corporate restructuring as the overarching framework of operational restructuring is presented showing the multi-dimensional appearance of restructuring concepts. Secondly, operational restructuring is defined, the needs for implementing such a concept as well as the factors that influence the successful execution of operational restructuring are outlaid. Lastly, two types of measures that evaluate the operational restructuring namely accounting and market-based performance measures are presented.

3.1 Corporate Restructuring

Corporate restructuring became a prominent aspect of corporate behavior during the 1980s when large corporations undertook radical changes in their business portfolio, financial or organizational structure (Bowman and Singh, 1990). Ever since, research in the field of corporate restructuring is growing and today there exists an extensive literature on the broad area of corporate restructuring (Singh 1993). In general, restructuring is a set of pivotal means undertaken to enhance the competitiveness of a firm (Crum and Goldberg, 1998). More precisely, corporate restructuring changes the composition of a company's assets accompanied by a change in its underlying strategy (Hoskisson and Turk, 1990).

The literature does not provide a unique definition of corporate restructuring. Therefore, by taking into account existing definitions, **we define** corporate restructuring as *a concept with several strategic levers taken as a consequence of internal or external disruptions at the corporate level aiming to increase the company's competitiveness.*

This definition accounts for the fact that corporate restructuring is a multi-dimensional concept with a wide range of facets. The concept includes corporate strategic initiatives like divestitures, leveraged buyouts, stock repurchases, mergers and acquisitions, downsizing and changes in organizational structure (Bowmann and Singh, 1993; Markides, 1995).

Concerning systemization, Bowman and Singh (1993) classify three types of corporate restructuring: portfolio, financial and organizational restructuring. Portfolio restructuring is preoccupied with changes in the company's portfolio including both investments and divestitures by making strategic acquisitions and selling of business lines which are assumed to be irrelevant for long-term strategy. Financial restructuring includes changes in the company's capital structure. This changes include especially the infusion of debt capital to finance leveraged buyouts, execute stock repurchases from equity investors or to pay large one-time dividends. Organizational restructuring involves changes in

the organizational structure to achieve increases in efficiency and effectiveness (Bowman and Singh, 1993). These three dimensions of corporate restructuring aim to provide synergies in multi-business corporations (Hoskisson and Turk, 1990).

Due to its many facets, corporate restructuring has caught the attention of many research disciplines including strategic management, finance and organizational theory (Bowman and Singh, 1993; Markides, 1995). Regardless of the interdisciplinary scholars, restructuring literature can be assigned to two main research areas. The first area engages with the attempt to explain the occurrence of restructuring activities. Many studies describe that restructuring was implemented to achieve greater efficiency (Bowman and Singh, 1993). To give an example, mergers and acquisitions often enable economies of scale and scope. Furthermore, downsizing and refocusing are associated with cost savings (Heugens and Schenk, 2004).
The second research area involves the effect of restructuring on performance improvements. The performance measures are either based on accounting measures such as return on investment, return on equity, free cash flow to the firm and profit margin (Brickley and Van Drunen, 1990; Blackwell, Kross, Park and Ro, 1998; Carter, 2000; Atiase, Platt and Tse, 2004) or on stock price performance of company's announcing restructuring activities (Strong and Meyer, 1987; Elliott and Shaw, 1988; Brickley and Van Drunen, 1990; Elliott and Hanna, 1996; Kross, Park and Ro, 1998; Francis, Hanna and Vincent, 1996; Carter, 2000).

3.2 Operational Restructuring

3.2.1 Defining the Term Operational Restructuring

Operational restructuring engages in strategic decision making and affects a firm's business strategy, operations, organizational functions and management structure.

Lin, Lee and Gibbs (2008) define operational restructuring as a 'program that is planned and controlled by management and materially changes either

- the scope of a business undertaken by an enterprise; or
- the manner in which the business is conducted' (Lin, Lee and Gibbs, 2008, p. 541).

Operational restructuring occurs in various forms. More specifically, it includes decision making about adequate headcount and skill requirements, a company's hierarchy, production capacity and location, operation consolidation, revision of compensation schemes, a change in production focus and reduction in product diversification (Lin, Lee and Gibbs, 2008; Bowman et al. 1999). When implementing a restructuring initiative, management aims to create efficiencies, increase value, and

boost earnings performance (Lopez, Holder-Webb and Regier, 2005). A common first step to achieve these objectives is to decrease costs. Measures include the decrease of expenses like production cost, selling and administrative expenses, R&D expenditures, financing cost and labor cost (Denis and Kruse, 2000). Downsizing initiatives and workforce reduction are actions that are often taken to ensure cost control.

A more drastic step involves the refocusing of a business or concentration on core business activities. The decrease of diversification to concentrate on the core business can raise funds which can be redirected to core business activities. Moreover, the refocusing of products or services can help to stay competitive in the market. These means are often accompanied by skill changes as well as capacity screening which include decision about volume or locations.

A company's restructuring can include parts or all the above-mentioned restructuring activities (Lin, Lee and Gibbs, 2008).

3.2.2 Reasons for Operational Restructuring

Decisions to restructure a corporation are driven by a number of factors. On the one hand factors relate to external reasons out of a company's influence. On the other hand, restructuring is caused by internal factors within a company's responsibility (Lin, Lee and Gibbs, 2008).

External factors

Changes in a company's business environment can provoke organizational restructuring. Factors include technological or product innovations, changed tax regulations and deregulations. Moreover, a company can become aware that its business model is outdated or it offers the wrong product or service when market demand or expectations shift. Intensified competition and market price pressures are further factors leading to the implementation of a restructuring program (Lin, Lee and Gibbs, 2008).

Operational restructuring can be triggered by macroeconomic factors. Studies have pointed out that restructuring occurs more often in times of a changed business climate. Particularly during economic recessions, companies are forced to undertake restructuring actions to sustain profitability (e.g. Geroski and Gregg, 1994). However, troublesome economic conditions often hinder a company to successfully implement restructuring activities. A recession drives decreases in product demand, complicates credit authorization and increases interest rates which in turn weakens a company's chances to survive down cycles. The changes can relate to one industry or affect the whole economy (Lin, Lee and Gibbs, 2008).

A firm's comparison with competitors can cause operational restructuring activities. A company learns that they are not as efficiently organized as their competition through market signals or internally created performance measures (Fama and Jensen, 1983a; Hayek, 1945).

Internal factors

Poor performance expressed in accounting measures or stock returns foster the decision to implement restructuring. A poor stock return signals that investors lost trust in the company's ability to generate profit whereas internally generated accounting measures mirrors the company's performance (Lin, Lee and Gibbs, 2008).

In a more severe situation, namely when companies face financial distress, operational restructuring is regarded as a measure to turnaround business. Financial distress is the situation in which companies are unable to meet its financial obligations which can be caused by declining revenues and the inability to generate cash flow from operations. In these cases, the likelihood of receiving support through credit institutes decreases. Furthermore, the generosity of supplies to sustain better credit terms declines as well (Lin, Lee and Gibbs, 2008).

In some cases, operational restructuring is executed as a preventive measure to steer the company into a profitable future without being under financial pressure. The company seeks to align its strategy with expected market demands and therefore undertakes measures such as refocusing the business (Brickley and Van Drunen, 1990).

Operational restructuring is in some cases implemented to mediate disagreements between executive management and shareholders (Lang and Stulz, 1994). It is observed that corporate disciplinary events like a change in top management, revised management compensation policies or shareholder engagement often precede restructuring initiatives with the objective to adjust to prior inefficient expansion, diversification or operational mistakes (e.g. Berger and Ofek, 1999; Denis et al., 1997; Denis and Kruse, 2000).

Figure 2 summarizes the reasons for an operational restructuring.

Figure 2: Reasons for operational restructuring; own creation

3.2.3 Factors Influencing Successful Operational Restructuring

The literature identifies several key factors which should be taken into consideration when evaluating the results of a restructuring initiative.

Research shows that the timing of the restructuring plays a crucial role. Studies have revealed that pre-emptive restructuring programs generate greater value than an execution under pressure, facing for example the threat of financial distress or hostile takeovers (Donaldson, 1990).
Nevertheless, the implementation of restructuring can face obstacles such as the persuasion of corporate stakeholders which argue against a restructuring in the absence of a crises or the threat of financial distress (Lin, Lee and Gibbs, 2008). Secondly, managers can be reluctant implementing restructuring initiatives to avoid admitting past mistakes. Moreover, labor laws and unions can hamper restructuring as employee protection might increase layoff costs. Lastly, employees might not go along with the change. Therefore, a rational decision making process should define the optimal timing for restructuring (Lin, Lee and Gibbs, 2008).

Lin, Lee and Gibbs (2008) show in their study that constant restructuring activities are positively correlated to a firm's failure. Even though additional restructuring activities can be initiated as a company's restructuring strategy evolves with its operating performance, the implementation of a new restructuring program after the previous one is finished is not recommended by the literature in order to avoid failure (Adut et al., 2003).

On average, restructuring is implemented within a one to two year time period (Lopez, Holder-Webb and Regier, 2005). This relatively short period can be attributed to the fact that restructuring is an exhausting undertaking which requires the commitment of a wide range of stakeholders. This commitment is more likely to guarantee over a short-time period.

Studies have proven that cost retrenchment activities contribute to a successful restructuring program (Pearce and Robbins, 1993 and Lin, Lee and Gibbs, 2008). There exists a multitude of retrenchment methods such as reducing production, selling and administration, R&D and financial cost, divestitures, liquidation of outdated inventory, consolidation of functions and product elimination. Outsourcing manufacturing or administrative functions is a further method to free capital. The improvement of supply chain management such as the implementation of just-in-time production and purchasing to decrease inventory cost is regarded as another method of cost retrenchment.
Although the previously mentioned strategies can improve a company's performance, management should consider that the implementation can also have negative effects. Outsourcing for example can have positive monetary effects but if falsely managed due to too little investment of time, money or people to efficiently manage the results of the outsourced operations, it can affect the quality, output or reliability of a company's product. Furthermore, if 'just in time' purchasing is not appropriately handled it can lead to supply shortages and slow down production with negative effects on the company's performance (Lin, Lee and Gibbs, 2008).

Downsizing is a common method during restructuring and an effective way to achieve cost savings. Nevertheless, Lin, Lee and Gibbs (2008) find out that a large workforce reduction implies a negative signal about a company's future. Moreover, studies indicate that investors respond negatively to announcement of workforce reduction caused by declining investment opportunities, weak demand and financial distress (Elayan et al., 1998; Chen et al. 2001, Hahn and Reyes, 2004 and Worrel et al. 1991).

Studies about the effect of refocusing on performance reveal positive results. It is shown that refocusing on the core business or most profitable products increases operating performance as well as stock returns, particularly if companies eliminate non-profitable business lines or non-core business activities (Berger and Ofek, 1999; Comment and Jarrell, 1995; Lin, Lee and Gibbs, 2008).

Lin, Lee and Gibbs (2008) find out that the company size has an influence on the restructuring performance. Large companies are more successful in undertaking restructuring. Additionally, companies which are longer in business than competitors also have higher chances conducting successful restructuring.

3.3 Operational Performance Measures

Prior research on the effect of restructuring on a company's performance can be classified based on two types of performance measures: measurement based on market performance and accounting performance measures. In the following we will review the literature.

3.3.1 Accounting Performance Measures

Accounting measures allow to compare a company's pre-restructuring performance with post-restructuring operating performance (Bowman et al., 1999). Common measures in the literature include return on equity (ROE), return on invested capital (ROIC), return on assets (ROA) and operating margin which are typically calculated several years before and after the restructuring event. The literature finds mixed results whether operational restructuring activities lead to improvements in accounting performance after operational restructuring. Kross, Park and Ro (1998) determine a negative relationship between restructuring activities and accounting performance. They report a decrease in return on asset comparing three-year pre-restructuring ROA to three-year post restructuring ROA (Kross, Park and Ro, 1998). A further study finds weak evidence in favor of performance improvements four years after restructuring (Carter, 2000). More significant positive evidence was found by a study comparing operating performance (EBITD/sales and ROA) four years after assets sales were carried out. The study further reports that improvements in performance primarily arise when firms increase focus (Kose and Ofek, 1995). Markides (1995) reports evidence as well that refocusing activities impact firm performance (ROA and ROE) positively. Findings of another study indicate that return and equity and profit margin improved during the post-restructuring time relative to non-restructuring firms (Atiase, Platt and Tse, 2004).

The different results of previous research can be attributed to differences in empirical design and limitations.

The studies presented above consider different time horizons. Some studies examine the restructuring effect one year after the restructuring program is terminated while other studies analyze the effects after two to three years. Therefore, it can be concluded that research does not agree when the restructuring effect is reflected in accounting measures and the mixed results can be related to the examination of different time periods (Lopez, Holder-Webb and Regier, 2005).

Furthermore, the different results can be caused by different research designs. Most papers use an industry control to isolate the effect of restructuring on firm performance. This control mean however does not allow for an adequate isolation of the restructuring effect as the comparison of a company's performance to an industry standard does not filter for changes in operating performance caused by

activities other than the restructuring. For example, a company with a negative operating performance corrected by the industry before the restructuring could exhibit a positive industry-adjusted operating performance after the restructuring. More specifically, a company may take initiatives prior to the restructuring that can affect the post-restructuring operating performance. This logic can also be applied in the opposed case when negative industry-adjusted performance can be observed after the restructuring. Here the negative performance cannot be attributed to restructuring activities with certainty, on the contrary the restructuring could also have improved performance but the effect was not strong enough to offset other influences (Lopez, Holder-Webb and Regier, 2005).

One paper used a control company in its research design which matches the restructuring company's pre-restructure operating performance, its industry and firm size. The operating performance of the control firm after the restructuring could then be used as an approximation of the restructuring company's performance in the absence of restructuring activities (Carter, 2000). Even though this research design takes macro-economic factors a firm is exposed to better into account than the design using industry control but like the industry control design it has the shortcoming that it does not filter for effects that affect operating performance other than the restructuring (Lopez, Holder-Webb and Regier, 2005).

Smart and Waldfogel (1994) propose a framework to capture the effect of operational restructuring on performance which filter for macro-economic effects as well as company specific factors that influence the company performance. The authors' general model entails a 'difference in surprise measures' which controls for two factors unrelated to the restructuring. First it accounts for all changes which are expected by the company by subtracting the post-restructuring performance from the expected performance without undertaken restructuring measures. Secondly, the design eliminates all unforeseeable changes by comparing the restructuring firm to a control firm which does not implement restructuring activities. Thus, to eliminate any performance shock experienced by the restructuring and control company, the formula accounts for the effect of restructuring as the performance surprise (actual less forecasted performance) at the restructured company, less the performance surprise by the control firm without restructuring activities (Smart and Waldfogel, 1994).

The difference in surprise measure can be explained by an intuitive interpretation. The model incorporates all statistically controllable aspect of change in performance of restructuring and non-restructuring companies which could be predicted prior to the restructuring process but for the restructuring effects. Therefore, the difference in surprise measures is the average difference in performance surprise of the case company (the restructuring company) and the control company (the non-restructuring company) and can follow the interpretation that it estimates the effects of the

restructuring on a company's performance (Smart and Waldfogel, 1994). Figure 3 illustrates how the difference in surprise is calculated.

$$\overbrace{X = \overbrace{\left[X^R_{t+k} - E_t(X^R_{t+k}|t)\right]}^{\text{Performance surprise}} - \overbrace{\left[X^C_{t+k} - E_t(X^C_{t+k}|t)\right]}^{\text{Performance surprise}}}^{\text{Difference in surprise}} \quad (1)$$

Figure 3: Difference in surprise; own creation based on Smart and Waldfogel (1994)

Where
$X =$ effect of restructuring on performance
$X^R_{t+k} =$ performance of restructuring company for period $t+k$, where t is the year prior to restructuring and k is 1,2,3 or 4.
$E_t(X^R_{t+k}|t) =$ expected performance of restructuring company for period $t+k$, where t is the year prior to restructuring and k is 1,2,3 or 4.
$X^C_{t+k} =$ performance of control company for period $t+k$, where t is the year prior to restructuring and k is 1,2,3 or 4.
$E_t(X^C_{t+k}|t) =$ expected performance of control company for period $t+k$, where t is the year prior to restructuring and k is 1,2,3 or 4.

To measure the effect of restructuring using the presented framework of Smart and Waldfogel (1994) it requires empirical analogues to each of the component of equation (1) (Smart and Waldfogel, 1994). As previously described the literature uses different accounting measures to evaluate the effect of restructuring. However, restructuring has many dimensions which have economic as well as accounting implications with different impacts on accounting measures (Jennings, Martin and Thompson, 1998). For instance, the diminution of manpower may indicate future increasing efficiency as future monetary obligations reduce, but it could signal reduced productivity or demand. A second example of operating restructuring can be the write-down of assets to its net realizable value. This activity does not trigger changes in future cash flows (Lopez, Holder-Webb and Regier, 2005). When selecting a performance measure one should be well aware that some measures are more affected by accounting effects while others isolate the implications of the restructuring effect of economic performance.
Accounting effects can be included in measures that include non-recurring items. These measures include net profit of a firm in their numerator like ROE or ROA. For example, when a company

includes non-recurring losses in their income statement the performance improvements in the following year can be traced to the previous loss. Measures like ROIC or operating margin are less prone to accounting effects, as their numerator, operating income, incorporated the relative profitability of a company's operations which do not have to include non-recurring items (Lopez, Holder-Webb and Regier, 2005).

In our analysis, we will apply the framework of Smart and Waldfogel (1994) to measure the effects of restructuring on accounting measures.

3.3.2 Market-Based Performance Measures

Another way to measure the effect of operational restructuring is to look at changes in the share price.

In 1953, Kendall discovers that price changes of shares are random. They do not follow cycles and are independent of previous changes and are thus difficult to predict. However, the share price fluctuates almost on a daily basis and these fluctuations arise from changing demand and supply of shares (Brealey, Miller and Allen, 2011).
The demand of shares varies with shareholders' perception and moods (Damodaran, 2012): If buyers are more anxious to buy than sellers are to sell, the demand and therefore share price rises. In the opposite situation, the demand as well as the share price declines (Coyne, Witter, 2002).

The public perception of the company is influenced by external factors or the company's actual or expected performance.

External factors that influence the shareholders' demand are amongst others general market conditions, inflation, government rules and regulations, money supply, competition, exchange rates or uncontrollable natural or environmental circumstances (Al-Tamimi, Alwan and Rahman, 2011; Chen, Roll and Ross, 1986).

The company's actual performance also influences shareholders' moods. Pindyck discovers that reduced profitability accounts for a 10 percent decline in stock price. Additionally, the decline in market between 1965 and 1980 can be explained with increases in variance of equity returns and reductions in return on invested capital (Pindyck, 1986).
Gordon (1984) values the development of shares when profitability is reduced and risk premia rise and finds that the market declines. Al-Tamimi, Alwan and Rahman (2011) point out that an increase in dividends influences the stock price as well.

Another factor influencing shareholders' perceptions and moods identified by the literature is the expected performance of a company. Several factors can make shareholders expect a certain future performance. For example, analysts' forecasts or published earning reports (Chambers and Plenman, 1984) can trigger these expectations.

This research stream however focuses on the market's expectations and interpretations due to the announcement of operational restructuring activities within the company. Several studies engaging in the research area prove that unexpected good or bad announcements result in changes of stock performance (Brealey, Myers and Allen, 2011; Lynch and Mendenhall, 1997). This is because in an informationally efficient market, the market evaluates corporate decisions through reactions in the stock price after corporate announcements (Woolridge and Snow, 1990).

However, the studies find mixed results whether restructuring announcements affect stock returns. Whereas some papers document a positive response (Bunsis, 1997; Kross et al., 2002, Bens, 2002; Chan, Martin and Kensinger, 1990; Francis et al., 1996, Ballester et al., 1999, Brickley and Van Drunen, 1990), some report a statistically insignificant response (Strong and Meyer, 1987; Poon et al., 2001) and others find out that a company's restructuring announcements have a negative effect on their stock price (Blackwell et al., 1990; Elliot and Hanna, 1996; Elliot and Shaw, 1988; Bens, 2002). These inconsistent observations may be attributed to the market's difficulty in interpreting future changes (Chaney, Hogane and Jeter, 1999) or the different activities included in the restructuring (e.g. downsizing, refocusing, cost retrenchment).

Different forms of operational restructuring provoke different reactions. While strategic investment decisions (formation of joint ventures, research and development projects, major capital expenditures and diversification into new products and/or markets) (Woolridge and Snow, 1990; Burton, Lonie and Power, 1999) or product-line revenue refocusing and downsizing (Chalos and Chen, 2002) are generally positively correlated with the development of the stock, plant closings (Blackwell et al., 1990; Lin and Rozeff, 1993; Gombola and Tsetsekos, 1992), layoffs (Worell et al., 1991; Lin and Rozeff, 1993; Elayan et al., 1998), inventory write-offs (Francis et al., 1996) or takeovers (Brealey, Myers and Allen, 2011) usually have a negative effect on the share price.

Bowman and Singh (1993) also find out that the reaction of shareholders often depends on the success of previous organizational changes whether they are favorably interpreted by investors. Rosen's (2006) study on the correlation between the announcement of mergers and share price increases agrees with Bowman and Singh, as the market reaction to a merger is positively correlated with the response to other mergers in the recent past.

Woolridge and Snow (1990) point out that announcements might not trigger a stock price reaction because investors already expect managers to undertake investments on a frequent basis on order to stay competitive. Additionally, investors might be more interested in short-term earnings and discourage managers aiming at long-term competitive advantage (Ellsworth, 1985).

The shareholders' reaction depends also on the level of information displayed. Often, investors under- or overreact to the earnings announcements and become aware of the full significance only after further information arrive (Brealey, Myers and Allen, 2011).

In our analysis, we will examine the development of Carlsberg's stock price after announcing a restructuring initiative.

4 The Case Company Carlsberg A/S

To gain a better insight into the firm and understand the context of our analyses, we present our case company Carlsberg in the following.

Carlsberg A/S is a global operating brewing company headquartered in Denmark. The Group consists of the parent company, the Carlsberg Breweries founded in 1847, and Tuborg Breweries established in 1873, and around 100 subsidiaries and associated companies. The company employs today about 41.000 employees. The organization mainly executes the production, marketing and sales of beer and soft drinks and markets its products in more than 150 countries around the world (Carlsberg company homepage). The company is not only present in markets with direct operations of its own breweries but also through licensing and export (Reuters, 2018). With its strong market positions in Western Europe, Eastern Europe and Asia, Carlsberg is a globally operating brewery. The company's portfolio includes 140 brands whereas Carlsberg as their flagship brand is internationally well-known. In 2017, the brand portfolio generated a net revenue of DKK 61.808 million. Based on the revenue the organization is the third biggest brewing group worldwide (Carlsberg company homepage).

In the following, we will take a closer look at the company's history as well as current ownership- and governance structure, operating markets and products offered. Lastly, we will present Carlsberg's business model.

4.1 The History of Carlsberg

Carlsberg A/S was established based on the merger of the two Danish breweries, Carlsberg and Tuborg.

The Carlsberg brewery was founded in 1847 by J.C. Jacobsen on a hill outside of Copenhagen and named after his son Carl and the Danish word for hill 'bjerg' (Carlsberg company homepage). J.C. Jacobsen laid the foundation for the modern beer-brewing industry with his revolutionized brewing technique. Today the majority of main lager products obtain the yeast from the stain evolved by Carlsberg (Carlsberg prospectus, 2017).

Tuborg was formed in 1873 by Danish businessmen. At that time, the company's portfolio included a glass factory and sulfuric acid works, until in 1880 all other business but the brewery got spun off (Woodward, Brynildssen and Stansell, 2009).

Starting their joint operations in 1903, Tuborg and Carlsberg stated in their operating agreement that they share profits, deficits as well as financing activities equally. The two brands controlled the

Danish beer market but soon aimed for expanding their business as Denmark only had a population of around five million inhabitants. Therefore, after World War II, the two brands started extensive marketing activities abroad which tripled their exports until 1972. This success led to the opening of breweries in other European countries and Asia.
To strengthen their export strategy, Carlsberg and Tuborg united in 1970 and renamed their business to United Breweries Ltd. (Woodward, Brynildssen and Stansell, 2009). The same year the company was listed on Copenhagen Stock exchange.
In 1970, United Breweries Ltd. started a partnership with the British brewer Watney to increase the company's share in the UK market. This was so far the largest operation beyond Denmark and included building a large brewery in Northampton. By the mid-1980s around 70 percent of United Brewery's beer was sold outside their home market, through either direct exports, licensing agreements with foreign breweries or company-owned breweries. Moreover, Carlsberg and Tuborg beers were offered in nearly every European capital.
In 1987, United Brewery's changed their name to the today known name Carlsberg A/S to improve the company's profile (Woodward, Brynildssen and Stansell, 2009).

In the 1990s Carlsberg continued to expand their business internationally. For example, the company obtained controlling interests in the biggest brewing company in Portugal, Unicer. Furthermore, Carlsberg acquired 10 percent interest in a Spanish brewery, La Cruz del Campo S.A. By forming a joint-venture with Allied Lyons, a British brewing and wholesale company, Carlsberg A/S was able to secure the important British market which contributed to nearly half of Carlsberg's worldwide profit in the beginning of 1990. The new founded alliance was called Carlsberg-Tetley P.L.C and enabled Carlsberg access to Allied's six breweries, its strong distribution network, and a larger brand portfolio (Woodward, Brynildssen and Stansell, 2009). In 1997, Carlsberg became the sole owner of Carlsberg-Tetley (Carlsberg prospectus, 2017). Further acquisitions included the Finnish brewery Oy Sinebrychoff AB, a Swedish subsidiary of Oy Sinebrychoff, Falcon Breweries and the Danish Malting Group A/S (Woodward, Brynildssen and Stansell, 2009).
In Asia Carlsberg A/S has grown to the leading international beer brand in the 1990s, with a strong market position in Singapore, Malaysia and Hong Kong. The company also achieved moderate revenue in Japan, Indonesia, South Korea, Thailand and Nepal. In 1992 Carlsberg gained market access to the Chinese and Sri Lankan market. By investing in Korea's largest brewery, Hite Brewery, in 1999, Carlsberg expanded the market presence in Asia further (Woodward, Brynildssen and Stansell, 2009).
In 2001, Carlsberg A/S and the Norwegian conglomerate Orkla SA combined their brewing activities to form Carlsberg Breweries A/S. Orkla contributed its leading positions in Norway and Sweden and its 50 percent shareholding in the Baltic Beverage Holding AB which created one of the largest

breweries worldwide with revenues above DKK 17,3 billion. Carlsberg originally held 60 percent in the venture but acquired Orkla's 40 percent share in 2004 (Carlsberg prospectus, 2017).

In the same year, Carlsberg took over Holsten-Brauerei and thereby became the leading brewery in Northern Germany. Further activities in 2004 included the acquisition of a Dutch holding company with assets in the Polish brewery Browary Dolnoslaskie Piast S.A and two further Polish breweries, Bosman Browar Szczecin S.A. and Kasztelan Browar Sierpc S.A. In 2005 Carlsberg continued its acquisition strategy in the German-speaking area and acquired the Swiss brewery Feldschlösschen Getränke (Woodward, Brynildssen and Stansell, 2009).
In early 2008 Carlsberg A/S in cooperation with Heineken N.V. acquired Scottish & New Castle plc (S&N). Carlsberg paid DKK 57 billion which made it the largest acquisition in Danish history. As part of the transaction Carlsberg gained complete control over S&N's French business including the Brasseries Kronenbourg and the worldwide brand rights to Kronenbourg (Carlsberg prospectus, 2017).
The last ten years Carlsberg grew mainly through acquisitions in Asia. For example in 2010, the company gained control of Wusu Xinjing Beer Group and in 2014 of Chongging Beer Group. Further acquisitions include breweries in Nepal, Laos, Vietnam, India and Singapore (Carlsberg annual report, 2010, 2011, 2012, 2013, 2014). Additionally, Carlsberg expanded its operations in Germany in 2013 and Greece in 2015 (Carlsberg annual report, 2013 and 2015).

4.2 Corporate Governance

4.2.1 Ownership Structure

Carlsberg A/S is listed with two share classes on the Large Cap index at Nasdaq Copenhagen (Nasdaq Nordic, 2018). The two share classes, Carlsberg A and Carlsberg B comprise different voting rights whereof each A share carries 20 votes and each B share is entitled to two votes and a preferential dividend (Carlsberg annual report, 2017).
This controlling minority structure provides controlling shareholders with an excess in voting rights compared to their economic rights, therefore separating positive cash flows form control rights of the same cash flows (Jensen and Meckling, 1976).

At the end of 2017 the Group counted around 39,000 registered shareholders holding 70 percent of the so called 'free float' capital. The Carlsberg Foundation is the company's largest single shareholder owning 30 percent of the capital and being entitled to 75 percent of the votes. When looking at the geographic split of the shareholders, the majority of shareholders are located in the US, followed by shareholders form the UK and Danish share owners.

Furthermore, Carlsberg A/S is the sole owner of Carlsberg Breweries which is the principal holding company for the domestic and international brewing business of the Carlsberg Group. Figure 4 illustrated the Group's ownership structure.

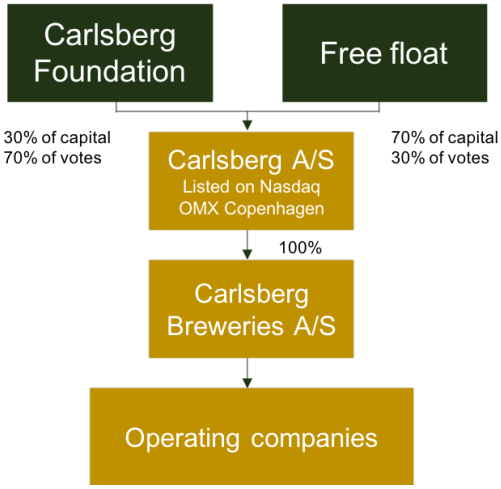

Figure 4: Carlsberg's ownership structure; own creation based on Carlsberg prospectus (2017)

4.2.2 Governance Structure

Carlsberg's governance structure is set up as a typical European two-tier board including 15 members of the Supervisory Board and six members of the Executive Committee. The Supervisory Board is headed by Flemming Besenbacher since 2012. Further members consist of ten elected members by the General meeting pursuant to the Danish Companies act and five members elected as employee representatives. Members elected by the General Meeting partly represent the majority shareholder, the Carlsberg Foundation. The other members qualify through their business background and specific knowledge within the brewing industry (Carlsberg annual report, 2017).

One of the Supervisory's Board main responsibilities comprises the hiring and supervision of the Executive Board which consists of the CEO Cees't Hart and CFO Heine Dalsgaard. Additional to the CEO and CFO, Carlsberg has a wider Executive Committee comprising four Executive Vice Presidents. Three of the four Executive Vice Presidents are responsible for each of the Group's main operational regions, Eastern Europe, Western Europe and Asia. The fourth Executive Vice President represents the Group Supply Chain function (Carlsberg annual report, 2017). While the Executive Board members, the CEO and CFO, are formally registered as executive directors of the company, the Executive Committee collectively prepares and implements the company's strategic plans (Carlsberg annual report, 2017). The Supervisory Board monitors that the Executive Board achieves the goals, strategies and business procedures established by the Board (Carlsberg annual report, 2017).

4.3 Markets

The operations of Carlsberg are segmented into three geographic areas: Western Europe, Eastern Europe and Asia. The Group's beer markets vary considerably regarding maturity, volume growth expectations, market cost and regulatory structures. The mature Western European market is characterized by stagnating growth rates and volume potential whereas the Eastern European and Asian markets are mostly growth and to some extent emerging markets (Carlsberg annual report, 2017). Figure 5 gives a geographical overview of Carlsberg's majority ownerships.

Majority ownership in:						
Denmark	Poland	Portugal	Greece	Russia	Singapore	Cambodia
Sweden	Germany	Lithuania	Bulgaria	Belarus	China	Myanmar
Norway	Switzerland	Latvia	Hungary	Kazakhstan	Hong Kong	Laos
Finland	France	Estonia	Serbia	Uzbekistan	Nepal	India
United Kingdom	Italy	Croatia	Ukraine	Malaysia	Vietnam	

Figure 5: Majority ownerships of Carlsberg; own creation

In 2017, Western Europe represents Carlsberg's strongest market, achieving 59 percent of the Group's net revenue and selling 47 percent of the company's volume. The region delivers 50 percent of Carlsberg's operating profit. Western Europe is followed by Asia with a contribution of 24 percent of the company's net revenue, volume sales of 29 percent of the Group's total volume and a delivery of 28 percent of the Group's organic profit. Eastern Europe was outplaced by Asia already in 2015 concerning its regional contribution of net revenue due to significant changes in the region's main market Russia. Today Eastern Europe contributes to 17 percent of net revenue, 24 percent of the volume and 22 percent of the operating profit (Carlsberg annual report, 2017). Figure 6 summarizes the regional performances.

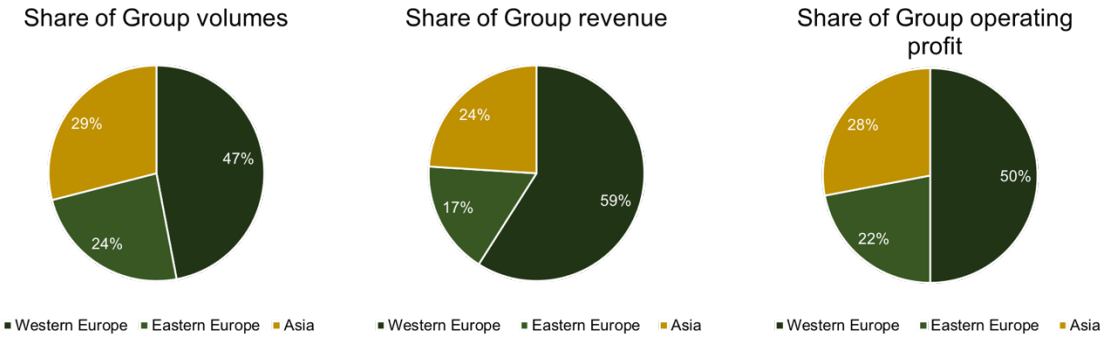

Figure 6: Carlsberg's volume, revenue and operating profit; own creation based on Carlsberg annual report (2017)

Carlsberg A/S has leading market positions in 25 countries in Europe and Asia and 75 percent of the company's volume is sold in these markets[2] (Carlsberg annual report, 2017).

4.3.1 Western Europe

Carlsberg is the second largest brewery in Western Europe with a market share measured in volume terms of 13,7 percent following Heineken with a market share of 17 percent[3]. The market volume in the region amounts to 268 million hl in 2017[4] (Euromonitor, 2018), whereas Carlsberg volume is 47,7 million hl (Carlsberg annual report, 2017). In 2017, the market records a negative market growth by 0,2 percent. In previous years, the market growth is close to zero[5]. Operating companies in this region attempt to oppose the flat or slightly decreasing market volume by focusing on the growing category of craft, specialty and non-alcoholic drinks (Carlsberg prospectus, 2017; Carlsberg corporate presentation, 2018). A second strategy to achieve growth in operating profit is through efficiency initiatives.

In Western Europe, Carlsberg operates in 18 countries with 23 breweries[6]. Most markets have a long and intense tradition of beer consumption. The per capita consumption of beer is strongest in Germany with 167 liters of beer per year, but closely followed by the Nordic countries[7] (Carlsberg annual report, 2017).

4.3.2 Eastern Europe

Carlsberg's Eastern European markets include Russia, Ukraine, Kazakhstan, Belarus and Azerbaijan. The company's main market in the region is Russia, with a market volume of 74,5 million hl beer in 2017. The country represents the fifth largest beer market in the world. In 2017, Carlsberg

[2] Carlsberg's market position in appendix 4
[3] Overview of market share of top four market actors in appendix 2
[4] Overview of beer volume per market and country in appendix 3
[5] Overview of market growth in volume terms per region in appendix 6
[6] Overview of Carlsberg breweries in appendix 5
[7] Overview of per capita beer consumption in appendix 18

has a market share of 32 percent which was constantly declining from 39 percent in 2013 (Carlsberg annual report, 2013-2017). Furthermore, Carlsberg has a diversified portfolio in the country comprising international brands as well as local brands and is presented in all price segments (Carlsberg annual report, 2017).

Carlsberg holds the market leadership position in Russia, as well as in the second largest market in the region Ukraine. Moreover, a number one position is achieved in Belarus and Azerbaijan. In Kazakhstan, the Group holds a number two position (Carlsberg annual report, 2017 and Carlsberg prospectus, 2017). The company operates with 14 breweries in Eastern Europe, whereof eight are located in Russia (Carlsberg annual report 2017). The total market volume in the region amounts to 104 million hl beer in 2017 (Euromonitor, 2018) and Carlsberg sells 30 million hl beer (Carlsberg annual report, 2017).

4.3.3 Asia

In Asia, the Group is present in 11 markets and operates in 42 breweries whereof 25 are located in China. The market has a volume of around 526 million hl (Carlsberg annual report, 2014). China is the region's largest market with a yearly consumption of 440 million hl. Despite the fact that Carlsberg's presence in China is limited to the Western part, the company is still the third largest brewer in China (Euromonitor, 2018).

The Asian market has gained increased importance for Carlsberg during the last years. The Asian markets are emerging and growing markets with diverse characteristics and a volatile market performance. Carlsberg expanded its market presence mainly through acquisitions but also organically (Carlsberg corporate presentation, 2018).

4.4 Products

The core product of the Group is beer. The company's beer portfolio includes international and local brands. In 2017, 84 percent of Carlsberg's total Pro Rata Volume[8] was obtained from beer, whereas the rest of the total Pro Rata Volume can be attributed to mineral water, soft drinks, cider and other non-beer beverages. The total Pro Rata volume in 2017 amounts to 133,3 million hl which represents a slight decrease by 4 percent compared to 2017. 92 percent of the Pro Rata Beer Volume consist

[8] 'Pro Rata Volume means volumes taking account of 100 per cent. of sales volumes of all subsidiaries where full management control is exercised by the Group and sales volume pro rata to ownership in joint ventures and associated companies, excluding the volumes of wholly-owned brands which are accounted for 100 per cent' (Carlsberg prospectus, 2017, p.57)

of core beer which comprises the two international brands, Tuborg and Carlsberg and local brands like Kronenbourg in France, Kasztelan in Poland, Baltika in Russia, Beerlao in Laos and Wusu as well as Chongqing in China (Carlsberg annual report, 2017).
Carlsberg divides its products into three categories: core beer, craft, specialty and non-alcoholic beer, and other beverages. In the following these categories are shortly described to get an overview of the diversified product range.

4.4.1 Core Beer

The core beer category comprises lager beer. The portfolio of core beer brands includes internationally known brands like Carlsberg and Tuborg and locally/regionally known brands which mostly are only available in a single country/market. Core beer is Carlsberg's most important product category as it has the highest penetration and frequency and contributes to the highest sales in volume and money terms.

Carlsberg is the Group's international premium brand. The flagship brand has a market presence in more than 130 countries through direct sales, licensing and exports. The gross beer volume of Carlsberg amounts to 11 million hl in 2017 which represents an increase by 1 percent compared to 2016 (Carlsberg prospectus, 2017).

Tuborg together with Carlsberg represents the company's international premium brand. Available in more than 70 countries, the brand contributes with 14,5 million hl in 2017 to the largest gross beer volume of Carlsberg. This represents a growth in gross beer volume of 3 percent in 2017 and 9 percent in 2016. The strong growth can be attributed to the successful expansion of the brand in Asia and becoming a popular choice of young consumers. China and India belong after Denmark to the largest markets for Tuborg (Carlsberg annual report, 2017).

Local brands contribute a big part to the Group's success. Carlsberg was able to develop a leading position of a local mainstream brand in each of the company's European markets. Local brands include among others, Ringers in Norway, Feldschlösschen in Switzerland, Baltika in Russia and Shancheng in China (Carlsberg prospectus, 2017).

4.4.2 Craft, Specialty and Alcohol-Free Beer

Craft, specialty and alcohol-free beer gain more and more importance for Carlsberg. The rapid volume growth of 29 percent of craft and specialties in 2017 especially in Western Europe builds up to a new valuable business for Carlsberg. The growth in specialties and crafts is mainly driven by customers' demand for premium brands with different tastes and styles, whereas the increased

demand of non-alcoholic beer is attributed to the growing interest in healthier choices. Carlsberg's portfolio of crafts and specialties includes Grimbergen, Jacobsen, 1664 Blanc and alcohol free beers brands include Nordic, Baltika 0 and FIX ANEY (Carlsberg annual report, 2017).

4.4.3 Others

As previously mentioned Carlsberg's non-beer related products account for 16 percent of the total Pro Rata Volume in 2017. This volume is achieved through soft drinks, mineral water, sports and energy drinks, cider and other alcoholic beverages (Carlsberg annual report, 2017).

4.5 Business Model

Carlsberg's current business model aims at supporting the Group's goal to be a successful, professional and attractive brewer in the industry by ensuring a cost-efficient and sustainable value chain (Carlsberg annual report, 2016). This value chain includes activities from sourcing of materials, brewing and bottling processes and distribution to being a preferred supplier for customers and offering an attractive product portfolio to consumers. A continuous focus on innovation and R&D as well as promotion for responsible drinking is ensured (Carlsberg annual report, 2016). The business model is made operative through the new company strategy SAIL'22.

The SAIL'22 strategy was launched in March 2016. It was co-developed by the top leadership team, comprising the top 60 leaders of the Carlsberg Group, in order to leverage the company's vast knowledge base, support a team-based culture and secure a fast implementation. The initiative is planned to come to conclusion by 2022 (Carlsberg annual report, 2016).

The initiative, also called 'strategic review process' (Carlsberg annual report, 2015) has the aim to strengthen Carlsberg's core business and capabilities and thereby deliver sustainable top- and bottom-line growth, be the preferred supplier of Carlsberg's customers and enhance value for shareholders, employees and society. These three goals support the business model of being a successful, professional and attractive brewer.

Activities are therefore grouped under four strategic choices: *'Strengthen the Core', 'Position for Growth', 'Deliver Value for Shareholders' and 'Create a Winning Culture'* (Carlsberg annual report, 2016). Activities within these key strategic choices are presented in more detail in chapter 5.5.3. The initiative comprises restructuring measures in all three geographic regions (Western Europe, Eastern Europe and Asia) (Carlsberg annual report, 2015; Carlsberg corporate presentation, 2017).

Overall, SAIL'22 addresses the long-term strategic direction and sustainable value creation of the (Carlsberg annual report, 2015). Figure 7 summarizes the Sail' 22 initiatives.

Figure 7: Overview of key strategic choices and focus areas within SAIL'22; own creation based on Carlsberg annual report (2015)

5 Strategic Analysis

Following the outline in the methodology section, we start our analysis with the strategic analysis. The strategic analysis supports us in fully understanding the circumstances Carlsberg operates in. This helps us to correctly analyze financial data and KPIs. In turn we are then able to make reliable forecasts.

First, we conduct the analysis of Carlsberg's macro- and micro-environment. After that, the internal analysis of Carlsberg will give us input about the company's resources. In the end, the SWOT analysis will summarize Carlsberg's overall situation.

The collected data only considers countries in the regions Western Europe, Eastern Europe and Asia in which Carlsberg has majority ownerships. Additionally, we focus on Carlsberg's beer segment as it contributes to 84 percent of the Group's revenue in 2017 (Carlsberg annual report, 2017).

5.1. External Analysis: PEST

The PEST model helps understanding the macro-environment Carlsberg operates in and identifies past, current or future factors that affect Carlsberg's revenue and risk. The PEST model structures the analysis into political, economic, sociocultural and technological factors (Petersen & Plenborg, 2012). More specifically the examined factors are summarized in figure 8.

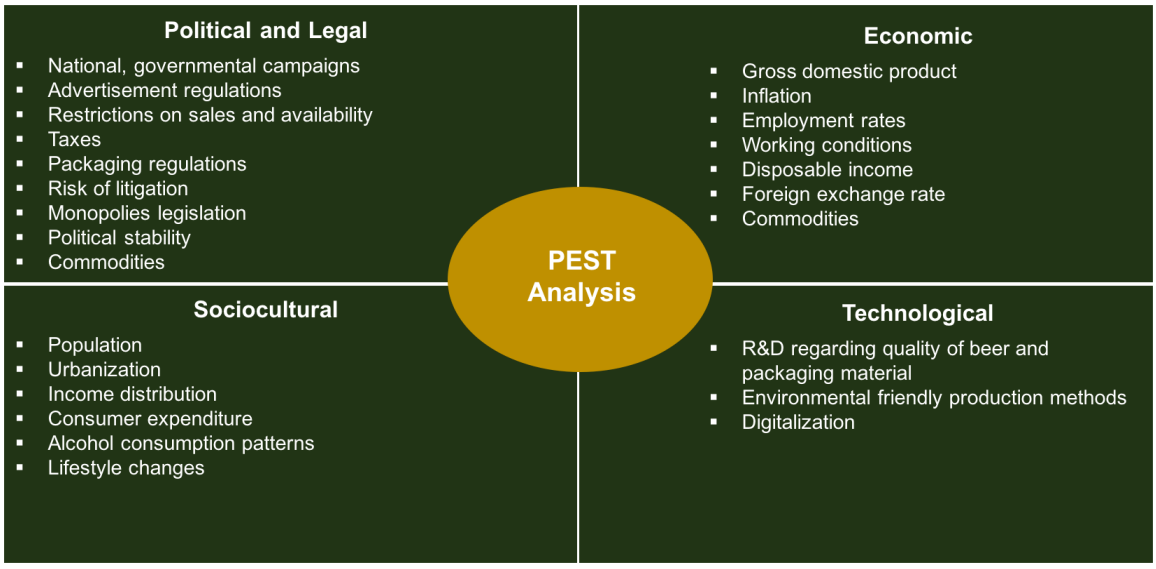

Figure 8: PEST analysis for Carlsberg; own creation

As the name of the analysis suggests, we start with political and legal factors and then go on with economic, sociocultural and finally technological factors.

5.1.1 Political and Legal Factors

This chapter will analyze major political and legal factors that have affected Carlsberg's profitability in the past or that might affect future performance.

In general, Carlsberg's operations are subject to several national and international laws regarding advertisement and sales, packaging, trade or tax regulations. A failure to comply with these regulations can result in negative publicity, penalties, cancellation or suspension of Carlsberg's licenses, permits or approvals (Carlsberg prospectus, 2017).
The level of regulation can be influenced by the development of the public perception of alcohol and soft drink consumption (Carlsberg prospectus, 2017). During recent years, governments have shown a strong interest in influencing the consumption of beer due to health and security issues such as accidents or domestic violence. The European Union (EU) for example introduced the 'Alcohol Harm Reduction Strategy' and encourages nationwide actions against harmful alcohol consumption. These national initiatives contain restrictions on marketing, selling or consuming alcohol and increased taxes but also nationwide media campaigns educating about harmful effects of alcohol consumption. Therefore, they influence sales as well as the image of Carlsberg (Commission of the European communities, 2006).

National Campaigns against Alcohol Consumption

Education and awareness campaigns promoting moderate consumption and informing about impact on health through different forms of media or with support from schools, doctors etc. are conducted on a regular basis in many of the countries Carlsberg operates in (Commission of the European communities, 2006).
In 2017 for example, an awareness week on alcohol related harm was organized by the WHO in the EU, offering different public events, e.g. presentations, conferences or debates (AWARH homepage). These educational campaigns and especially the association with traffic accidents or violence put a negative image on the alcohol industry which duplicates on Carlsberg's brand image and might decrease the demand for beer.

Advertisement Regulations

Several countries restricted or banned marketing channels for alcoholic beverages. Some countries, e.g. Norway, Sweden or Russia banned advertisement for alcoholic beverages on most media, including television, cinemas, billboards or newspapers. Other countries, e.g. Estonia, Finland or Malaysia limit the advertisement to specific times at night and in some countries, e.g. Thailand, advertisement must contain a warning message. In Denmark, the youth protection policy prohibits

advertisements to be directed towards young people (European Centre for Monitoring Alcohol Marketing, 2018).
The monitoring activities today are especially high in Europe. In Asia however, there is still a lot of potential for governments to get involved and restrict marketing and advertising activities of Carlsberg in the future. Especially in countries or regions in which Carlsberg is not yet well-known, advertisement is highly important and bans might influence the success tremendously.

Restrictions on Sales and Availability

Other governmental activities aim at reducing the alcohol consumption by restricting sales of alcoholic beverages. Some countries, such as Norway, Germany or Singapore for example, prohibit the sale of alcoholic beverages after a certain time at night or on weekends or holidays. In Sweden and Norway, drinks with a higher content of alcohol than 4,7 percent can only be bought in special liquor shops. In 2013, beer was reclassified from foodstuff to alcoholic drink in Russia so that legal restrictions on the retailing of alcohol applied to beer as well. Subsequently, the availability of beer in kiosks and other non-stationary places was limited and beer sales were banned everywhere from 11 pm to 8 am excluding bars, cafes and nightclubs (Euromonitor International, 2016A). Age restrictions further decrease the availability for customers (European Centre for Monitoring Alcohol Marketing, 2018).

The regulations regarding the availability of beer limit the Group's sales. Since these regulations were all established or tightened during the last years, further strengthening of laws and regulations regarding the consumption of alcohol is highly possible.

Taxes

Excise duties increase prices and thereby heavily influence the behavior of consumers. Consequently, an absolute or relative (compared to substitutes) increase of taxes can have a strong adverse impact on the economy (EY, 2014).
Several countries have increased excise duties in the last years or will increase taxes in the future (Euromonitor International, 2016A). Russia increased excise duties to restrict alcohol consumption by 200 percent in 2010. The tax was further increased by 11 to 25 percent each year until 2016 (Carlsberg annual reports, 2010-2016). The Finnish government announced in November 2017 that taxes on beers are to be increased by 10,6 percent and for cider by 12,7 percent in 2018. Consequently, retail prices of beer will be on average five percent higher than they are right now (Helsinkitimes, 2017).

Not only changes in the taxation of beer influence Carlsberg's industry but also the taxation of wine and spirits matter as they are considered as substitutes in the market.
In most of the European countries, beer is stronger taxed than wine so that wine is likely to be used as a substitute for beer. Countries such as Germany or Italy do not take excise duties on wine at all. Only in the Nordic countries and the UK, wine is higher taxed than beer so that an increase in taxes for beer does not have that big of an influence (European Commission, 2018)[9]. Taxes on beer in Asia however, are comparably low and also much lower than taxes on wine (Preece, 2012).

Besides excise tax, the industry always faces a possible increase in VAT, corporate income tax, transfer pricing regulations, repatriation of dividends and capital etc. from local, national or foreign authorities (Carlsberg prospectus, 2017).

Overall, these legislative changes including restrictions in advertisement and sales as well increased excise duty rates aiming towards reduced beer consumption were especially strong in Russia during the last years. As Russia is a huge market for Carlsberg, the newly introduced laws and rules had a significantly negative impact on the company's global performance (Carlsberg annual report, 2017). In Asia, the consideration of health issues is not as prominent as in Europe. Therefore, excise taxes and educational campaigns do not influence the industry as much yet. However, for religious reasons, many countries restrict the advertisement and consumption of alcohol as well.

Packaging Regulations

During the last years, several nationwide packaging regulations have influenced the operations of Carlsberg (Carlsberg annual report, 2017).
Examples are bans of glass bottles in city centers or during events. Russia banned PET bottles above 1,5 liters in 2017 (Carlsberg annual report, 2017). This ban massively reduced the beer consumption in Russia as beer became less affordable (Euromonitor International, 2016A). PET as a cheaper form of packaging dominated the Russian market. Brewer's Union estimated that 42 percent of all beer is sold in PET bottles (CNN, 2017).

Risk of Litigation

The beverage industry is also exposed to a risk of class action or other forms of litigation, for example in cases of accidents where excessive consumption of beer was involved. Similarly, soft drinks can be litigated due to health issues. Litigations can result in fines as well as reputational damage. Litigation can also be related to competition law infringements (Carlsberg prospectus, 2017).

[9] Overview of excise tax for beer and wine in appendix 7

Monopolies Legislation

The enormous size of Carlsberg and its leading position in many of the operating markets makes the company subject to competition laws which can influence the company, i.e. slow down its growth plans by restricting further acquisitions and expansions (Carlsberg prospectus, 2017).

Carlsberg currently faces a EUR 62 million fine for alleged infringement of the competition rules in 2007 by the Federal Cartel Office Germany. The management does not agree and has appealed the decision to the relevant German court (Carlsberg annual report, 2017).

Political Stability

Political stability can highly influence the economic situation of a country or region. If a country is very unstable, investments and the pace of economic development will be reduced. Carlsberg has significant operations in emerging markets in Asia and Eastern Europe. Here, Carlsberg faces challenges such as crime and lack of law enforcements, corruption, terrorism, political insurrection and changes in government policy (Carlsberg prospectus, 2017). The World Bank Group classifies Russia as one of the five markets to avoid doing business in (Euromonitor International, 2015A). This is due to the unstable political environment, threats of terrorism and high corruption rates. Further, the judicial branch is not considered independent (Euromonitor International, 2016A). Another country mentioned in the report by the World Bank Group is Italy: Italy is amongst the least accessible markets due to very low labor market laws leading to overly stringent hiring and firing practices (Euromonitor International, 2015A). Corruption perception is very high compared to other European countries (Euromonitor International, 2016B)[10].

Mostly in Europe, a rising number of refugees has led to controversial political debates and increasing popularity of right winged parties. Asian countries, for example India, are affected from the huge flow of refugees as well which might affect the political stability (Euromonitor, 2015B).

Commodities

Several raw materials are needed in the production and packaging of beer: Hops, barley, malt, glass, aluminum, other packaging materials as well as indirect materials (Carlsberg annual report 2017).

Prices of raw materials needed to produce beer might be influenced by national legislation, e.g. when affecting agriculture, generation of energy etc. (Carlsberg prospectus, 2017). Although the company uses forward contracts, price fluctuations might have material adverse effects on the Group's business.

[10] Corruption perception ranking in appendix 8

In addition, national trade legislation can affect the possibility to import cheap raw materials from elsewhere. Custom duties on aluminum, which the United States face since March 2018, might have severe consequences on the industry.

5.1.2 Economic Factors

Generally, the literature is split on whether to classify beer as necessity good which is consumed no matter how well the economy is doing, a luxury good, that is only consumed in times of economic well-being or a superior good which is consumed especially in times of recession (Freeman, 2001; Blake & Nied, 1997; Johnson et al., 1992; Nelson, 1997; Standard & Poors, 1998; Latane & Tuttle, 1970; Ruhm 1996).
Carlsberg classifies beer as a luxury good. If economic conditions are adverse, demand is reduced and price sensitivity is high, so that consumers will most probably switch to lower-cost beers or non-alcoholic beverages (Carlsberg annual report, 2017). Soft drinks follow a similar pattern. If per capita income increases, the consumption rises as well (Carlsberg prospectus, 2017).

Since the beer consumption is highly dependent on the economic well-being of a region we will analyze the Gross Domestic Product (GDP), inflation and employment rates, working conditions and disposable income rates of the different regions in the following part.

Gross Domestic Product

The GDP measures the production of goods and services in a region. In general GDP growth is a good indicator of the strength of an economy.
GDP growth in Western Europe has constantly increased since 2013, where it was at 0,82 percent on average. In 2017, the GDP growth in Western Europe was 2,73 percent.
Despite negative growth numbers in 2015 and 2016 which were strongly impacted by Ukraine and Russia the GDP growth in 2017 in Eastern Europe is expected to stay positive in the future and even exceed Western Europe's GDP growth rates.
Real GDP growth in the Asian countries Carlsberg operates in is high, especially compared to Europe. With no negative growth in any of the countries since 2013 the average GDP growth in Asia was 6,2 percent in 2017. In the future, real GDP growth rates are expected to decline, however, still staying at a high level (Euromonitor International, 2018)[11].

[11] Development of GDP growth in appendix 9

Inflation

In Western Europe, the inflation rate was on average 1,89 percent in 2017. The rate was especially high in the Baltics with over three percent. From 2014 to 2016, the rates were much lower, fluctuating between 0,31 and -0,05 percent. This shows that the money value has remained at a constant level in Western Europe. Inflation rates in Eastern Europe are on average much higher. Especially the Ukraine, with an inflation rate of 48,5 percent in 2015 as well as Russia and Belarus contribute to the high average rates. Inflation rates in Asia have been decreasing from around five to three percent within the last five years. Looking at the biggest markets, China's rate fluctuates between 1 and 2 percent. In India, inflation was very strong in 2013 and 2014 but is declining now, ending at 2,5 percent inflation in 2017 (Euromonitor International, 2018)[12].

The high numbers of inflation in Eastern Europe and Asia show an increase in price levels or a decrease in money value. High levels of inflation therefore have a negative impact on the demand for beer as well as on the Group's money value in the respective country.

Employment Rates

Employment rates not only serve as an indication of how well an economy is doing but also together with income rates determine or influence the level of consumption.

In general, the employment rates in 2017 were very high in all three regions. Data from Euromonitor International show an average employment rate in Western Europe of 68 percent. In Eastern Europe 67 percent of the population was employed and in Asia 70 percent (Euromonitor International, 2018)[13].

Working Conditions

Although employment rates are at a high level, emerging and growing countries in Asia and Eastern Europe struggle with bad working conditions. These working conditions can expose the Group to risk of strikes, work stoppages and disruptions (Carlsberg prospectus, 2017).

Disposable Income

Additionally to the employment rates, beer consumption is strongly linked to per capita income. A high income generally means a higher consumption of alcoholic beverages and soft drinks (Carlsberg prospectus, 2017). We choose to take a closer look at disposable income, i.e. the income that is left after taxes, social security charges, cost of living etc. are deducted. Disposable income can therefore be considered as the "money that is left to spend".

[12] Development of rate of inflation in appendix 10
[13] Development of the rate of employment in appendix 14

Overall, the total disposable income is increasing continuously in all regions. In sum, the disposable income in Western Europe was DKK 53 trillion in 2017 and has increased by 11 percent during last five years. The income per household in Western Europe is the highest of the three regions Carlsberg operates in. On average, a household in Western Europe had DKK 212.000 disposable income available in 2017. In the Eastern European countries, the disposable income per household is much lower than in Western Europe. On average around DKK 54.000 were available in each household in 2017. Asia not only has the strongest increase in total disposable income: During the last 5 years, disposable income increased by more than 42 percent. The disposable income per household in Asia was on average DKK 177.000 in 2017. However, data from Cambodia, Nepal, Laos and Myanmar are missing. Therefore, the data is most probably overestimated and an adjustment downwards would be appropriate. Households in countries such as Singapore and Hong Kong have a high amount of income left for consumption, on average around DKK 400.000 were available for consumption in each household (Euromonitor International, 2018)[14].

Summing up, growing and high GDP rates as well as high employment and income levels in Asia create growth opportunities for the beer industry in this region. However, bad working conditions and high inflation rates bring along challenges. Eastern Europe is characterized by very challenging economic conditions. Low income levels and employment rates compared to the other two regions provide low opportunity of favorable developments of demand and high inflation and negative GDP rates create unstable market conditions. In Western Europe, economic conditions are at a very stable and high level. Consequently, the risk of challenges from an economic perspective is very low but there is also only small potential for growth.

Foreign Exchange Rate

The Group is operating in more than 150 countries and many of the company's assets, liabilities, revenues and expenses are denominated in a different currency. Fluctuations in these currencies can strongly influence the Group's income statement. Therefore, highly volatile currencies (such as the Eastern European ones) expose businesses to high risks. However, in 2017, the Russian Ruble was appreciated, i.e. the foreign exchange rate increased by 11,3 percent, which had a positive impact on the operating profit. On the other side, the strong Danish Kroner led to a negative currency impact in Western Europe and Asia (Carlsberg annual report, 2017).

[14] Development of total disposable income and disposable income per capita in appendix 11 and 12

Commodities

As mentioned in the chapter above, prices of raw materials can be influenced by the government but other factors outside of the company's control can impact them as well. Examples are growing demand for other products that need the same raw materials. In the last years, the demand for biofuel has massively increased. Energy prices and water availability also play an important role (Carlsberg prospectus, 2017).

Environment

The weather strongly influences the performance of Carlsberg in different ways. Firstly, a bad summer in Europe has a negative impact on the consumers' desire to drink beer. Carlsberg justifies the unsatisfactory financial performance in the third quarter of 2017 with the rainy and cold summer in parts of Europe (Carlsberg annual report 2017). In the future, a very cold spring or bad summers might again reduce the demand for beer.

In Asia, environmental disasters, such as floods or tsunamis occur frequently and can have a huge impact on the economic situation of a region. Thereby, demand for beer is influenced (Carlsberg annual report, 2017).

Secondly, not only the demand is affected by climatic conditions but also the crop of raw materials such as barley and hops. Frost or droughts can reduce supply and increase prices and thereby affect Carlsberg's cash flow (Carlsberg prospectus, 2017).

5.1.3 Sociocultural Factors

This sub-section analyzes sociocultural conditions that shape the industry. This involves population demographics, urbanization, income distribution, consumerism and lifestyle changes.

Population

The level and trend of population in the three regions are valid indicators of the market size and potential. Increasing population can support future growth. In Western Europe **the** population aged between 15 and 64 is stagnating. In Eastern Europe, the population has been constantly decreasing. Since 2013, the amount of people living in Eastern Europe has decreased by 4 percent.

Contrary, population in Asia has been increasing by around 3 percent since 2013. In the Asian countries Carlsberg operates in, population from the age of 16 to 64 comprises more than 2 billion people in 2017. In Eastern and Western Europe combined, there were together 414 million people in this age group in 2017, which is only less than a quarter of Asia's population (Euromonitor International, 2018)[15].

[15] Development of population in appendix 13

From the amount of people in a region alone however, we cannot draw conclusions on how the demand looks like. We therefore analyze the social standard and thereby the possibility to afford beer through measures such as the income distribution and the actual consumer expenditure in the following paragraphs.

Urbanization

Another trend visible is the shift from living in rural areas to moving to cities. Especially millennials foster this trend (Euromonitor International, 2016C). In Western Europe, on average 74 percent and in Eastern Europe on average 68 percent of all households are located in urban rather than in rural areas. More than half of all households in Asia are located in cities. This number increased by 2 percent during the last 5 years (Euromonitor International, 2018)[16].

Income Distribution

To develop an understanding on how income is distributed within the population, we analyze how many people in a region are considered as middle class. The more people belong to the middle class the lower is the gap between rich and poor in a region.

In Europe, income is mostly equally distributed. On average, more than 32 percent of the population in Western Europe and more than 36 percent of the population in Eastern Europe is considered as middle class in 2017. Figures have been very constant throughout the last five years. In Asia, the percentage of people belonging to the middle class is lower. On average 25 percent of the population belong to the middle class. However, the numbers have been slowly increasing since 2013 (Euromonitor International, 2018)[17].

Consumer Expenditure

Contrary to disposable income discussed in the previous chapter, we will now evaluate what consumers actually spent. Consumers in Western Europe spent DKK 48 trillion in 2017 which is 97 percent of their disposable income. The amount of money spent for consumption has been increasing since 2013. In Eastern Europe consumer spent DKK 6 trillion in 2017. This makes up 94 percent of their disposable income. Again, the consumer expenditure increased every year by 4 to 9 percent each year. Asia's consumption is characterized by the highest growth. The amount has increased by 9 to 10 percent every year since 2013. However in 2017, DKK 42 trillion were spent in the Asian countries Carlsberg operates in in total. This makes up only 50 percent of the money

[16] Development of total urban households as well as urban households as percentage of total households in appendix 19 and 20

[17] Development of amount of middle class households in appendix 15

available to spend on consumer goods. This low percentage indicates potential for growth in Asia (Euromonitor International, 2018)[18].

Alcohol Consumptions Patterns

As another more specific indicator for the size of the beer market and demand, we now analyze the beer consumption pattern of the last five years.

In total, Western Europeans drank almost 27 billion liters of beer in 2017. This amount has been yearly drunk since 2013 with only very small variations. On average, one person drank 103 liters per year. In Eastern Europe, 10 billion liters of beer were consumed in total. In the last five years, the amount has been declining by 32 percent in total, similar to the per capita consumption. In 2017, an Eastern European drank on average 66 liters of beer. In Asia, 51 billion liters of beer were consumed in 2017, of which 44 billion liters were drunk in China. Similar to the total volume of beer drunk, Asia's per capita consumption has been decreasing by 13 percent within the last five years (Euromonitor International, 2018)[19].

A comparison of per capita beer consumption in Europe and Asia shows that Asians currently drink only one third of what Western Europeans drink per year. However, due to the big population numbers, the total volume of beer drunk in 2017 is almost twice as high. This proves a very high growth potential in Asia, even in markets, that already consume beer.

Lifestyle Changes

Euromonitor has identified healthy living, ethical living, premiumization and connected customers as four of eight megatrends in 2017 (Euromonitor International, 2017). Following this, consumers have rising interests in healthier alternatives (Carlsberg annual report, 2017). This trend might lead to a reduction of demand for alcoholic products and an increase in demand for non-alcoholic alternatives, including non-alcoholic beers.

Additionally, customers are increasingly aware of environmental issues and are highly interested in protective and sustainable measurements from companies (Euromonitor International, 2018). The beer industry therefore might have to focus even more on the reducing waste and the pollution of water and air in future.

Moreover, consumer have rising desires for premium brands with varied tastes and styles (Carlsberg annual report, 2017).

[18] Development of actual consumer expenditures 16
[19] Development of total and per capita beer consumption in appendix 17 and 18

5.1.4 Technological Factors

Technology within the beer industry comprises not only brewing but also packaging and dispensing processes (Carlsberg annual report, 2016).
In general, Research and Development is done by the brewing companies themselves rather than governmental institutions. However, breweries collaborate with research agencies and universities to identify critical technologies and techniques. Since the focus in innovation is very prominent in the industry. Carlsberg faces the risk that competitors find new brewing methods that produce higher-quality beer or decrease the cost of the processes. Especially due to the recent bans of glass bottles in Italy or the restrictions of big-size PET bottles in Russia (see chapter 5.1.1) new innovations in packaging are of high demand.
Regarding the trend towards a healthier lifestyle, the development and improvement of non-alcoholic fermentation processes can give competitive advantages.

As mentioned in chapter 5.1.3, interest shifted toward more environmental friendly production methods and operation techniques. There is a public interest in reducing the water consumption and the carbon footprint (Carlsberg prospectus, 2017).
Therefore, there is trend towards new, sustainable brewing technologies to reduce water and waste and to be able to use renewable electricity throughout the whole production process, e.g. new refrigeration systems (including cold outside temperatures in cold regions) or heat recovery to reduce energy consumption (Carlsberg sustainability report, 2017; Carlsberg company homepage).

Further, there is a trend towards digitalization in the beer industry. A strong presence in digital media is increasingly playing a central role in marketing and brand development to emotionally interact with the customers (Euromonitor International, 2016A).

5.2 Industry Analysis: Porter's Five Force

The attractiveness of an industry is characterized by the likelihood of gaining reasonable returns. One important factor that decreases the chance of earning acceptable returns is a high level of competition (Petersen and Plenborg, 2012). The framework of Porter's Five Forces analyzes the different factors affecting competition in a certain industry, hence enables a holistic understanding of the root causes of profitability in the industry. Porter identifies five forces that define the industry's attractiveness: threat of new entrants, bargaining power of suppliers, bargaining power of buyers, threat of substitutes and the intensity of rivalry among companies (Porter, 2008). Figure 9 shows how the forces are connected.

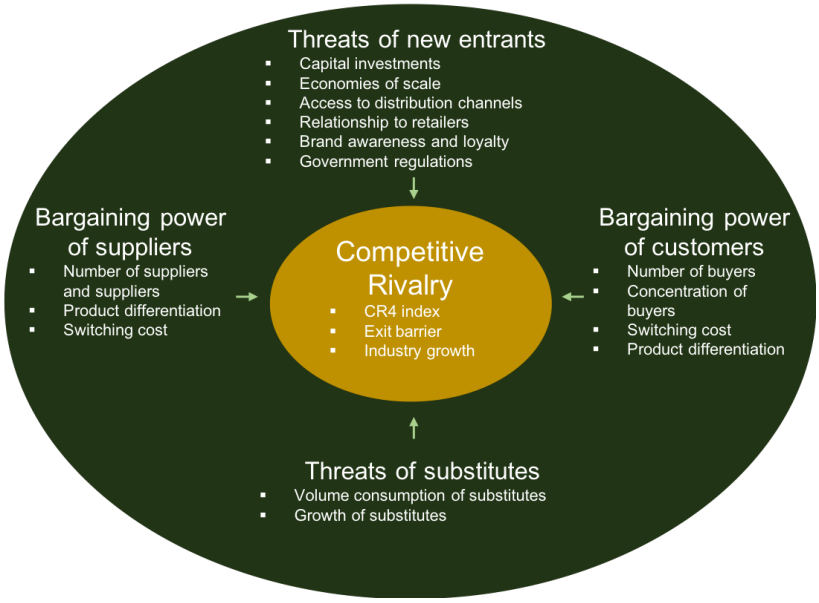

Figure 9: Porter's Five Forces; own creation

In the following we will analyze the competitive environment of Carlsberg.

5.2.1 Threat of New Entrants

To enter the brewing industry and become a large manufacturer high capital investments are required. The estimated cost to build a production site with a production capacity of 6,5 to 8 million hl of beer per year amount to approximately DKK 1511 million (Elzinga, 2000). To set that in reference, Carlsberg's largest brewing facility has a production capacity of 8,6 million hl of beer a year. The brewery is one of eight company-owned Russian production sites servicing the demand of 29,8 million hl of Carlsberg's beer in Russia (Carlsberg prospectus, 2017). This example shows that becoming a national scaled brewer takes not only heavy investments in production facilities but additionally investments in raw materials and workforce have to be considered. Moreover, the average capital expenditure (CAPEX) of the four largest brewing companies worldwide amount to DKK 10,7 billion in 2017 which represents a slight decrease by 9 percent compared to the previous year. Carlsberg's CAPEX is below that average and totals around DKK 4,1 billion in 2017. The application of the CAPEX to sales ratio gives insight in the required level of net revenue to be reinvested to keep the company in business. The ratios of the four largest breweries range between 7,7 and 3,1 percent in 2017, whereas Carlsberg has the third highest CAPEX to sales ratio with 6,1 percent. The underlying facts indicate that new entrants have to raise high capital investments when aiming for the position as a national brewery (Carlsberg annual report, 2016, 2017; Heineken annual report, 2016, 2017; AB InBev annual report, 2016, 2017; China Resources Beer (Holdings) Company Limited annual report, 2016, 2017)[20].

[20] Calculation of CAPEX of the top four beer producers in appendix 21

Additionally, breweries producing in large volumes are able to generate economies of scale. This ability to generate cost savings when the absolute volume per period increases and therefore unit cost decreases, creates an advantage for large breweries. This advantage is especially important for mainstream beer with low differentiation as lacking product differentiation increases the bargaining power of customers leading to a decrease in profit margin. Furthermore, economies of scale do not only exist in production but also in marketing, purchasing and distribution. Big players know how to exploit and generate further competitive advantage (Porter, 1979).

The access to distribution channels is a further barrier to entry. Nationally successful companies as well as multinational companies have strong distribution networks. Availability is an important factor in retail as supplying the adequate amount at the right time and place is fundamental (Koller, Goedhart and Wessels, 2010). Close relationships to retailers and wholesalers are particularly important as the off-trade segment accounts for the majority of sales in world-wide (Euromonitor, 2018). Carlsberg for example got access to markets and the thereby connected distribution channels through buying or creating joint ventures with local breweries (Carlsberg annual report, 2015). Good relationships to distributors arise through long-term relationships and are therefore difficult to achieve for new entrants.

The beer market is characterized by a wide variety of different types of beer. This is why, breweries put a lot of effort in creating customer loyalty and brand identification. Loyalty and brand awareness is achieved through offering marginally cheaper products, exploiting all distribution channels and creating a positive brand image (Porter, 1979).
In the period from 2012 to 2017, Carlsberg for example spends on average 9,7 percent of its net revenue on marketing activities[21] (Carlsberg annual report, 2012-2017).
Nevertheless, the demand for craft and specialty beer increased during the last years (Carlsberg prospectus, 2017). This is also reflected in the increasing number of microbreweries over the last 10-20 years in the US and in Western Europe. However, microbreweries constitute a moderate threat for existent breweries. To be considered as a microbrewery the yearly production level should not exceed 18.000 hl. Compared to the volume of the global players of between 100 to 600 million hl this makes up only a small share[22] (Carlsberg annual report, 2017; Heineken Annual report, 2017, AB InBev Annual report, 2017; China Resources Beer (Holdings) Company Limited annual report, 2017). Moreover, the large brewing companies have expanded their portfolio and offer more and more craft and specialty beers (Carlsberg prospectus, 2017).

[21] Marketing spend of Carlsberg in appendix 22
[22] Volume sold of top four breweries in appendix 23

The in chapter 5.1.1 mentioned government regulations regarding restrictions on sales or increasing excise duties additionally impede a market entrance.

Lastly, the threat from existing large brewing companies entering a new geographical area should be considered. The firms could get access through mergers and acquisitions, licensing agreements or building new production facilities. For example the merger of AB InBev and SABMiller in 2016 enables AB InBev to capture cost synergies, expand geographically for example in Brazil and reshape the portfolio in the US (AB InBev annual report, 2017).

The mentioned high capital investments, the possibility to achieve economies of scale when producing in high volumes, government regulations and the ability to offset low product differentiation by creating brand awareness hinder potential new entrants to start a large-scale brewing business. Therefore, we assess the threat from new entrants for Carlsberg as low.

5.2.2 Bargaining Power of Suppliers

The main inputs for beer production are raw materials including barley, malt, hops and yeast, as well as packaging material like aluminum cans, glass and PET bottles (Carlsberg prospectus, 2017). Traditionally the brewing industry operates mostly non-vertically integrated. This means, raw materials are purchased either on the open market or through independent producers. Raw material inputs like barley, malt and hops are offered by numerous producers worldwide. The number of independent hops farmers is large including sometimes fairly small operators which weakens supplier power. In contrast, farmers for barley and malt have other buyers than beer producers which decreases their dependency on the brewing industry. Barley for example can be sold as animal feed. Yeast however is often produced in-house by the breweries and therefore there is no dependency on suppliers (Carlsberg prospectus, 2017).
Furthermore, some internationally operating companies recently incorporated some degree of vertical integration weakening supplier power.

Additionally, the raw materials are undifferentiated products which implies low switching costs. However, the quality of raw materials is highly important, because the taste of beer is strongly influenced by the nature of the ingredients. This is why, breweries often rely on long-term agreements with suppliers to ensure high quality.

The bargaining power of suppliers is evaluated as moderate due to the high number of suppliers delivering only small volumes to breweries.

5.2.3 Bargaining Power of Buyers

In general, the brewing industry has two types of buyers, customers from the on-trade segment and from the off-trade segment. The on-trade segment comprises channels such as restaurants, pubs, bars whereas off-trade channels include supermarkets or kiosks selling beer. The off-trade segment is more dominant, making up 60 percent in Western Europe, 53 percent in Asia and 84 percent in Eastern Europe[23] (Euromonitor, 2018). However, the distribution to the off-trade segment differs in each country. While in some countries brewing companies have direct contact with the retail level, in other countries third-party distribution is exercised through wholesalers, importers or distributors. In some countries, there exist a mix between direct distribution and third party distribution. For example, in Europe supermarkets and hypermarkets account for 55 percent of the sales in the off-trade segment (Euromonitor, 2018). If in the individual countries the market concentration of those supermarket/hypermarket chains is highly concentrated, this may lead to increased negotiation power on the buyer site. The same argument can be applied to third party retailers and wholesalers. If their market concentration is high, they can exercise more power towards the brewing industry.

Carlsberg for example generates a significant part of its consolidated revenues from third-party retailers and wholesalers. In case these buyers shift their priorities to other brands and purchase less of Carlsberg's beer or at lower prices, this could lead to sales losses. Even though Carlsberg does not depend on an individual customer or wholesaler, the termination of a business relationship can affect the company's results and make the company vulnerable and therefore increase buyers' bargaining power (Carlsberg prospectus, 2017). The delisting in the UK by one of the biggest retailer had a major effect on the Group's result (Carlsberg annual report, 2017).

The on-trade segment is characterized by a moderate buyer power as supply is to individual restaurants with low leverage.

Furthermore, buyers do not face high switching cost as the termination of a business relation is not connected with any sunk cost. This increases the buyer power in all markets.

Moreover, breweries differentiate their products through varied ways to decrease buyer power and tie buyers to their product. One possibility breweries use is the differentiation of the overall segment (lager, ale or craft beer for example). A further way is to strengthen the brand or use special or high quality ingredients.

[23] Share of on-trade and off-trade in Eastern Europe, Western Europe and Asia in appendix 24

Additionally, buyers have to supply a variety of products to accommodate customers' preferences, therefore they harm themselves by taking out products from their assortment.

In general, the buyer power is assessed as moderate, as Carlsberg does not depend on a single customer.

5.2.4 Threat of Substitutes

The main substitutes for beer are alcoholic beverages like, wine, spirits, cider and RTD (ready-to-drink, FABs, alcopops or premixes).

When looking at the alcoholic beverage segment in 2017 we determine that in the three operating regions of Carlsberg beer represents the highest consumption. In Asia the consumption of beer amounts to 77 percent of all alcoholic drinks while in Eastern Europe it is 79 percent and in Western Europe 65 percent. Beer is followed by wine with 27 percent in Western Europe and 11 percent in Eastern Europe except for Asia where spirits are following beer with 15 percent[24] (Euromonitor, 2018).

When looking at the volume growth[25] of the different alcohol categories from 2012 to 2017 it can be determined that the consumption of beer in Eastern Europe, Western Europe and Asia is declining. Taking a closer look at the consumption in Western Europe we see that all categories record a negative consumption growth which is reflected in the overall growth rate of alcoholic drinks which follows a decreasing trend as well. In Eastern Europe, the trend to consume alcoholic drinks is declining as well. This negative trend can be seen in all categories where the growth is negative except cider which records an increase in volume consumption. In Asia, the consumption of alcoholic beverages decreases as well. This is consistent in all categories except for wine where the consumption increased in 2016 and 2017 (Euromonitor, 2018). These trends indicate that even though the consumption of beer decreased in the last years it is most likely that it is not caused by the increased consumption of other alcoholic drinks as the general consumption of alcohol decreased.

From the perspective of the retailers and wholesalers the potential benefits and disadvantages of including beer in their product range are difficult to determine. The majority of retailers and wholesalers will stock a combination of beer and its substitutes to satisfy highest possible number of customers. In the on-trade segment, however, in some restaurants it might be more reasonable to serve wine as it supplements the menu in a better way. In contrast, in many pubs and bars, beer is indispensable.

[24] Share of beer and substitutes in Eastern Europe, Western Europe and Asia in appendix 25
[25] Volume growth of different alcohol categories in appendix 26

From the consumer perspective, the consumption of beer depends on factors like changes in demographics and social developments, health perceptions, alternative spending possibilities and downturns in economic conditions. These factors influence the likelihood to purchase beer and may foster purchases of substitute products (Carlsberg prospectus, 2017).
Furthermore, neither costumers, retailers and distributors, nor consumers face switching cost, when changing from beer to substitutes products.
In general, the threat from substitutes is assessed to be moderate, as beer is the most consumed alcoholic drink in the three operating regions of Carlsberg.

5.2.5 Rivalry of Competitors

To better understand Carlsberg's competitive environment firstly we would like to present the company's major competitor. Competitors are identified by offering similar products, their revenue and their volume of sales as well as their operating regions.

AB InBev was formed in 2008 by the merger of the American company Anheuser-Busch and the Belgian brewery InBev. Based on their sold beer volume in 2017 of 613 million hl (AB InBev annual report, 2017) the company is the biggest brewery worldwide with 27 percent of the volume market share (Euromonitor, 2018). AB InBev's revenue amounts to DKK 346 billion. Unlike Carlsberg, the company is present on all continents. The company owns over 500 beer brands, whereas Budweiser, Corona and Becks are their international flagship brands (AB InBev annual report, 2017).

Heineken is a Dutch brewing company, selling 218 million hl beer in 2017 which accounts for 10 percent of the volume market share and consequently Heineken is the second biggest brewery worldwide. In 2017, the company makes a revenue of DKK 162 billion. Heineken as well as AB InBev operate on all continents.

China Resources Beer Holdings Company Limited is a Chinese brewery which limits their operations to the Asian market. With a volume sales of 126 million the company has a market share of 6 percent like Carlsberg and is the fourth biggest brewery globally. The company's revenue amounts to DKK 31 billion in 2017.

The beer industry counts many players, however each market is characterized by only a few major players. This observation can be measured by the 'four-firm concentration ratio' framework CR4 which calculates the percentage of market share amongst the four largest firms in a market. When looking at the three operating regions of Carlsberg, it can be determined that the three markets are oligopolies because in Western Europe the four largest companies have a joint market share of 42,3

percent, in Eastern Europe the CR4 ratio is around 61,6 percent and in Asia around 46 percent[26] (Euromonitor, 2018). This indicates an intense competition. Furthermore, given the high amount of operating breweries there is an extreme price competition especially in the mainstream beer as it lacks differentiation and customers are price sensitive. Additionally, the competition especially in Western Europe is increased by the rising demand for craft and specialty beer as well as healthier choices like non-alcoholic beers. This trend is reflected in the increased penetration through microbreweries. Therefore, a large brewery like Carlsberg does not only compete with large players but also with microbreweries, even though a single brewery does not pose a threat to the company's sales.

Furthermore, the exit barrier in the brewing industry is high which increases competition further. This is due to the fact that breweries require special and expensive production facilities which cannot be used in other industries. Therefore, it is costly to close down production in case of market exit. Hence companies might continue the production even though the profit margin is only marginal profitable.

The extent of rivalry is also influenced by industry growth. The future growth rate of the beer industry is an important factor as future expectations have a big influence on profit potential and the attractiveness of the market (Porter, 1979). The mature Western European grew in volume terms by 0,5 percent in 2017. Forecasts predict that the market growth remains in most countries positive but under 1 percent until 2021. In Eastern Europe, the market growth in 2017 was around 0,6 percent whereas the previous four years are characterized by a negative growth rate. Forecasts estimate positive market growth until 2021. In Asia, the market growth in 2017 was on average 2,6 percent and the forecasting predicts a positive market growth until 2021. Most of the markets in Asia are growing however Carlsberg's biggest market China shows declining market growth[27] (Euromonitor, 2018). The moderate growth rates indicate that the competition is severe as companies are not able to achieve growth through increased demand but rather through the gain of additional market shares. However, this analysis relies on the market share in volume terms. Companies are also able to achieve increased revenue through price increases.

Overall, the rivalry in the brewing industry is assessed to be neutral.

[26] CR4 Index in appendix 2
[27] Market volume forecast in appendix 27

Our analysis of the five forces leads to the conclusion that the competitiveness in the brewing industry is moderate. Carlsberg does not face an immense risk from buyers, suppliers, new entrants or substitute products. We identify Carlsberg's competition as the biggest threat.

5.3 Internal Analysis: Value Chain Analysis & VRIO

5.3.1 Value Chain Analysis

Every organization is driven by creating value, customers are willing to pay for. Value creation arises when benefits of the product or service produced outperform the cost of production. Companies that achieve the highest value therefore dominate others. For this reason, it is crucial to understand a company's value creating activities (Porter, 1985).

In 1985, Michael E. Porter first introduced the analysis of the value chain to determine the source of a company's competitive advantage. Porter describes the value chain as a series of interdependent activities which directly or indirectly add value to a product or service. Direct value creation is achieved through primary activities whereas secondary activities contribute indirectly to the value of a product or service. According to Porter, primary and secondary activities can be divided into nine generic categories as described in the following (Porter, 1985). Figure 10 illustrates the value chain framework and summarizes Carlsberg's main characteristics.

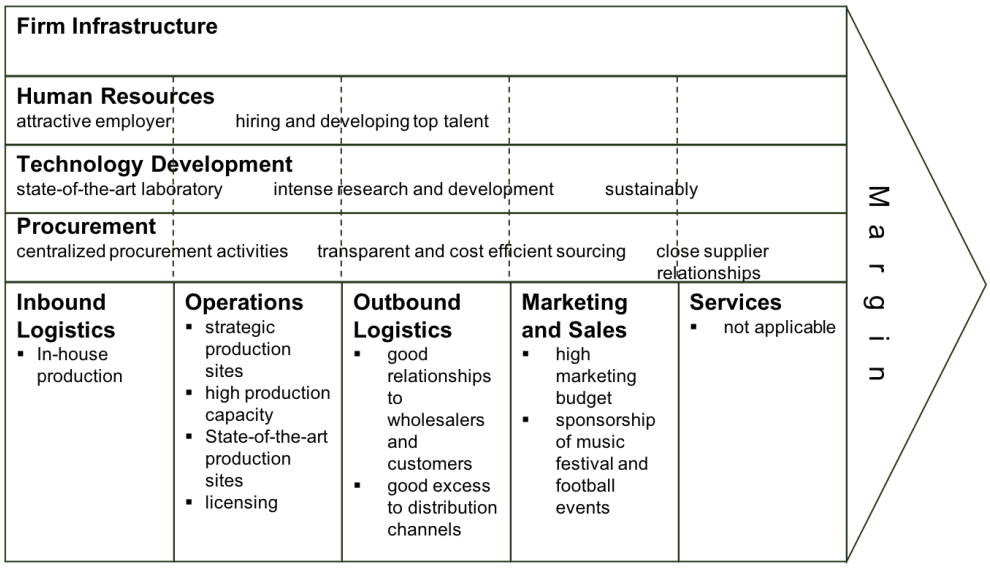

Figure 10: Carlsberg's value chain; own creation

5.3.1.1 Support Activities

Support activities provide the infrastructure to facilitate primary activities and each other. Support is provided through four categories: the company's infrastructure, human resources, technology and procurement (Porter, 1985).

The dotted lines in the figure above display that each support activity is able to influence each primary activity. Support activities therefore improve efficiency of primary activities.

Human resources management

In line with the ambitions of the company's strategy to foster success and professionality, Carlsberg also focuses on becoming an attractive employer which means to offer a pleasant working environment and encourages high-performance culture. Moreover, the Group perceives employees as 'the key to the company's success'. This opinion is reflected in fair compensation and a broad range of options to develop within the company (Carlsberg company homepage; Carlsberg annual report, 2017).

Furthermore, in specific areas Carlsberg relies on highly-skilled employees. Especially senior management and key personnel with extensive knowledge and experience with the company's business, products and services consist of a small group. Therefore, the company invests substantial resources to recruit and develop talent and is committed to maintain qualified employees within the Group (Carlsberg prospectus, 2017).

Technology development

During industrialization Carlsberg Research Laboratory contributed significantly to the development of brewing science ensuring high quality of the end product. Furthermore, Carlsberg's discovery of the purification of yeast, the role of enzymes and pH scale ensures the high and consistent level of beer these days. Today as in the past product quality is the company's priority. Nowadays the Research Laboratory focuses on enhancing flavor stability. Therefore, investments in reliable brewing technology and equipment are essential to the company's success (Carlsberg company homepage).

Moreover, Carlsberg's research is devoted to sustainability. Not only does the company develop a sustainable brewing technological process which enables lowest consumption of water and energy per liter of beer produced but also invests in sustainable production facilities. The brewery in Sweden is the first fully run production site with biogas and green electricity (Carlsberg annual report, 2017).

Procurement

Global sourcing is coordinated by Carlsberg Supply Company which is located in Switzerland. Central procurement was established to achieve a transparent and cost efficient sourcing process. In line with this sourcing approach the Group pursues the development and maintenance of good

relationships with suppliers to enable strict quality control and competitive prices (Carlsberg prospectus, 2017).

Carlsberg primarily purchases raw materials and packaging material. However, their sourcing approach differs within the three operating regions. In Western Europe, the company relies primarily on large national and international suppliers whereas in Eastern Europe and Asia packaging and raw material is also provided by local and regional suppliers. Most of the contracts with suppliers are long-term enabling fixed price agreements to guarantee reliable supply, price stability and thus predictability (Carlsberg prospectus, 2017).

The principal raw materials used in the brewing process are barley, malt, hops, yeast and water. To ensure appropriate quality Carlsberg grows its own proprietary yeast in its facilities. Barley and hops are acquired through the open market and through contracts with suppliers. In Eastern Europe barley is partly sourced through direct collaborations with farmers (Carlsberg prospectus, 2017).

The used packaging material includes beverage cans, glass and PET bottles, steel kegs, crown corks, plastic closures, wet glue labels and cardboard products. Most of the materials are bought through long-term contracts with strategic suppliers. Nevertheless, the type of packaging material is determined by the availability and price as well as regional consumer preferences in the different counties (Carlsberg prospectus, 2017). For example in Russia it is common to buy beer in 1,5 liter PET bottles, while in Germany it is usual to consume beer from glass bottles.

Especially the purchase of cans (aluminum), malt and energy are associated with risk. This is why, Carlsberg does not only minimize risk through fixed-price purchase agreements with suppliers but also hedges against the prices at raw materials market. The volatile prices of aluminum are for example hedged at the London Metal Exchange (Carlsberg annual report, 2017).

5.3.1.2 Primary Activities

Primary activities engage directly in the creation of a product, its marketing activities, delivery to the customers and its maintenance and service after the sale. The activities are directly involved in the value creation process of the company. Describing Carlsberg's primary activities contributes to the understanding of its core competences. Any company divides primary activities into five categories: inbound logistics, operations, outbound logistics, marketing and sales, and services (Porter, 1985).

Inbound logistics

Carlsberg does not disclose information concerning its input handling. This is why it is difficult to determine the efficient handling of those operations. However, Carlsberg maintains good relationships with its key supplier to ensure disruption-free production.

Operations

In 2017, the Carlsberg Group brews its beer in 31 countries in 79 breweries whereof 25 of the breweries are located in China. Starting in 2015 the number of breweries decreased due to the divestiture of 19 production sites in China. The scale of production facilities can differ significantly. The four biggest breweries are located in Russia and the largest production site has a capacity of around 6,6 million hl per year which is equivalent to the production of approximately 2606 billion cans of beer (Carlsberg annual report, 2017; Carlsberg prospectus, 2017).

The production methods applied to manufacture different brands of beer do not differ. Therefore, Carlsberg gains a certain flexibility to organize the production between brewing facilities to gain maximum efficiency by reducing distribution cost and capital expenditure and minimizing overhead. Savings can mainly be achieved by avoiding the change in packaging formats in the production and products being tied to specific locations (Carlsberg prospectus, 2017).

Opening a new production facility is considered a strategic choice which has to comply with the demand and requirements of the local market considering the brand, needed production volume and packaging type. The Carlsberg Supply Company, headquartered in Switzerland, is responsible for the production and technology function of the Group. More specific Carlsberg Supply Company manages the construction of new breweries worldwide, maintains brewing equipment and controls the quality of the beer produced. Moreover, every brewery has to meet the company-wide quality and safety assurance and environmental standards as product quality is the key focus for Carlsberg (Carlsberg prospectus, 2017).

Additionally to Carlsberg's brewing activities the company issues licensing agreements in over 25 countries. This means that a brand of the Carlsberg portfolio is licensed by Carlsberg to Carlsberg Breweries and Carlsberg Breweries sub-license the brand to third-parties. The licenses include the allowance to produce, package, sell and market a determined brand in a specifically assigned territory or country. Furthermore, the agreements only cover a certain brand which is agreed to be manufactured under strict guidelines and technical requirements monitored by Carlsberg's headquarters. Brands licensed to third parties include Carlsberg, Tuborg, Holsten, Somersby and Kronenbourg 1664 (Carlsberg prospectus, 2017).

Outbound logistics

The distribution of beer differs from market to market due to Carlsberg's position in the market, legal reasons and regulatory considerations and local market dynamics like consumption patterns, market structure, geographic density of customers and the existence of third-party wholesalers. Therefore, the Carlsberg Group uses three distribution models: direct distribution to retailers, third-party distribution to wholesalers, importers, distributors and 'cash and carry' outlets, as well as a combination of direct and third-party distribution (Carlsberg prospectus, 2017).

The Logistic and Customer Supply Chain functions take care of the distribution of products. Furthermore, they are responsible for the optimization of warehouse networks, distribution and transport flows.

In Western Europe, the service level required differs in each county. While in the Nordic region as well as Switzerland and Italy stores and outlets are delivered directly, the German and Portuguese market are mainly served through wholesalers. In general, the Western European market is characterized by quality standards for product handling and high automatization for warehouse operations which improve storage and handling capacity. The delivery is carried out by either using trucks owned or leased by Carlsberg or by hired external providers of transportation services (Carlsberg prospectus, 2017).

In the Eastern European market, distribution to the off-trade segment is mainly accomplished through distributors and wholesalers while providing direct distribution to large retail chains which represent a fast growing industry, mainly in Russia.

In Asia, the distribution of beer is primarily executed through wholesalers. Particularly in Malaysia, China and Singapore wholesalers dominate the market and direct deliveries are executed to the major retail chains. In contrast, in Hong Kong the major distribution is direct and only a small part is carried out with wholesalers (Carlsberg prospectus, 2017).

Marketing and sales

In 2017 sales and marketing expenses amount to DKK 11.625 million which represents 19 percent of Carlsberg's net revenue (Carlsberg annual report, 2017).

The company's sales activities comprise order taking, distribution and payments directed towards existing and new customers. The sales system however works different in each region. For example in Western Europe the on-trade segment is reached by telephone sales calls, while the off-trade segment requires sales representative visits. Furthermore, key account managers for specific areas are used to handle daily customer sales in bigger stores (Carlsberg prospectus, 2017).

Carlsberg's marketing activities are diverse including traditional advertising combined with an increased usage of digital channels. The company divides its marketing activities into brand and trade marketing. Brand marketing includes sales campaigns, sponsorships and in-store display. For example, the Group engages in a long-lasting sponsorship with the English Premier League which will end in 2018. Furthermore, Carlsberg sponsors the Liverpool Football Club since 1992. Additionally to sponsoring sport events the Group displays its brand on large music festival like the Roskilde Festival in Denmark. Despite Carlsberg's various marketing initiatives, the company also faces advertisement regulations like mentioned in the PEST analysis which restrict their choices of marketing channels, like TV, cinema, billboard or newspaper advertisements.
Trade marketing in contrast comprises promotional activities directed towards the customer, like the supply of point-of-sales material, promotional materials and trade offers (Carlsberg annual report, 2017; Carlsberg prospectus, 2017).

Service

Porter (1985) defines services as 'activities associated with providing services to enhance or maintain the value of the product, such as installation, repair, training, parts supply, and product adjustment' (Porter, 1985). As Carlsberg offers a product which is consumed directly and maintenance activities are not required, service activities are not applicable and therefore do not contribute to the company's value creation.

5.3.2 VRIO

In the following, the VRIO model summarizes the results of the value chain analysis. The framework was developed by Barney (1991, 1995) and later modified by Rothaermel (2015) and analyzes whether a company is able to achieve a sustainable competitive advantage through its internal resources and capabilities. VRIO is an initialism of four questions:

- Does the capability or resource contribute value to the company? Is it **V**aluable?
- Is the capability or resource only controlled by a few? Is it **R**are?
- Is the capability or resource costly to **I**mitate?
- Is the company **O**rganized to exploit the resource or capability?

If a resource/capability complies with all four requirements a company is able to achieve a sustainable competitive advantage. Table 1 summarizes Carlsberg's outstanding resources.

Resource/ Capability	Valuable	Rare	Inimitable	Exploited by the organization	Competitive implications
Hiring and developing top talent	Yes	No			Competitive parity
Good relations to suppliers	Yes	No			Competitive parity
Good access to distribution channels	Yes	Yes	No		Temporary competitive advantage
Strategic production sites	Yes	Yes	No		Temporary competitive advantage
Central Supply Chain Company	Yes	Yes	No		Temporary competitive advantage
Sponsoring of sport and music events	Yes	Yes	No		Temporary competitive advantage
Intense R&D	Yes	Yes	No		Temporary competitive advantage
Brand image	Yes	Yes	No		Temporary competitive advantage

Table 1: VRIO analysis of Carlsberg; own creation

5.4 SWOT

In this section, we use the SWOT analysis to summarize the findings of our previous strategic analysis and identify them as strength, weakness, threat or opportunity which may have an impact on Carlsberg's ability to deliver satisfactory performance. The external analysis in combination with the industry analysis enables us to gain an insight in the macro- as well as micro-environment of Carlsberg, thus supports the identification of threats and opportunities the company is facing. The internal analysis helps us identifying Carlsberg's strengths and weaknesses and thereby the company's competitive advantages. Carlsberg can influence internal factors, while external factors are out of the company's control. The organization can therefore deploy its strength to take advantage of the opportunities and to mitigate weaknesses and threats.

Strengths	Weaknesses
▪ Leading market position in Western Europe, Eastern Europe and Asia ▪ Strong international and diversified local brands ▪ Strong brewing capabilities ▪ Supply chain ▪ Manufacturing network ▪ Marketing campaigns ▪ Brand innovation	▪ Revenue decline ▪ Limited geographic reach
Opportunities	**Threats**
▪ Growth opportunities in Asia ▪ Favorable trends in the NAB segment ▪ Focus on core business	▪ Increasing health consciousness ▪ Stringent advertisement regulations and restrictions on sales ▪ Packaging regulations towards sustainable materials ▪ Raw materials risk ▪ Competition and consolidation

Figure 11: SWOT analysis; own creation

5.4.1 Strengths

Carlsberg possesses leading market positions in Western Europe, Eastern Europe and Asia. The Group's market presence entails 25 markets in Europe and Asia, where 75 percent of the total volume is sold. The leading position gives access to a diverse customer base and enables the exploration of growth opportunities.

Carlsberg's portfolio is widely spread across the beer category. The portfolio includes strong international and diversified local brands. The well-known flagship brand Carlsberg is marketed in 130 countries. Brands like Tuborg, Kronenbourg 1664 and Grimbergen contribute further to Carlsberg's market presence, leading to steady revenue streams and a distinct competitive advantage in the marketplace.

The company's operations are supported by an efficient manufacturing network ensuring steady production activities. Geographically diversified operations mitigate the risk to depend on a single region for revenue generation and to secure to serve customers efficiently. Carlsberg sells its products in approximately 150 countries worldwide enabled through 23 breweries in Western Europe, 14 in Eastern Europe and 42 in Asia.

The Group's supply chain is managed centrally and engages in the global procurement process and logistics services to assure end-to-end planning throughout the full supply chain process. We identify the company's supply chain and logistics services as a strength that enables the company to foster operational capabilities and its ongoing and future growth and expansion plans. Moreover, the centrally anchored supply chain function ensures a steady supply of inputs and mitigates supply risks, price variations and complexities.

Carlsberg's brewing capabilities are supported by its high R&D efforts including the research on new brewing techniques enabled through its state-of-the-art equipment which helps the Group to foster innovative breakthrough technologies in its production processes. Especially its innovation based strategies help Carlsberg to adapt to changes in the industry and gain a first mover advantage by launching products ahead of competition.

Carlsberg develops several brand innovations to adapt to changes in customer tastes and preferences. The company's profound understanding of consumer insights, trends and opportunities strengthens the company's capability to develop and launch products that contribute to performance improvements of existing as well all as new products. Furthermore, Carlsberg's creativity when it comes to the development of new types of packaging or the use of new ingredients in the brewing process helps the company to stay competitive.

Carlsberg's marketing campaigns create high brand awareness, particularly the sponsoring of music events as well as sport events target a large audience.

5.4.2 Weaknesses

Carlsberg has a lower scale of operations compared to its main competitors. The production scale is an important factor to achieve and sustain cost leadership in the beer industry as the brewing process requires heavy investments in plant and equipment. A significant part of the costs is fixed. Therefore, Carlsberg's comparably low scale hampers the ability to achieve cost savings which will in turn affect the Group's profitability and therefore its growth opportunities.
Increasing competition in the global beer market is also resulting in increased choices, which, in turn, is leading to reduced brand switching costs for consumers.

Moreover, the revenue decline over the last three years lowers shareholders' confidence.

Carlsberg's limited geographic reach caused by a weak presence outside the company's main markets results in missing growth potential in emerging and growth markets like Africa, Middle East and Latin America.

5.4.3 Opportunities

We interpret the favorable economic and sociocultural trends in Asia as a huge opportunity for Carlsberg. Increasing rates of GDP growth and disposable income promise economic well-being and thereby an increase in consumerism. Moreover, due to rising living standards and changing lifestyles many new bars and restaurants are expected to open in Asia within the coming years. These new

channels can increase the availability of Carlsberg products in existing markets and introduce them into new markets.
Additionally, a low current per capita consumption of beer compared to the European market and rising interests in beer as well as increasing numbers of population create growth opportunities in Asia. Not least, Carlsberg currently has breweries in only 10 countries in Asia. This means, that geographical expansion is also possible.

Overall, the beer market in the Asian region is estimated to grow at a compound annual growth rate (CAGR) of approximately 4.5 percent. Many of the company's brands including Carlsberg, Shancheng, Wusu, Dali, Tuborg, Huda, Halida, Beerlao, Palone and Gorkha already have proven to be well accepted in the Asian market and could be launched through new channels or in new markets. Carlsberg already operates through various subsidiaries in Asia so that an opportunity to nurse the growing demand for beer products in this region is available.

From our previous analysis, we derive the non-alcoholic beer (NAB) segment as the second main opportunity for Carlsberg. Increasing health consciousness drives the trend towards non-alcoholic beverages.
Furthermore, Carlsberg can turn threats coming from governmental interference spreading negative perceptions of alcohol to prevent harmful consumption into a support for non-alcoholic products.

The focus on its core business is another opportunity for Carlsberg. Divesting non-core businesses leverages Carlsberg’s strengths of having a portfolio of well-known beer brands and outstanding brewing capabilities. Additionally, the company raises funds that can be used for future growth.

5.4.4 Threats

A huge threat comes from the above mentioned negative health attributes that are associated with beer, mainly its effect on body fat and cholesterol. Substitutes such as wine are considered healthier. The shift of consumer interests towards a healthier lifestyle can heavily affect the Group’s revenue.
Additionally, stringent advertising regulations and restrictions on sales and availability to control irresponsible use of alcoholic drinks are affecting Carlsberg’s marketing activities and thereby affecting sales.
Other governmental regulations, e.g. regarding packaging pose a threat on the Group as well. As seen in the key market Russia the ban on PET bottles holding volumes of 1,5 liters had a huge influence of Carlsberg’s revenue. The trend towards sustainability can bring along regulations regarding packaging or general production processes and thereby threaten the company’s sales volumes as well as increase operating expenses.

Increasing prices of raw materials used in the production, packaging or distribution process of Carlsberg's products could have a major impact on the operational efficiency of the Group. The price of barley has been increasing mostly due to increased demand in the ethanol market. Even though the company uses forward contracts price fluctuations and shortages of raw materials could increase product costs and thereby have a material effect on the Group's profit.

The company faces an intense competition from large international breweries and increasingly from regional brewers and microbrewers. Especially during the last years, consolidations have been taking place within Carlsberg's main competitors so that in many markets in which Carlsberg used to own a high share competition has increased. Consolidation not only brings an expansion in geographical areas, but also in the product portfolio. Therefore, Carlsberg has to offer high-quality products at competitive prices to not lose market shares.

5.5 Carlsberg's Restructuring Initiative SAIL'22

In this section, we define Carlsberg's restructuring initiative as operational restructuring, we emphasize the need for restructuring and present activities within the initiative. Lastly, we assess the potential of SAIL'22 on Carlsberg's future performance.

5.5.1 Classification of SAIL'22 as an Operational Restructuring Initiative

The literature defines operational restructuring as a program that is initiated to either change the scope of business of the company or the way the firm conducts business (Lin, Lee and Gibbs, 2008). With the implementation of SAIL'22 Carlsberg undertakes both changes. Firstly, the Group changes its scope of business by refocusing its activities on their core business. This is executed by revitalizing the firm's core beer through the improvement of brand fundamentals such as packaging, taste and communication as well as by streamlining the portfolio of local and international brands. Furthermore, Carlsberg increases its focus on niche products like craft, specialty and non-alcoholic beer through building a global portfolio of beer brands and line extensions (Carlsberg corporate presentation, 2018).

Secondly, Carlsberg changes the manner in which its business is conducted by optimizing the organization's efficiency and cost. Throughout the sub-program *Funding the Journey* Carlsberg defines four optimization areas including value management, supply chain efficiencies, operating cost efficiencies and right-sizing which contribute to efficient processes in the company. The right-sizing initiative for example aims to optimize and streamline structures and businesses which result in the layoff of 2280 white collar workers (Carlsberg corporate presentation, 2018). However, we would like to add that the definition of operational restructuring stating that a company 'changes the way its business is conducted' can also be interpreted as a more fundamental change in the

business. While Carlsberg changes its way of doing business only by optimizing existent process other companies may change their manner of conducting business by for example altering their value chain, changing production focus or by addressing a different target group.

Overall the literature describes various forms of operational restructuring. Throughout our research on Carlsberg's restructuring activities we identify the following: The company refocuses its business activities, implements cost reduction activities including decisions about adequate headcount and production locations (Carlsberg corporate presentation, 2018). Therefore, we would classify Carlsberg's strategic review process as operational restructuring.

5.5.2 The Need for SAIL'22

The literature defines several reasons for conducting an operational restructuring and divides them into external and internal factors.
The reasons of the implementation of Carlsberg's strategic review process mainly derive from a changing business environment. An adaption to these changing industry environments is needed so that Carlsberg can ensure to sustain current market shares and is not outperformed by competition. The restructuring initiative is therefore a preventive measure which keeps the company from facing financial distress in the future.
Carlsberg identifies several needs and as a response implements different activities, targeting each challenge.

In the following we will explain the challenges that create the need for the different activities within SAIL'22 in more detail. These challenges are in line with trends in the industry which we identified within our strategic analysis.

From an economically perspective, there is the need to revitalize core beer. Especially in Western Europe markets are economically mature. In Eastern Europe and Asia beer consumption is declining (Carlsberg corporate presentation, 2018). Therefore, Carlsberg needs to re-attract consumers' attention on their strong international and diversified local brands.

Challenging macroeconomic circumstances in Russia during the last years have led to reduced sales figures and brand impairments (Carlsberg annual report, 2017). Russia is especially important for Carlsberg since the country accounts for around 17 percent of the Group's operating profit (Carlsberg annual report, 2017) and thereby classifies as a core contributor to earnings (Carlsberg corporate presentation, 2018). This leads to the need to transform the business in Russia.

Increased competition and industry consolidation force the company to re-assess the size of its supply base in relation to potential future earnings (Carlsberg annual report, 2015).

The need for a rising focus on craft and specialty beer results from an increased demand (Carlsberg annual report, 2017). The volume growth rate of craft and specialty beer is 15 percent higher than the volume growth rate of non-craft beer. Additionally, craft and specialty beer generate higher profit margins than average beer and thus create the opportunity to increase overall profit (Carlsberg corporate presentation, 2018).

Another growing category is non-alcoholic brews: Rising health consciousness creates the need to increase the business in non-alcoholic beer segment (Carlsberg annual report, 2017). Around 70 percent of consumers aged between 24 and 45 years make conscious attempts to consume more healthily. This preference in consumption leads to a three times higher growth of non-alcoholic beer than average beer (Carlsberg corporate presentation, 2018). Similarly to craft and specialty beer, non-alcoholic beer creates the possibility to increase the Group's total profit because the gross profit per hectoliter of non-alcoholic beer exceeds the gross profit of average beer (Carlsberg corporate presentation, 2018).

High beer consumption in Asia creates the need to implement activities that enhance future growth and expansion in Asia. Although current per capita consumption is comparably low (Euromonitor, 2018), 40 percent of total beer volume is consumed in Asia (Carlsberg corporate presentation, 2018). This is due to the large population. The mentioned low capita consumption as well as increasing population growth creates huge potential for growth in Asia. Additionally, rising GDP growth rates, growing disposable income and thereby overall wealth induce increased demand (Euromonitor, 2018).

The activity '*Target Big Cities'* is based on Carlsberg's forecasts that by 2050 more than 70 percent of the population will live in big cities, where the beer consumption is about 30 percent higher than in rural areas. Out of the top 50 cities in the world, Carlsberg currently only operates in 30 of them (Carlsberg corporate presentation, 2018).

5.5.3 Activities within SAIL'22

Within the operational restructuring program SAIL'22, Carlsberg conducts several activities that aim at making the company a more successful, professional and attractive brewer (Carlsberg corporate presentation, 2018).

The first strategic choice is to *Strengthen the Core* and to focus on core brands of beer (Carlsberg annual report, 2016). Therefore, Carlsberg streamlines the portfolios of local and international beer brands. Brand fundamentals on these core brands, such as the packaging and the taste are constantly renovated to revitalize the core brand's image (Carlsberg corporate presentation, 2018). The group also develops a new commercial approach and re-allocates resources to selected core brands and sales channels (Carlsberg annual report, 2016). As an example, the visual identity of Tuborg is updated through a new, modern marketing campaign (Tuborg company homepage). Additionally, Carlsberg aims to improve occasion, brand, price, pack and channel processes to drive value creation (Carlsberg corporate presentation, 2018).

Another 'core' that should be leveraged is the high market share and the originally strong operating performance in Russia. To gain back this market position, the business is transformed. The transformation of business in Russia includes offering a full portfolio of local, regional, national and international leading brands (Carlsberg annual report, 2016). Moreover, efficiency of the supply chain is improved, the production network and unique local brewery footprint are leveraged and in-store visibility of the products is increased (Carlsberg corporate presentation, 2018; Carlsberg annual report, 2016). A focus is also put on capitalizing and driving growing channels and segments (e.g. urban areas or NAB) (Carlsberg corporate presentation, 2018).

An activity within the key strategic choice *Excel in Execution* is the facilitation of consumer-driven R&D (Carlsberg corporate presentation, 2018). Carlsberg is gaining insights into consumer behavior and drinking occasions through systematic and recurrent surveys. To excel at the point of sale the FIT (Focus-Implement-Track) model is implemented which ensures an effective way of working uniformly across markets (Carlsberg annual report, 2016).
Moreover, the Group develops a tracker tool that identifies inefficient SKUs that need to be optimized or removed and thus helps to manage complexity smartly and efficiently (Carlsberg annual report, 2016).
The last measure to excel in execution is to 'step up on digital'. Therefore, new capabilities are hired to be able to apply digital when servicing of customers, managing brands online to improve consumer engagement and developing excellence in e-commerce (Carlsberg annual report, 2016).

Within the *Funding the Journey* initiative, Carlsberg rolls out group-wide value management practices through standardized tools and processes (Carlsberg corporate presentation, 2018). Focus is put on creating and capturing customer value across core channels and customer segments to optimize value between market share and operating profits. This is done by setting up rigorous performance management processes resulting in a more profitable mix of brands, channels and

promotional activities (Carlsberg annual report, 2015). Employees are trained to work with the mindset of the Golden triangle, which seeks to find the right balance between market share, gross profit margin and operating profit (Carlsberg annual report, 2016).
To increase efficiencies in the supply chain, a global and integrated end-to-end supply chain is established, that reduces complexity and manages the whole network (Carlsberg corporate presentation, 2018).
Another activity within *Funding the Journey* is to drive operating cost management further by embedding routines for key cost drivers (e.g. FTEs), harmonizing business processes and outsourcing shared service processes (Carlsberg corporate presentation, 2018). Additionally white-collar staff is reduced by 2.280 employees (Carlsberg annual report, 2016).
The fourth aspect within *Funding the Journey* is Right-Sizing. Here, the assessment of the anticipated future earnings projections of individual businesses and brands as well as the assessment of our supply base relative to expected volumes is updated (Carlsberg annual report, 2015). Annually, the portfolio of businesses is reviewed. Within this activity, a number of non-core assets, are disposed (Carlsberg annual report, 2016).
The results of *Funding the Journey* activities are tracked rigorously (Carlsberg corporate presentation, 2018).

When positioning for growth, activities focus on the craft and specialty and non-alcoholic beer segments as well as big cities and Asian countries.
Activities to increase shares in the craft and specialty beer segment contain the development of relevant capabilities in R&D, brewing and commercial (Carlsberg corporate presentation, 2018). To turn the Sales and Marketing teams into beer experts, a training program called 'Art of Beer' is developed (Carlsberg annual report, 2016).
To support the growth in the non-alcoholic beer segment existing lines are extended and stand-alone brands are introduced (Carlsberg corporate presentation, 2018).
Further, the company invests in technologies that overcome taste differences to beer containing alcohol and thereby offers a healthier alternative to consumers (Carlsberg corporate presentation, 2018). A NAB-team that solely focuses on gaining market insights and R&D know-how within this segment is established (Carlsberg annual report, 2016).
To grow in the urban areas, Carlsberg enters new cities in existing as well as new geographic areas. The Group will penetrate the cities through an Export & License business model. However, it is very time-consuming and results are not expected to be seen before 2022 (Carlsberg corporate presentation, 2018). Thus first, a dedicated team analyzes customer behavior and needs, matching brand and portfolio, the strength of competitors, the urban life, supply chain and local partner possibilities and tests and pilots concepts in the first cities (Carlsberg annual report, 2016).

In Asia, the product portfolios are updated and now focus on international premium brands. As an example, Tuborg is launched in growth markets such as Vietnam, Cambodia and Laos (Carlsberg annual report, 2016). Additionally, channels in these growth as well as mature markets (e.g. Malaysia, Singapore, Hong Kong) are expanded (Carlsberg corporate presentation, 2018).

The last strategic choice *Create a Winning Culture* comprises activities that foster team-based performance, contribute to a better society and ensures the application of codes and policies (Carlsberg annual report, 2016).
To foster one-team behavior and reward high level performance a new performance management system based on the triple-A concept (Alignment, Accountability and Action) is introduced. This concept is applied when measuring performance and assessing potential (Carlsberg annual report, 2016).
Additionally, Carlsberg cares for global challenges and thus contributes to a better society: The Group conducted a materiality assessment which results in a prioritization of the most important sustainability topics. Now, a decreasing consumption of water and energy, a reduced carbon footprint, promotion of responsible drinking and caring for health and safety are in focus. Measurable targets are set and force the implementation of activities (Carlsberg annual report, 2016).
Facilitation of awareness and compliance with all Group policies is maintained by rolling out a new Code of Ethics and Conduct (CoEC), translated into 27 languages (Carlsberg corporate presentation, 2018). To ensure the values of integrity, responsibility and honesty in the CoEC are implemented, an e-learning tool as well as a compass game are implemented (Carlsberg annual report, 2016). A so-called policy house is launched which is easily accessible and which encompasses company-specific and functional policies (Carlsberg corporate presentation, 2018). Breaches of the CoEC and other policies can be reported anonymously through the new “speak up” helpline that supports the Group’s whistleblower set-up (Carlsberg annual report, 2016).

5.5.4 Potential Effect of SAIL’22 on Carlsberg’s Future Performance

This part engages in our assessment of the potential of SAIL’22 on Carlsberg’s future performance. In the first step, we assess whether Carlsberg complies with the success factors identified by the literature to execute a successful restructuring program. Then we evaluate the activities undertaken by Carlsberg and how they could influence future performance.

Chapter 3.2.3 describes factors the literature identifies that influence a successful operational restructuring. Firstly, research identifies that the pre-emptive execution of restructuring initiatives generates greater value than under pressure. At the time of the implementation of the restructuring,

Carlsberg did not face financial trouble. In fact, the company introduced SAIL'22 to become more competitive.
Secondly, the repetition of restructuring activities does not contribute to a successful restructuring operation. Carlsberg's strategy is shaped by a history of restructuring initiatives. In 2003, the company implements the so-called Excellence Program targeted to Western Europe aiming to increase efficiency, control costs and optimize turnover growth. Carlsberg describes the program as successful as it improved the profitability of the company (Carlsberg annual report, 2003 and 2008). In 2008, the next generation of the Excellence Program started aiming for further optimizations across the value chain (Carlsberg annual report, 2008) which translated 2010 in a more subtle business strategy which however still comprised the same aims within a different format (Carlsberg annual report, 2010). Furthermore, it can be determined that the objectives of the Group's restructuring initiatives resemble one another however the content was adjusted according to the macro-economic as well as industry specific challenges of the company.
Moreover, the literature indicates that long lasting restructuring programs can lead to a loss of commitment in the restructuring activities by stakeholders. The duration of SAIL'22 can be characterized as long. While the literature described that restructuring is implemented within one to two years Carlsberg's initiative lasts six years.
Additionally, the literature identifies cost retrenchment and downsizing as means that contribute to a successful restructuring. Both activities are undertaken during SAIL'22.
Furthermore, refocusing on the most profitable products can help the company to conduct a successful restructuring as operating performance as well as stock returns can be improved. Carlsberg induces this mean in its strategy as well.

All in all, Carlsberg follows most success factors identified in the literature. However, the fact that the company has a track record of implementing restructuring programs incorporating all efficiency improvements and refocusing initiatives could contradict the Group's aim to implement long lasting changes through SAIL'22 because the previous initiatives only contributed to short-term improvements while they aimed to increase long-term profitability.

In section 5.5.2 we emphasize that there is a need for Carlsberg to undertake the strategic review process SAIL'22 to mitigate internal weaknesses and overcome external threats while focusing on their strength. The previous section 5.5.3 gave us then an insight through which activities Carlsberg wants to mitigate the identified weaknesses and threats. Now, we want to assess which potential influence the SAIL'22 program may have on the company's performance. With the execution of SAIL'22 Carlsberg follows the objective to deliver increased value for shareholders. Carlsberg highlights especially three performance measures which should be improved and which should

contribute to increased shareholder value. Firstly, Carlsberg aims to increase *organic growth in operating profit* through top-line growth and the right balance between volume market share, gross profit after logistics margin and operating profit. Secondly, Carlsberg aims to improve the *ROIC* and lastly the company wants to achieve an *optimal capital allocation*, meaning that the ratio NIBD to EBITDA is below 2.0x and the dividend pay-out ratio should amount to 50 percent.

The activities revitalize core beer and transform the business in Russia under the sub-initiative leverage the strongholds aim to boost revenue through updating existing products. Carlsberg uses its strength of having strong and well known core brands and increases marketing activities on these brands. Additionally, Carlsberg reacts to the loss in market share in Russia by implementing initiatives that transform the business in Russia. Nevertheless, it is hard to predict how successful the actions in Russia are going as the past showed that macro-economic factors have a huge influence on the business and the macro-economic conditions are hard to predict due to the political instability in Russia.

The development of categories like craft, specialties and non-alcoholic beer is a strategic choice which should lead to revenue growth as well. The focus on craft beer and specialties as well as non-alcoholic beer has proven successful with a volume growth of 29 and 15 percent respectively in 2017. Especially the focus on craft and specialties is worthwhile as it offers a bigger profit margin as core beer. Therefore, by supporting the growth of this category Carlsberg may foster organic growth in operating profit. Moreover, the extension of non-alcoholic product lines turns the threat of increasing health consciousness into an opportunity for Carlsberg. We believe that especially craft beer and specialty as well as non-alcoholic brews will account for a revenue boost in the next years as how in our strategic analysis determined the demand for this category is growing and by bringing the beer to the stores Carlsberg can use its existing distribution channels to flood the supermarkets with these products.

We identify Carlsberg's limited geographic reach in comparison to its bigger competitors Heineken and AB InBev as a competitive disadvantage. Therefore, the SAIL'22 program reacts to this weakness by growing markets in Asia and targeting big cities. Particularly the presence in big cities promises increased returns as in our PEST analysis described urbanization increases and the alcohol consumption in cities exceeds the consumption rural areas. However, we believe that the successful launch in big cities is rather difficult as especially in big cities the competition is severe. Not only other major players identify the revenue potential in big cities but also local brews and micro-breweries are present in the big cities. The same argument applies for Asia. The predicted rising beer consumption in the region makes the market not only attractive for Carlsberg but also a

number of competitors. However, with more than 68 billion liter beer consumption[28], Asia is the biggest market in the world. Therefore, it should be possible for Carlsberg to increase revenue in Asia.

Additional to the activities that pursue revenue growth, the company aims to become more competitive through efficiency optimization and cost saving programs which are executed under the sub-strategic choice Funding the Journey and Excel in Execution. Nonetheless the question arises how sustainable the cost savings will be in the future. As previously described Carlsberg has a track record of optimization and cost saving initiatives which go more than 10 years back. However, none of the initiatives allowed for long-term effects. Although we believe that Carlsberg will generate cost savings and create efficiency in its processes the question remains how sustainable these effects may be.

Overall, Carlsberg has identified the internal weaknesses and external threats it is facing and with the implementation of the strategic review process SAIL'22 the company intends to actively mitigate them. Therefore, the restructuring program has, if executed as planned, a positive effect on the company value. However, it is difficult to determine to which extent SAIL'22 will improve operating performance measures and the shareholder value in the long-term as previous projects with comparable objectives did not lead to a satisfying long-term effect.

[28] Calculation of total beer consumption is Asia in appendix 25

6 Financial Statement Analysis

In this chapter, we will conduct a financial analysis. The aim of the analysis is the calculation of Carlsberg's historical and current profitability. This helps us to gain an understanding of the effect the SAIL'22 restructuring initiative has on the Group's profitability. Additionally, the financial analysis identifies financial drivers and thus serves as a basis for forecasting in chapter 7.

Before actually calculating the return from financing and operating activities, we first analyze the quality of accounting data provided by Carlsberg and prepare the financial statements for the analysis.

6.1 Accounting Principles

The financial data used for the following analysis is taken from Carlsberg's financial statement which is prepared and published on a yearly basis. We access the annual reports from the considered years on the company's homepage.

The financial data is based on the Group's chosen accounting policies. Accounting policies are "the specific principles, bases, conventions, rules and practices applied by an entity in preparing and presenting financial statements" (Deloitte, 2018). Changes in accounting policies affect the reported performance and may create noise. Therefore, it is necessary to determine these changes and adjust financial data where needed.
Since we focus on the development of financial ratios and the effect of the SAIL'22 initiative, we especially analyze whether accounting policies have been used consistently throughout the considered period (2012-2017).

The Group's consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU and additional requirements in the Danish Financial Statements Act. In the years considered in our analysis (2012-2017), the Group's financial statement has been audited by KPMG until 2016. The Group's reported data from 2017 was audited by PricewaterhouseCoopers (Carlsberg annual report, 2012-2017).

In 2014, there has been a significant change in the application of an accounting principle: IFRS 10 "Consolidated Financial Statements", IFRS 11 "Joint Arrangements" and IFRS 12 "Disclosure of Interests in other Entities" were implemented (Carlsberg annual report, 2014).
IFRS 10 "Consolidated Financial Statements" redefines the term of having control over entities and thus outlines which entities have to be consolidated. An entity has control if it is exposed to risk and

has the power over the investee to influence these returns. IFRS 11 “Joint Arrangements” explains required accounting methods if there is joint control. Carlsberg now has to use the equity method for entities that were previously proportionately consolidated. IFRS 12 “Disclosure in other entities” demands a full disclosure on the type of investment and the financial and earning position (Deloitte, 2018).

The adjustment of IFRS had an impact on several items in the income statement, balance sheet and cash flow statement. Net revenue for example decreased by DKK 2,2 billion. To have consistent, accounting principles throughout the considered time period, we use the restated numbers for 2013. To be entirely consistent data from 2012 would have to be adjusted accordingly as well. However, we do not have enough information to conduct these changes and make adjustments to the numbers from 2012. This might create some noise as financial results from 2012 are not exactly comparable to the following years (Carlsberg annual report, 2014).

Other than that, the company has not renewed or revised relevant existing accounting principles that could have a material impact on our analysis. The annual reports have been prepared using the same accounting policies for recognition and measurement. Only small amendments and improvements became applicable but they covered areas that are not relevant for the Group or only affect accounting policies that have not been used by the Group (Carlsberg annual report, 2012-2017).

The data is presented in Danish Kroner (DKK) as it is the Parent Company’s functional currency (Carlsberg annual report, 2012-2017).

6.2 Analytical Balance Sheet and Income Statement

Carlsberg’s business comprises operating as well as financing activities and both activities are included in the Group’s financial statement. Operating activities, including the production and distribution of beer, can be considered as the primary source of value creation. Therefore, when calculating profit with the aim of analyzing economic performance, operating activities should be isolated from non-operating activities (Petersen and Plenborg, 2012; Koller, Goedhart and Wessels, 2010).

As a basis for upcoming analysis, we therefore create an analytical balance sheet and an analytical income statement.

The aim when reformulating the balance sheet is to calculate invested capital. Invested capital is the capital provided by investors to fund operations without differentiating whether it is provided in form of equity or debt (Koller, Goedhart and Wessels, 2010). It is needed to calculate ratios measuring Carlsberg's operational performance later in the chapter.

The analytical balance sheet is based on the 'traditional' balance sheet that is published in the annual report of the Carlsberg Group. This traditional balance sheet is build up as following:

$$Assets = Liabilities + Equity$$

Assets and liabilities include both operating and financial assets.

$$Operating\ assets + Financial\ assets = Operating\ liabilities + Financial\ liabilities + Equity$$

In the analytical balance sheet, we separate operating and financing items and thereby come to the following equation:

$$Operating\ assets - Operating\ liabilities = Invested\ capital$$
$$= Net\ interest - bearing\ debt + Equity$$

Net interest-bearing debt are financial liabilities subtracted by financial assets.

This equation illustrates more precisely the capital used for operations on the one side and the financing provided by investors to fund those operations on the other side of the equation (Koller, Goedhart and Wessels, 2010).

The analytical income statement is also based on the 'traditional' income statement created and published by Carlsberg. It restructures the order in which costs and expenses are added up to calculate the consolidated profit. The aim of the analytical income statement is to calculate operating earnings, i.e. the profit from the company's core business.

To calculate the operating profit, only operating expenses are subtracted from net revenue. We calculate earnings before interest, taxes, depreciation and amortization (EBITDA), earnings before interest and taxes (EBIT) and net operating profit after tax (NOPAT). NOPAT is the profit available to all investors whereas net income is only relevant for equity holders. Items that are classified as financing items (e.g. interests) are only deducted after NOPAT is calculated (Koller, Goedhart and Wessels, 2010).

The classification of items as operating or financing is straightforward for most of the items. However, for some items classification was not clear. For those items, we make the following assumptions.

6.2.1 Investment in Associates

From the financial reporting, we assume that most of the associated companies and joint ventures are involved in brewery-related activities. We therefore classify investments in associates as

operating items. Since the profit from associates is measured after tax in the original income statement, tax must be added when classifying the profit as operating profit in the analytical income statement (Carlsberg annual report, 2012-2017)[29].

6.2.2 Deferred Tax Assets and Liabilities

For deferred tax assets or liabilities, the financial statement does not provide information whether they are linked to operations or financing. However, mostly intangible and tangible assets as well as tax loss carry forwards are recognized differently in the balance sheet than for tax purposes. Since these items are related to operating activities we classify deferred tax assets and liabilities as operating items (Carlsberg annual report, 2012-2017).

6.2.3 Trade Receivables

We classify trade receivables as operating items. In the financial statement, Carlsberg specifies that trade receivables comprise invoiced goods and services plus short-term on-trade loans to customers. Receivables from the sale of goods and services are operating items. On-trade loans are grants given to on-trade customers. As the interests of these on-trade loans are recognized in other operating income, we classify on-trade loans and thus all trade receivables as operating in nature (Carlsberg annual report, 2012-2017).

6.2.4 Other Receivables

Other receivables comprise VAT receivables, loans to partners, associates and joint ventures, interest receivables and other financial receivables. Hereof, VAT receivables can be classified as operating items whereas loans to partners, associates and joint ventures, interest receivables and other financial receivables are interest-bearing and thus will be classified as financial items (Carlsberg annual report, 2012-2017; Petersen and Plenborg, 2012).

However, the amount of those items is not explicitly disclosed in the financial statement. Therefore, we base our separation on Carlsberg's calculation of invested capital[30]. Here, the company deducts interest receivables, fair value of hedging instruments, receivables sold and financial receivables as well as loans to associates and joint ventures (current) from total assets and thus classifies these items as financial items. Consequently, the remaining consists of VAT receivables and is classified as other receivables from operations (Carlsberg annual report, 2012-2017)[31].

[29] Calculation of tax on profit from associates in appendix 28
[30] Carlsberg's calculation of invested capital in appendix 29
[31] Calculation of operating and financing other receivables in appendix 30

6.2.5 Corporation Tax

In the original income statement, corporation tax is related to both operating and financing items. When separating the tax to assign it to either financial or operational activities, we have to estimate a tax rate. We can either use the effective or the marginal tax rate as estimate. Although the company might have borrowed in countries outside of Denmark where the tax rate differs from domestic corporate tax rate in Denmark of 22 percent, we chose to apply the marginal tax rate (Petersen and Plenborg, 2012). Brealey, Myers and Allen (2011) argue that the effective tax rate is often biased as it includes accelerated depreciation and other tax adjustments.

6.2.6 Borrowings

Borrowings include issued bonds, mortgages, bank borrowings and other borrowings. In general, we classify borrowings as financing activities.

Other borrowings however, include finance lease liabilities which are subtracted as operating liabilities in the Group's calculation of invested capital and thus are classified as operating items by Carlsberg. The financial statement does not disclose to which assets finance leases relate to. However, since Carlsberg classifies these finance lease liabilities as operating liabilities, we assume that the leased assets are needed for operating activities and classify them as operating items as well (Carlsberg annual report, 2012-2017)[32].

6.2.7 Other Liabilities

Since there was no further information in the annual report regarding the nature of other liabilities, we again make our assumption based on Carlsberg's calculation of invested capital. Carlsberg classifies all other liabilities except for interest payable and fair value of hedging instruments as operating liabilities. We use the same amount and classify the remaining part as liability for financing activities (Carlsberg annual report, 2012-2017)[33].

6.2.8 Retirement Benefit Plan Assets and Obligations

Retirement benefit plans are a way of funding Carlsberg's pension obligations. The retirement benefit costs from the defined plans are recognized in the income statement as staff costs as they occur. Retirement benefit plans assets and obligations in the balance sheet arise due to the difference between the present value of funded plans and the fair value of plan assets; i.e. if the plan is under- or overfunded. Since pension obligations are interest bearing we treat benefit plan assets and obligations as financing activities (Petersen and Plenborg, 2012; Carlsberg annual report, 2012-2017).

[32] Calculation of operating and financing other borrowings in appendix 31
[33] Calculation of operating and financing other liabilities in appendix 32

6.2.9 Assets Held for Sale

We classify assets held for sale as financial items because a disposal of those assets will reduce Carlsberg's borrowings or increase cash or cash equivalents and thus affect net-interest bearing debt (Petersen and Plenborg, 2012).

6.2.10 Cash and Cash Equivalents

The exact share of cash and cash equivalents that is needed for operations is not disclosed in Carlsberg's annual report. However, when calculating invested capital, Carlsberg deducts cash and cash equivalents from total assets and thereby treats the whole item as a financing item (Carlsberg annual report, 2012-2017).

Koller, Goedhart & Wessels (2010) argue that part of cash is always used as working capital. Their discussion results into the conclusion that 2 percent are a good proxy for the amount that should be classified as working capital.

However, we have decided to classify cash and cash equivalents completely as financing items. The 2 percent rate is just an estimate and we would be left to guessing the size of 'operational liquidity' which does not add value or credibility to this valuation.

6.2.11 Amortization and Depreciation

Carlsberg classifies its line items by function. Therefore, amortization, depreciation and impairment losses are already included in the function they belong to (cost of sales, sales and distribution expenses, administrative expenses and special items). To calculate earnings before depreciation and amortization, the amounts amortized and depreciated are added back to the respective functions. After that, all amortizations and depreciations are subtracted in an individual item which then results in EBIT (Petersen and Plenborg, 2012).

Some authors suggest to exclude the impairment of brands and goodwill as these expenses do not reflect the operating performance of a company and thus bias profitability ratios. Additionally, only the value is reduced and there are not any 'real' costs reducing the profit. We however, add back all depreciation and amortization expenses, including impairment of brands because we think Carlsberg's brands are of huge importance for their business. A decrease in the value of these brands thus should not be ignored (Petersen & Plenborg, 2012).

6.2.12 Staff Costs

The annual reports in the considered years specify that staff costs which are operating expenses are already included in respective functions cost of sales, sales and distribution expenses, administrative expenses, other operating activities and special items (restructurings) they belong to and thus do not have to be subtracted as expense individually (Carlsberg annual report, 2012-2017).

6.2.13 Special Items

Carlsberg uses special items if significant income and expenses of a special nature cannot be attributed directly to the Group's ordinary operating activities. Special items include fundamental structural or process-related changes in the Group, gains and losses from the disposal of entities, sites, real estate and property plant and equipment, impairment of brands, or termination benefits. Carlsberg excludes special items from calculations of profitability, e.g. return on invested capital. In the last years, special items consisted mainly of brand impairments. As explained in chapter 6.3.11, we subtract these costs and expense them under depreciation and amortization. However, we still classify them as operating items and include them in EBIT as brands are an important part of Carlsberg's business (Carlsberg annual report, 2012-2017).

Other activities accumulated under special items are restructurings and the disposal of entities. To define if special items should be classified as operating items, we consider whether they are part of the Group's core business and whether they are recurring. We consider restructuring activities as part of the company's core activities as every firm needs to adjust its business to changing market conditions. Most of the restructuring activities belong to SAIL'22 and focus on operational efficiency and growth which can be attributed to Carlsberg's core business. Since one strategic choice within the restructuring program is to *Strengthen the Core*, the selling activities can be classified as restructuring activities and thus also belong to Carlsberg's usual operations. We think disregarding restructuring charges may create a too promising picture of past performance and should be considered carefully in forecasting future earnings. Additionally, in the considered period special items have appeared in the income statement every year. This indicates that they are recurring (Petersen and Plenborg, 2012).

Therefore, we classify special items as operating items and include them in EBITDA and consequently in EBIT and NOPAT figures as well.

The analytical balance sheet and income statement are presented in appendix 33 and 34.

6.3 Profitability Analysis

In this chapter, we will analyze Carlsberg's profitability based on historical data. Aim of the profitability analysis is to measure operating profitability and find factors that have created value and thus driven profitability during the past years (Penman, 2010). This knowledge then serves as a profound basis for the upcoming forecasting because knowing how the company performed during the last years and what factors affected this performance helps defining future expectations for the

company. Understanding company's past is essential to forecast its future (Koller, Goedhart and Wessels, 2010; Petersen and Plenborg, 2012).

We calculate Carlsberg's profitability in the years 2012 until 2017 to have a profound amount of historical data we can compare Carlsberg's current performance to.
Key financial ratios are based on the analytical balance sheet and income statement. The analysis' structure follows the DuPont Model which decomposes the ratios into their main value drivers, starting from Return on Equity (ROE) (Penman, 2010). The DuPont model gives a good overview on how the ratios are interrelated (Petersen and Plenborg, 2012).

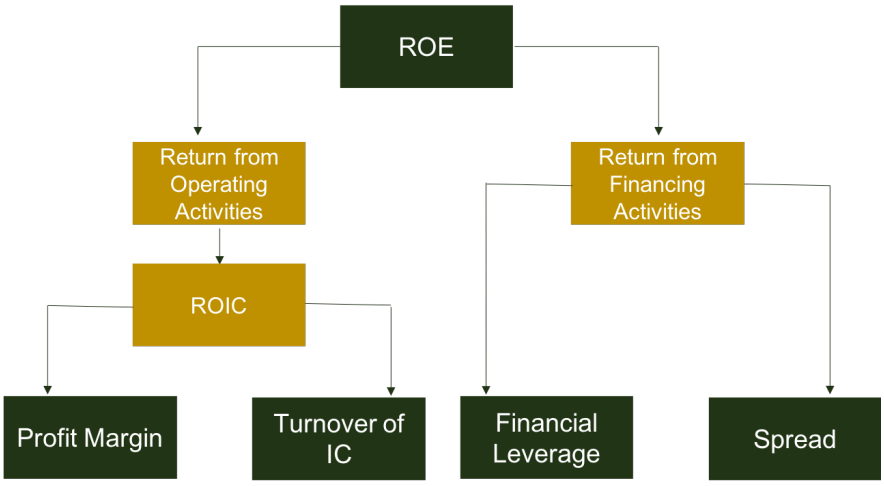

Figure 12: The Du-Pont Model; own creation based on Penman (2010)

All balance sheet ratios used in the upcoming calculations are based on averages. This ensures that we take developments within the year into account (Petersen and Plenborg, 2012).

6.3.1 Return on Invested Capital

As Koller, Goedhart and Wessels (2010) suggest, we start our analysis with the return on invested capital (ROIC) which measures the overall profitability of operations (Petersen and Plenborg, 2012). It is the best way to measure the company's capability to exceed the cost for capital it has invested (Koller, Goedhart and Wessels, 2010). The ratio expresses the operating profit as a percentage of capital invested in a firm (Petersen and Plenborg, 2012).
The formulas for pre- and post-tax ROIC are as follows:

$$ROIC_{after\ tax} = \frac{NOPAT}{Average\ invested\ capital} * 100$$

$$ROIC_{before\ tax} = \frac{EBIT}{Average\ invested\ capital} * 100$$

A high rate of return is favorable for every company because it will, ceteris paribus, lead to a higher estimated company value (Petersen and Plenborg, 2012). A high ROIC positively affects the economic value added (EVA) for example which will be the main input factors of our valuation in chapter 8.
From an investor's perspective, it is more attractive to lend money to companies with a high ROIC as they can convert many of this lent and invested capital into profits. Consequently, the company can obtain cheaper financing (Petersen and Plenborg, 2012).

In general, ROIC is a great measure to understand the firm's value creation potential through its operations. However, some factors have to be considered when interpreting ROIC.
These factors include previously identified differences in accounting policies. Since we were not able to adjust data from 2012, the profitability measures from 2012 might be biased.

Additionally, ROIC does not take into account the age of assets. Since assets are depreciated on a straight-line basis, the return on invested capital is usually very low in the beginning and the more the asset is depreciated, the lower the invested capital and the higher the return. Thus, compared to the internal rate of return (IRR), ROIC might be biased. However, ROIC as the accounting equivalent to IRR is based on realized figures rather than prospects and is thus a more reliable ratio (Petersen and Plenborg, 2012).

A further factor we consider is the product lifecycle. Spending of capital and thus the level of ROIC depends on the stage a company is at. The introduction and growth phases are usually very capital intensive whereas mature companies can collect the gains of their investments. Thus, we take into account the level of new products and technologies when choosing comparable peers (Petersen and Plenborg, 2012).

The after-tax ROIC of 3,27 percent in 2017 indicates that Carlsberg is able to generate a return of 3,27 ore for each Kroner invested in operations.
The development of Carlsberg's ROIC before and after tax from 2012 until 2017 is illustrated in figure 13.

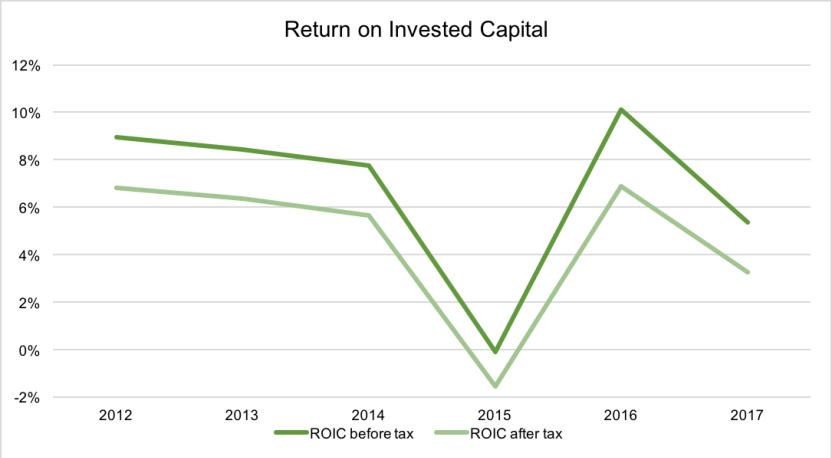

Figure 13: Development of ROIC between 2012 and 2017; own creation

From 2012 until 2014 both ROIC before and after tax constantly decrease, overall by a bit more than 1 percent. In 2015 ROIC drastically sinks. It is just below 0 percent which means that Carlsberg is not able to generate a return on invested capital.
Carlsberg justifies the decline with the difficult macroeconomic circumstances in Eastern Europe. These challenges result in high impairments of the Russian brands which we include in our NOPAT calculation and thus are reflected in the ROIC. Other factors influencing the expenses for special items which amount more than DKK 8bn in 2015 are measures taken under the *Funding the Journey* initiative. Restructuring costs amount more than DKK 500 million (Carlsberg annual report, 2015).

After 2015 the company is able to recover and the after tax ROIC increases back to its initial value of around 6 to 7 percent in 2016. One of the reasons for this improvement is the disposals of non-core assets within the SAIL'22 initiative that reduce fixed assets and thus contribute to this improvement. Other sources of improvement are the efficiency improvements including simplification and re-movement of duplication in processes (Carlsberg annual report, 2016).

In 2017, ROIC after tax drops again by more than 3 percent. Again, the reason for this decrease in operating profitability is an increase in expenses for special items, mainly related to restructuring activities. Further non-core assets, such as the subsidiaries Carlsberg Uzbekistan, Nordic Getränke and a number of entities in China as well as associates (United Romanian Breweries and Malterie Soufflet) are disposed. In addition, the previously mentioned PET downsizing in Russia causes a significant write-down of the Baltika brand and additional restructuring activities in Russia (Carlsberg annual report, 2017).

The graph illustrating the return on invested capital before tax has the same development as return on invested capital after tax. This shows that taxes do not affect ROIC in any of the last 5 years.
This development of ROIC makes clear that the impairment of brands is a strong value drivers of the company's operating profitability. Therefore, transforming the business by improving the brand image and increasing availability in Russia is of main importance to decrease these drops in ROIC in the future.

The development of ROIC helps us to understand how the company is doing compared to previous years. However, it does not give us an indication whether the level of ROIC is satisfactory at all (Petersen and Plenborg, 2012). To find out not only if ROIC is better or worse than in previous years but whether it is good at all, Petersen and Plenborg (2012) suggest two options:
The first option is to compare Carlsberg's ROIC to competitors. Since Bloomberg calculates performance ratios with very similar values to ours, we derive the data from Carlsberg's competitors from Bloomberg's database. To be consistent, we also use the ROIC Bloomberg calculations for Carlsberg. We assume Bloomberg takes into account varying accounting policies within the firms. Within our analysis of Porter's Five Forces, we define Heineken, AB InBev and CRB as Carlsberg's competitors as they compete with similar products in Carlsberg's markets. However, when comparing performance, we exclude AB InBev because the company has a much wider geographical reach than Carlsberg and a yearly revenue which is around six times as high as Carlsberg's revenue, amounting to DKK 351 billion in 2017 (AB InBev annual report, 2017). Thus, defining AB InBev as a peer would bias our interpretation. Hence, in the following we compare the performance ratio of Carlsberg with Heineken und CRB to understand the level of performance.

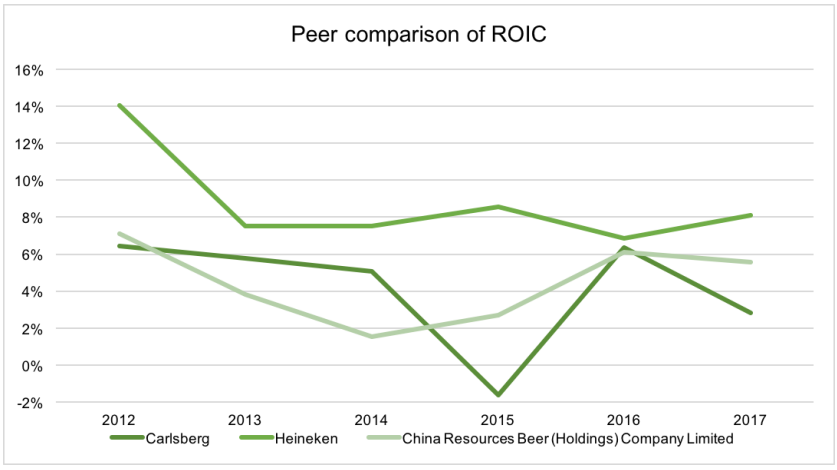

Figure 14: Peer comparison of ROIC; own creation, data derived from Bloomberg

Figure 14 shows that compared to its peers, Carlsberg's operating performance has improvement potential. Especially Heineken's operating performance is much more stable. Additionally, both

companies' ROIC show an upward trend, whereas Carlsberg's ROIC is decreasing again. This again supports the need for the restructuring initiative SAIL'22.

The second alternative to evaluate the level of ROIC proposed by Petersen and Plenborg (2012) is to compare Carlsberg's ROIC with the weighted average cost of capital (WACC) to debt- and equity-holders. WACC is the return on assets for capital to debt- and equity-holders, i.e. what investors claim for investing their money within the Carlsberg Group. If the operating profit measured as percentage of invested capital exceeds the cost for equity- or debt-holders, the company creates excess return which means value for shareholders. If ROIC however is lower than WACC, then the costs for equity- or debt-holders are higher than the return (Petersen and Plenborg, 2012).
Based on our calculations in chapter 8, we assume a WACC of 6,59 percent.
Figure 15 illustrates the relation of ROIC to WACC at Carlsberg in the last 5 years

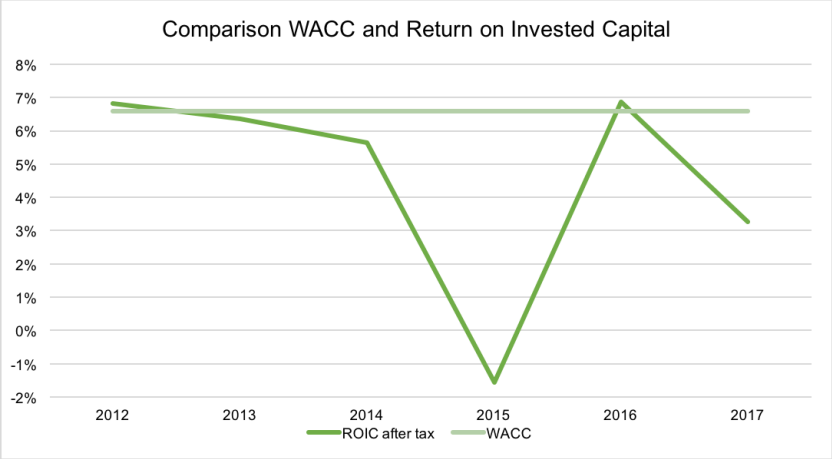

Figure 15: Comparison of WACC and ROIC; own creation

Figure 15 shows that ROIC after tax is almost constantly lower than WACC. Only in 2012 and 2016, ROIC after tax is slightly higher than WACC. However, all in all we can conclude that ROIC is at a very unfavorable level as it does not create value to debt- and equity-holders.

ROIC alone does not explain whether the firm's operating profitability is driven by an improved revenue-to-expense relation or better utilization of capital. As figure 12 illustrates, ROIC has two value drivers: The profit margin and the turnover rate of invested capital. Consequently, ROIC can be decomposed into these two ratios (Petersen and Plenborg, 2012):

$$ROIC = Profit\ margin * Turnover\ rate\ of\ invested\ capital$$

Profit margin

The profit margin expresses the profitability of every Kroner of sales by setting the operating profit in relation to revenue. Thus, profit margins are the percentage of sales that yield profit (Penman, 2010). A high profit margin is therefore preferable (Petersen & Plenborg, 2012). The ratios are calculated as follows:

$$Profit\ margin_{before\ tax} = \frac{EBIT}{Net\ revenue} * 100$$

$$Profit\ margin_{after\ tax} = \frac{NOPAT}{Net\ revenue} * 100$$

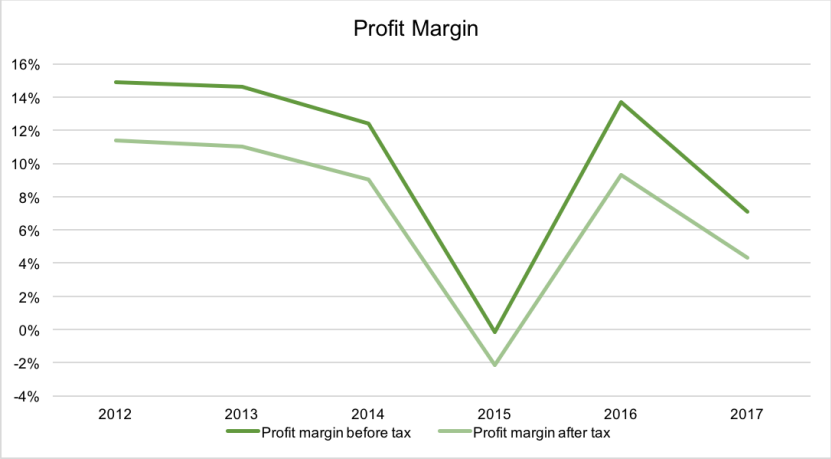

Figure 16: Carlsberg's profit margin between 2012 and 2017; own creation

The after-tax profit margin of 4,34 percent in 2017 expresses that Carlsberg generates 4 ore on each Kroner of revenue.

Turnover rate of IC

The turnover rate describes the company's capability to make use of invested capital. The rate expresses how quickly invested capital is turned into revenue (Petersen and Plenborg, 2012). The turnover rate of invested capital is defined as:

$$Turnover\ rate\ of\ invested\ capital = \frac{Net\ revenue}{Average\ invested\ capital}$$

Similar to the profit margin, a high turnover rate is favorable (Petersen and Plenborg, 2012).

The turnover rate of 0,75 conveys that Carlsberg has tied up invested capital in 477 days or that for each Kroner Carlsberg has invested in operation (net operating asset) a sale of 75 ore is generated (Petersen and Plenborg, 2012).

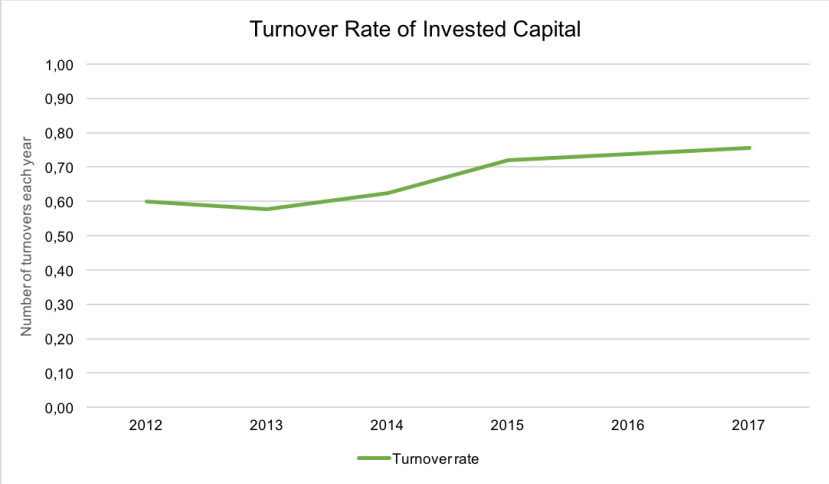

Figure 17: Carlsberg's turnover rate between 2012 and 2017; own creation

Other than the profit margin, the turnover rate remains almost constant and is not affected by the high expenses on special items in 2015 and 2017 as only invested capital and net revenue before subtracting the expenses are considered. The turnover rate is constantly increasing which means that the Carlsberg is able to achieve tighter cost control throughout the value chain while invested capital is held at a minimum (Petersen and Plenborg, 2012).

The decomposition of ROIC into profit margin and the turnover rate of invested capital reveals that ROIC is majorly impacted by the profit margin, i.e. the revenue expense relation (Petersen and Plenborg, 2012). While the turnover rate remains almost constant, the development of the profit margin looks very similar to the development of ROIC. The development of ROIC can therefore be explained by changing ratios of earnings to expenses. This is in line with the conclusions we draw when analyzing the development of ROIC in the beginning of the chapter. Mainly the disposal of non-core and not as profitable assets were the reason for the increase of ROIC in 2016 which increases the earnings to expense ratio. Reduction of costs through complicated or duplication processes as well as the lay-off of excess white-collar workers supported the increase of profit margin in 2016.

6.3.2 ROE

Return on equity (ROE) is the measure of profitability from the stockholders' perspective. It measures the impact of financial and operational leverage on profitability from the owners' perspective

(Petersen and Plenborg, 2012). Following the Du Pont model, we calculate ROE based on ROIC and other financial drivers:

$$ROE = ROIC + Spread * Financial\ Leverage$$

where

Spread $= ROIC - NBC$

Financial leverage $= \frac{avg.NIBD}{avg.BVE}$

The second part of the formula includes financing activities (hence the differentiation in the DuPont model) and shows the effect of financial leverage on overall profitability (Petersen and Plenborg, 2012).

Financial leverage is the degree to which net operating assets are financed by debt or by equity. For example, if net operating assets are financed by debt, financial leverage increases (Penman, 2010). Carlsberg's financial leverage is increasing until 2015. In 2015, Carlsberg has the highest share of assets financed through debt with a financial leverage ratio of 0,76. In 2016 and 2017 the financial leverage decreases. This is in line with Carlsberg target to reduce financial leverage within the key strategic choice *Increase Shareholder Value* of SAIL'22. Carlsberg measures financial leverage as net debt divided by EBITDA and aims at a leverage below 2,0x. This goal is achieved in 2017, when the net debt/EBITDA ratio declined to 1,45x (Carlsberg annual report, 2017)[34].

The spread is the difference between ROIC and net borrowing costs (NBC). NBC are the costs a company has for taking debt. They are calculated as follows:

$$NBC_{after\ tax} = \frac{Net\ financial\ expenses_{after\ tax}}{average\ NIBD} * 100$$

A positive spread means that the amount the company pays to borrow is smaller than the return the company is able to generate with these borrowings. Therefore, a high spread is favorable (Petersen and Plenborg, 2012).

In our case, the spread is positive in every year except for 2015. This means that in most of the years, Carlsberg's financial leverage has a positive effect on the shareholder's return. When the spread is positive ROE increases linearly with financial leverage. However, the risks increase simultaneously (Petersen and Plenborg, 2012).

[34] Development of Carlsberg's financial leverage in appendix 35

In 2015 the spread is negative which means that borrowing costs are higher than return on invested capital. A high financial leverage, i.e. financing through debt, is now unfavorable and has a negative effect on the ROE (Penman, 2010). In figure 18, the effect of financial leverage on ROE can be seen.

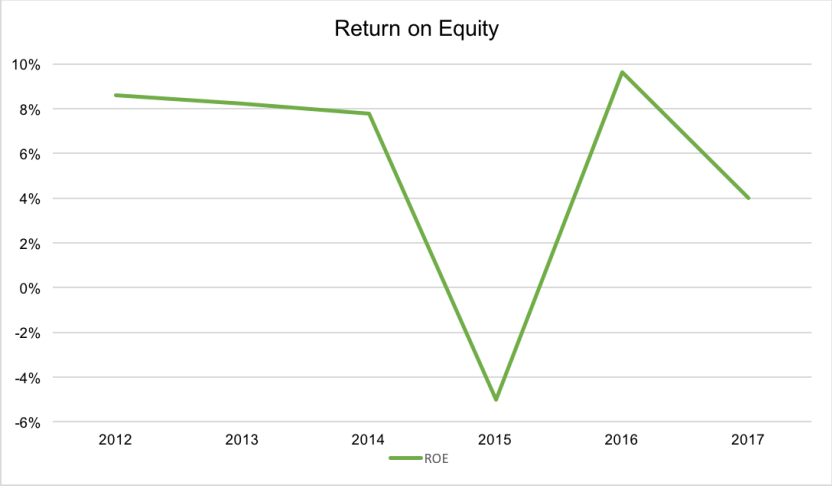

Figure 18: Carlsberg's return on equity between 2012 and 2017; own creation

Since earnings as well as equity from subsidiaries in which Carlsberg has minority shares are included in the underlying data, the calculated ROE does not reflect exactly the ROE for investors in the parent company. Therefore, we exclude the value coming from minority interests and calculate the ROE at the parent level. The development of the ROE excluding minority interests shows a very similar trend, yet the outliers are more extreme[35].

6.4 Effect of SAIL'22 on Operating Performance

Since one key strategic choice is to drive shareholder value and improve operating performance like ROIC, we will now analyze how SAIL'22 affects Carlsberg's operating performance.

To make the effect quantifiable, we use a framework derived by Smart and Waldfogel (1994). As already explained in chapter three, the formula takes two factors into account: The first part of the formula calculates the difference between the current performance and the performance that was expected before the restructuring started or even was announced. The difference should then reveal the effect of the operational restructuring initiative. In the second part, the formula takes into account macro-economic challenges that were outside the company's control and thus affected the whole industry (Smart and Waldfogel, 1994). To exclude these factors, we calculate the first part of the formula for a control company which did not conduct a restructuring initiative during the considered period. Since the difference cannot be caused by restructuring activities, we assume it is initiated

[35] Calculation and development of ROE, parent in appendix 36

from unexpected macroeconomic challenges. This difference is then deducted from the initially calculated restructuring effect.

The first part of the formula incorporates the performance of the current year, i.e. 2017 as well as the performance that was expected before the initiative was announced. In Carlsberg's case, it thus is reasonable to use the performance ratio that was expected for 2017 in 2014, i.e. three years ago. Since we cannot forecast the performance for 2017 objectively from the perspective of 2014, we used external forecasts from 2014. We derived this data from Thomson Reuters (Datastream, 2018). However, forecasts from 2014 for 2017 were only available for ROE. Other operational performance measures such as ROIC or OM were not forecasted and thus cannot be used. Since the profitability analysis earlier in the chapter showed that the trends and differences within the three ratios (ROE, ROIC and OM) are similar, we assume that the effects of restructuring, i.e. the results from this calculation, would be similar as well and the effect on ROE reflects the effect on Carlsberg's total operating performance.

To be consistent throughout the calculation and only use comparable data, we use the ROE for 2017 that is calculated by Thomson Reuters. However, the current as well as historical returns on equity calculated by Thomson Reuters are exactly the same returns we calculated when excluding minority interests. Thus, the calculation is in line with our prior analysis and matches our assumptions on what should be included as operating expense.

Similarly to previous chapters, we choose the control companies based on product offering, company size and geographic reach and deduct the values from Heineken as well as CRBH from Carlsberg's value.

Hence, we use the following formulas to calculate the restructuring effect on return on equity (REROE):

$$REROE_1 = \left[ROE_{2017}^{Carlsberg} - E_{2014}(ROE_{2017}^{Carlsberg})\right] - \left[ROE_{2017}^{Heineken} - E_{2014}(ROE_{2017}^{Heineken})\right]$$

$$REROE_2 = \left[ROE_{2017}^{Carlsberg} - E_{2014}(ROE_{2017}^{Carlsberg})\right] - \left[ROE_{2017}^{CRBH} - E_{2014}(ROE_{2017}^{CRBH})\right]$$

A result of 0 percent would mean that the restructuring does not have an impact of Carlsberg's operating performance. When using Heineken as the control company, we receive -6,83 percent as result with CRBH as control factor the result is -5,36 percent. This means that the restructuring initiative has a negative effect.

When taking a closer look at the calculation it becomes clear that the reason for this result is that Carlsberg's ROE is much lower than expected (8,9 percent expected, 2,58 percent in 2017) whereas Heineken exceeds the expectations and CRBH achieves a ROE in 2017 that is close to the ROE that was expected in 2014.
However, earlier in this chapter we identified that the main reason for the weak operating performance of Carlsberg are the impairments of brands which are included in ROE. These impairments are primarily caused by the challenging macroeconomic circumstances in Russia. Neither Heineken nor CRBH has a comparably high share of sales in Russia. Therefore, in our case the formula fails to exclude uncontrollable macroeconomic challenges through control companies. Yet, it is very difficult to find more suitable control companies as Carlsberg is the market leader in Russia and no other brewery suffers comparably from the negative economic effect.

Therefore, we decide to conduct the calculation for 2016. Here, we use the ROE from 2016 as the current performance measure and deduct the ROE that was expected for 2016 in 2014.
This results in a positive effect of restructuring. With Heineken as a control company, the result is 3,52 percent, with CRBH as control company we receive a result of 1,768 percent. This means that the restructuring initiative SAIL'22 increased the return on equity by around 2-3 percent and thus has a positive effect on Carlsberg's operating performance[36].

However, it must be considered that the restructuring process is still in an early stage and this result might change throughout the further implementation of activities.

[36] Calculation of REROE in appendix 37

7 Forecasting

In this chapter, we change the focus of our analysis from a historical view to a forward-looking perspective to forecast Carlsberg's future financial performance. Forecasting is a crucial part of the valuation process as the valuation relies on the results of the forecasting (Petersen and Plenborg, 2012). The in this section developed pro forma income statement and balance sheet follow the same approach as the reformulated income statement and balance sheet from section 6.2, as again the separation of operating and financing activities is important to determine the driving force behind value creation. Operating activities are therefore fundamental when forecasting future earnings.

The forecasted numbers are based on the findings and conclusion of the strategic and financial analysis of the company as well as our assumptions of the restructuring program SAIL'22. Therefore, the forecast has to be consistent and incorporate risk and success factors as well as key drivers of profitability.

The forecasting is separated in three periods, the *historical period* which is used as a foundation as it gives insights into the historical trends and value drivers. The *explicit forecasting period* reflects the future development of each value driver. The drivers are expected to change during this period. The *terminal period* refers to a 'steady state' setting and represents Carlsberg's long-term growth capability (Petersen and Plenborg, 2012).

There are various ways to conduct forecasting. We decided to use a sales-driven forecasting approach as the different accounting items develop according to the expected level of activity (Petersen and Plenborg, 2012). As previously mentioned Carlsberg mainly earns money through sales of beer, cider and alcohol free beverages and most expenses are related to the production and selling of those beverages. Therefore, most expenses vary with the level of sales.

7.1 Forecasting Period

Valuation models assume that the entire future is incorporated in their model. However, forecasting is related to a high level of uncertainty and therefore in practice the length of the forecasting period ranges typically between five to ten years. Factors influencing the decision about the length of the forecasting period include market characteristics like growth, industry specifics like intensity of the competition and firm specific factors like age of the company (Peterson and Plenborg, 2012).

We choose a forecast period of six years plus terminal period. This means that our forecast starts in 2018 and ends in 2024. This choice was affected by two factors. Firstly, Carlsberg undertakes the

restructuring program SAIL'22 until 2022 and therefore, we expect changes in our line items in this period. Furthermore, we assume it takes one more year until the effects settle. Secondly, the Group's largest market is Western Europe, a region characterized by a high degree of maturity which indicates that the market growth is steady and does not influence our estimates. Additionally, Carlsberg is a mature company and we do not expect big increases in growth. Therefore, we believe that a forecasting period of seven years is an appropriate choice.

7.2 Future Investments

Before starting with the forecasting, we would like to discuss whether Carlsberg will engage in further acquisitions, as this will influence the growth rate of the Group.

As described in section 4.1 Carlsberg has a long history of acquisitions. A major part of the company's growth can be attributed to acquisitions of local breweries to enter markets and gain market share. However, the strategic initiative SAIL'22 shifts the focus towards the development of the company's existing products. Particularly, the sub-initiative *Strengthen the Core* aims at improving the performance of the core beer through streamlining the portfolios of local and international beer brands and increase investments in their key brands. This indicates that Carlsberg has no ambitions to pursue future acquisitions.
Additionally, the company states in their *Position for Growth* initiative that growth is a major factor for future revenue increases. Nonetheless the strategy does not indicate the intention to grow through acquisitions. The company rather intends to grow in their mature Western European market through improving their portfolio of craft and specialty as well as alcohol-free beers. This improvement will either be executed through the development of new brews enabled by increased R&D efforts and through expanding the geographical reach of their existing products. Secondly, Carlsberg pursues the strategy to grow in Asia by focusing on premiumization. Thirdly, growth should be generated through expanding the geographical reach in big cities, which will be implemented mainly through increased export and licensing.
Additionally, Carlsberg did not undertake any acquisitions for their operating business since the launch of SAIL'22 which supports our assumption that future growth will be solely generated through organic growth (Carlsberg annual report, 2017).

This is why, we assume that Carlsberg will not undertake major investments in the forecasting period.

7.3 Pro Forma Income Statement

In the following the forecasted pro forma income statement, balance sheet and cash flow statement of the Carlsberg Group are developed[37] and the rationale behind the expected developments of the individual financial items are explained.[38]

7.3.1 Revenue

The focus of our revenue forecast is on the beer market as in 2017 84 percent of the Group's total pro rata volume (133,3 million hl) was generated from beer while 16 percent was generated from soft drinks, mineral water and other non-beer beverages (Carlsberg annual report, 2017).

The revenue forecast is broken down in more detail, due to the fact that Carlsberg operates in three geographical regions with different market characteristics and macroeconomic influences and conditions. It is difficult to estimate sales of the whole Group because sales in some regions may face declines while other regions show increasing sales figures.
In addition, as previously discussed in section 7.2 we do not include acquisitions in our revenue estimates, our revenue forecast[39] is driven by organic volume growth and price/mix changes as well as the underlying market growth (Petersen and Plenborg, 2012).

The Western European beer market is characterized by a high degree of maturity, which translates into a high exposure to low growth rates. In fact, the beer consumption in volume terms is predicted to increase 0,3 percent on average in the forecasting period (Euromonitor, 2018). We have taken the market characteristic into account when estimating Carlsberg's organic volume growth which we believe is around 0,1 to -0,1 percent in the forecast period.
Also, Carlsberg faces a difficult pricing environment in Western Europe due to high competition. A price increase would therefore result in lower volume growth. However, Carlsberg has managed to increase prices in 2017 without losing volume share, therefore we estimate a yearly price increase of 0,5 percent. We base our positive estimates of the price/mix on Carlsberg's SAIL'22 strategic objectives which seek improvements through innovations in the beer market, namely to focus on categories like craft and specialty as well as alcohol-free offerings which can be sold at higher prices. Due to the cautious expected volume and price/mix growth the organic growth in Western Europe is estimated to be steady between 0,3 and 0,6 percent.

[37] Pro forma income statement, balance sheet and cash flow statement in appendix 40, 41 and 42
[38] Value driver map in appendix 38
[39] Revenue forecast in appendix 39

Carlsberg faces an unfavorable macroeconomic environment in Eastern Europe. Especially in their main market Russia, Carlsberg had to cope with high volume decreases and a loss in market share by 270 basis points to 31,9 percent in 2017 due to changed market dynamics following the PET ban. Furthermore, the Russian market is characterized by low pricing power and high competition. In 2017 Carlsberg has traded positive price/mix for market share loss (Carlsberg annual report, 2017). We believe that Carlsberg continues to increase their price/mix until 2023 by around 2,6 to 3 percent every year. Moreover, we are of the opinion that Carlsberg is able to increase organic volume growth steadily starting in 2018 by 0,2 percent to 2,2 percent in the following years. The increased volume in 2018 can be attributed to the football World Championship hosted in Russia. Additionally, our positive volume estimates are also based on Carlsberg's initiatives in Russia to transform their business within the SAIL'22 program. In total, out organic revenue growth outlook in Eastern Europe is positive, increasing from 3,2 percent in 2018 until 4,3 percent in 2023.

The Asian beer market offers several growth opportunities for Carlsberg. Within SAIL'22 the company focuses on building a diversified portfolio including premium beer to increase sales. In 2017, Carlsberg's largest Asian market China faced a market decline by 1 percent however Carlsberg was able to generate a sales growth of 8 percent due to a positive price/mix and volume growth (Carlsberg annual report, 2017). We believe that the positive results will continue in the future with a growth of organic revenue between 5 and 6,6 percent. The organic revenue growth is mainly driven by an increase in price/mix and less by organic volume growth.

Our estimates of the three operating regions yield in the Group's net revenue forecast. As previously discussed we are of the opinion that organic revenue growth for all three regions is positive throughout our forecast period. The positivity reflects Carlsberg strategic efforts within the SAIL'22 initiative. Especially the cost cutting through *Funding the Journey* and the thereby generated funds will support the brand and accelerate sales growth.

Despite our positive assumptions, we estimate a negative net revenue growth of 2,1 percent in 2018 which is caused by changes in reporting standards. Starting from 2018 Carlsberg implements IFRS 15 'Revenue from Contracts with Customers' which impacts the company's revenue streams, as it is required to recognize marketing activities with customers as revenue instead of sales and distribution cost. However, the changes only have impact on the revenue and operating cost not on profit. From 2019 onwards we forecast a positive net revenue growth of 2,6 percent slightly decreasing to 1,7 percent in the terminal period.

7.3.2 Cost of Sales and Other Operating Expenses

Cost of Sales as a percentage of net revenue has decreased in the last five years from 46,7 percent in 2012 to 43,8 percent in 2017. Especially since the launch of the efficiency initiative *Funding the Journey* in 2015 cost of sales as a percentage of net revenue decreased by around 1 percent every year. The decrease relates to production efficiency improvements initiated by *Funding the Journey* in the framework of supply chain efficiencies which aims to reduce material and non-material cost per hl of beer. Furthermore, the reduction in cost of sales can be attributed to volume declines and disposals of breweries. *Funding the Journey* is expected to deliver further savings in 2018, therefore we estimate the cost of sales as a percentage of net revenue will decrease by 0,7 percent in 2018 and from 2019 onward by 0,2 percent. We expect a modest decrease of cost of sales every year as this line item mainly comprises cost of materials (50 percent) including raw material and packaging and the past years have shown that cost of sales are affected by overall cost inflation which are likely to offset the cost savings through efficiency programs.

Sales and distribution expenses comprise marketing, sales and distribution expenses in equal shares. The past five years show stable sales and distribution expenses amounting around 27-28 percent of net revenue. In the future, we believe that the *Funding the Journey* initiative will impact sales and distribution expenses through the improvements of the supply chain through reducing complexity and manage the network centrally. Therefore, our estimates incorporate a yearly decrease of 0,1 percent.

Administration expenses as a percentage of net revenue increases in the past four years by 1,8 percent. In 2017, the expenses decrease by 0,5 percent which can be attributed to *Funding the Journey* and the layoff of white collar workers. We assume that administration cost decrease by 0,2 percent in 2018 as a result of initiatives related to *Funding the Journey* and *SAIL'22* and will stay constant from 2019 onwards.

Other operating activities only make up less than 1 percent of revenue and include activities not related to Carlsberg's core business like income and expenses from rental properties, restaurants and on-trade loans. We estimate that other operating activities remain constant in the forecasting period.

Income before tax on associates and joint ventures as a percentage of net revenue also makes up less than one percent of net revenue. We assume that the rate will be constant as well.

7.3.3 Special Items

Special items are difficult to forecast as they are normally transitory in nature. However, Carlsberg's special items as a percentage of net revenue are on average 0,4 percent and vary between -0,9 and 2,3 percent. Considering Carlsberg's track record on special items and the strategic initiative SAIL'22 which incorporates several efficiency programs we assume that special items will be lower than the historical average and amount to -0,5 percent of net revenue form 2018 until 2022. For 2023 and the terminal period special items are 0 percent of net revenue.

7.3.4 Depreciation and Amortization

Depreciation as a percentage of property plant and equipment varies in the last five years between 11,6 percent and 20,6 percent. We estimate that depreciation stays constant in our forecast period and predict depreciation is 15,9 percent of property plant and equipment which represents the average of the previous five years and is in line with the depreciation rate of 2017.

Carlsberg's intangible assets consist to more than 90 percent of goodwill and brands. These items are not amortized as in 2004 Carlsberg determined that the value of goodwill and brands can be retained for an unlimited time (Carlsberg annual report, 2004). These items only undertake regular impairment test to evaluate their worth. The remaining 10 percent of intangible assets include software, land use rights and beer delivery rights. These assets are amortized (Carlsberg annual report, 2017). Amortization is forecasted as a percentage of intangible assets and amortization varies in the historical period between 0,3 and 10,1 percent of intangible assets. In 2015 and 2017 amortization as a percentage of intangible assets is 10,1 and 8,2 percent respectively. These high values relate to the impairment of brands which Carlsberg undertook in both years. The impairments affected brands in Eastern Europe which were conducted due to the troubling macroeconomic environment in Russia and brands in China because of the disposal of entities and the thereby related decrease in volumes sold (Carlsberg annual report, 2015 and 2017). It is very difficult to forecast impairments as they appear on an irregular basis mostly triggered by unforeseeable events. This is why, we did not forecast impairments. The remaining amortization excluding impairment losses amounts to a very small percentage so that we are going to neglect it for our forecast.

7.3.5 Taxes

Carlsberg's effective tax rate in 2017 and 2015 has been negatively impacted by the impairment of brands especially in Russia but also in China. Excluding the impairment effects in both years the tax rates amount to 29 percent. These tax rates are in line with the years 2012, 2013, 2014 and 2016 where the effective tax rate was 23 percent, 24,1 percent, 26,1 percent and 33 percent, respectively. We follow the argument in section 6.2.5 and apply the marginal tax rate of 22 percent which is close

to the effective tax rate of 29 percent. We use the same tax rate on operating income and net financial expenses.

7.3.6 Non-Operating Items

Instead of forecasting financial income and financial expenses individually, the value driver net financial expenses as a percentage of net interest-bearing debt (NIBD) is used. The value driver ranges from 4,6 to 2,7 percent in the past five years. On average net financial expenses amount to 3,6 percent. In line with Carlsberg's objective to reduce financial leverage, we assume that net financial expenses will reduce by 0,1 percent from 2017's 2,7 percent and remains constant at 2,6 percent for the following seven years.

7.4 Pro Forma Balance Sheet

7.4.1 Investment Drivers

Intangible assets

Following our argument from section 7.3.1 where we base our estimates solely on organic growth, intangible assets as a percentage of revenue are assumed to stay constant in the forecasting period. The reasoning behind this argument is that a company only changes its goodwill and acquired intangibles when the price paid for its acquisitions exceeds the target book value (Koller, Goedhart and Wessels, 2010). As we determined in section 7.2 we do not expect Carlsberg to undertake acquisitions in the forecasting period.

Property, plant and equipment (PPE)

Property, plant and equipment as a percentage of net revenue constantly decreased from 50,3 percent to 39,4 percent from 2012 to 2015. The decrease can mainly be explained by the disposal of entities. Especially, in 2016 and 2017 the decrease in property, plant and equipment can be attributed to disposal of non-core assets as part of structural changes under *Funding the Journey*. As the *Funding the Journey* program will end in 2018 we expect a decrease of 0,4 percent in property, plant and equipment as a percentage of net revenue in 2018. The years following 2018 are characterized by a constant level of 39 percent.

Other non-current assets

Other non-current assets include investments in associated, receivables and joint ventures (Carlsberg annual report, 2017). Other non-current assets as a percentage of revenue remained fairly constant the last four years, that is why we assume the investment driver to remain at the level of 11,1 percent like in 2017.

Net working capital

The historical investment drivers for inventories as a percentage of net revenue are constant and range between 5,8 and 7,4 percent. When forecasting the inventory level, we take the *SAIL'22* initiative into account which includes the strategy *Excel in Execution* aiming to optimize SKU's that create unwanted inefficiencies throughout the supply chain. This optimization is supported by the development of a tool that manages the supply chain more efficiently and offers transparency which will help to better plan inventory levels (Carlsberg annual report, 2016). Therefore, we assume the inventory level as a percentage of net revenue to decrease by slightly from 2018 to 6,1 percent and then to remain constant.

To forecast trade receivables as a percentage of net revenue, other current assets as a percentage of net revenue, deferred tax liabilities as a percentage of net revenue, trade payables as a percentage of net revenue and other liabilities as a percentage of net revenue we take the average of the previous five years and apply it to our forecast period. We chose this approach as the historical level of these line items is fairly constant and we do not identify any factors that could lead to changes in the future.

7.4.2 Financial Drivers

NIBD is forecasted as a percentage of invested capital excluding intangible assets. Intangible assets are in this calculation excluded as like previous mentioned we assume that this line item remains constant. We assume that net-interest bearing debt remains constant in the forecasting period and amounts to 260 percent of invested capital excluding intangibles.

7.5 Pro Forma Cash Flow Statement

The result of the pro forma cash flow statement is most important in the forecasting process as it yields the free cash flow to the firm (FCFF) which is a crucial input for the DCF model which is applied in the preceding chapter (Koller, Goedhart and Wessels, 2010). FCFF is defined as following:

$$FCFF = NOPAT + Non - cash\ operating\ expenses - Investments\ in\ Invested\ Capital$$

We calculate NOPAT in our pro forma income statement. In order to receive cash flows from operations, non-cash operating expense have to be added/deducted which include depreciation and amortization and changes in net working capital. To calculate free cash flow to the firm investments in invested capital have to be deducted from cash flows from operations.

When deducting net financial expenses and changes in NIBD we receive free cash flow to equity. This amount is assumed to be paid out as dividends to shareholders. The pro forma cash flow statement can be found in appendix 42.

7.6 Budget Control

The assessment of the estimates of the pro forma statements is an important step in the forecasting process. Therefore, we will assess the future development of the most important ratios analyzed in section 6 as well as the expected free cash flow to the firm[40].

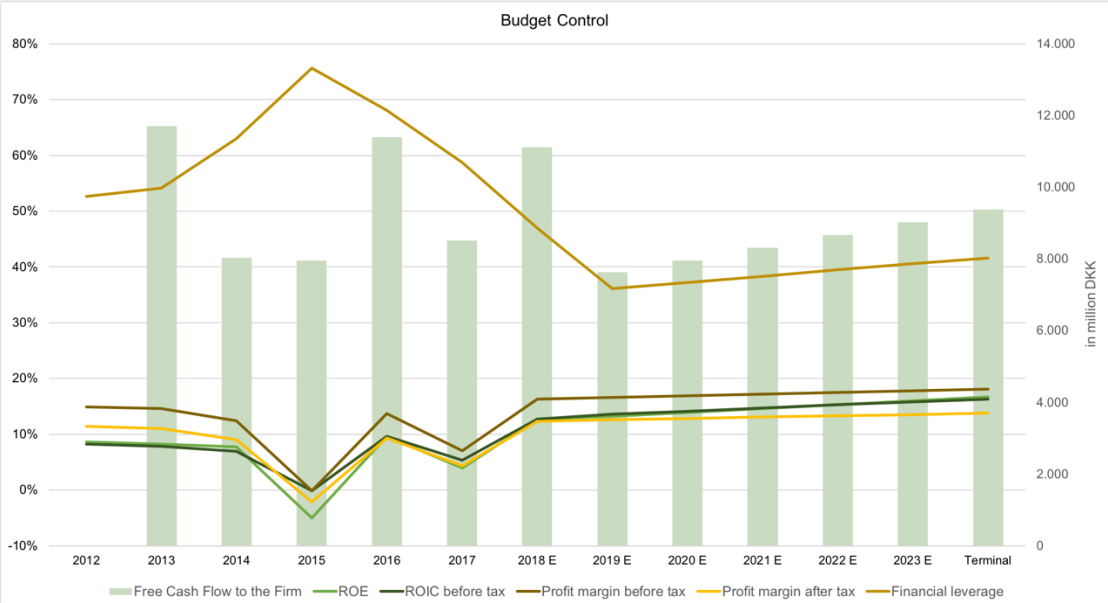

Figure 19: Budget control; own creation

The figure illustrates that FCFF experiences a peak in the first forecast year. This can be observed because there are only little investments in non-current assets in 2017. In 2017, the FCFF decreases again to the normalized level and growth then every year. In line with Carlsberg's objective to decrease financial leverage, we assume a lower financial leverage in the forecast period than in the historical period. This is due to the fact, that we assume NIBD to decrease in the future as the maturity of non-current borrowings are expected to expire without efforts to renew them.

We forecast the pre-tax ROIC to increase every year in the forecast period. This is in line with our assumptions that SAIL'22 will decrease operating cost. Furthermore, the figure shows that the level of ROIC from the historical period to the forecast period increases severely. This is due to the fact that NOPAT and EBIT respectively increased in 2018 as we do not expect further impairment losses and invested capital decreased. The same can be observed when analyzing the EBIT and NOPAT profit margin. The increase in 2018 compared to 2017 can be attributed to the increase in EBIT and NOPAT. The level improvement of ROE in the forecasting period compared to the historical period can be attributed to increases in net profit.

[40] Overview of different factors considered in budget control in appendix 43

8 Valuation

This section will focus on calculating the value of Carlsberg. It builds upon data and results determined in previous chapters. The outcome of this chapter will be the enterprise value of Carlsberg as of December 31st, 2017.
As explained in chapter 2, we will use the Discounted Cash Flow to Firm model and Economic Value Added approach to estimate the enterprise value.
Firstly, we will discuss the theory behind the chosen valuation models. Secondly, we will divide the formulas into their input factors and finally, we will calculate the enterprise value of Carlsberg. To interpret the result, we compare our estimated share price to the actual share price and analyze its development.

8.1 Explanation of Chosen Valuation Models

To get a realistic valuation of Carlsberg and answer the research question 'What is the estimated value per share of Carlsberg as of 31st of December 2017 considering the restructuring initiative SAIL'22?', we use the present value approach to calculate Carlsberg's value and share price.

For our calculations, we decided to focus on two models: The DCF and the EVA model. More specifically, we apply the Discounted Cash Flow to the Firm model (DCFF) because we aim to estimate the enterprise value as described in chapter 2. Other than the Discounted Cash Flow to Equity (DCFE), the DCFF does not include net financial expenses after tax and changes in NIBD. Therefore, the model estimates the market value of shareholders' equity as well as the estimated market value of net interest-bearing debt and consequently reflects the market value of all of Carlsberg's operations. Having the enterprise value, we can easily calculate the value per share (Petersen and Plenborg, 2012).
Both approaches discount future income streams or cash flows to present value with a discount factor that takes into account the time value of money and the risk connected to the income. As discussed in chapter 2, these two approaches provide several advantages and match the aim of our valuation best (Petersen and Plenborg, 2012).

The DCFF defines the value of a company as the present value of all future free cash flows (Petersen & Plenborg, 2012). The free cash flows to the firm consist of the cash that is left after taxes are paid, after reinvestment needs are met and before debt payments are made (Damodaran, 2010).
Besides the future cash flows the return on assets, also called weighted average cost of capital (WACC), affects the market value of a company (Petersen & Plenborg, 2012). It is the rate at which the cash flows are discounted and reflects the cost of financing from all sources of capital

(Damodaran, 2010). Higher future cash flows and a lower cost of capital thus have a positive effect on the enterprise value (Petersen & Plenborg, 2012). Since we are not able to project cash flows to infinity, we use the following two-stage formula:

$$EV_0 = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{WACC - g} * \frac{1}{(1+WACC)^t}$$

The EVA approach is constructed very similarly to the DCFF model and estimates the enterprise value of a company as well. It uses the initial invested capital which is the book value of equity plus net interest-bearing debt and adds the discounted future EVA's. Thus, opposed to the DCFF model, the EVA model relies on accrued accounting data. It is a so-called 'excess return approach' (Petersen and Plenborg, 2012).

$$EV_0 = Invested\ capital_0 \sum_{t=1}^{\infty} \frac{EVA_t}{(1+WACC)^t} + \frac{EVA_{n+1}}{WACC - g} * \frac{1}{(1+WACC)^t}$$

Both models are two-staged and consist of a budget period and a terminal period. The terminal period entails our estimated long-term growth rate which we derived from the strategic and financial valuation. We assume a steady state from where on growth, margins, WACC and capital turnover are constant.

Both valuation methods are based on the same inputs and should therefore yield the same result (Petersen and Plenborg, 2012).

To calculate DCFF and EVA we need several inputs, such as the pre-debt cash flows to all suppliers of cash, the different EVA-values, the long-term stable growth rate and a discount rate (Damodaran, 2010; Petersen and Plenborg, 2012). These input factors are elaborated on in the chapters 8.3-8.4. After that, the enterprise value is calculated using the two models.

In the following, we explain the assumptions we make when valuating Carlsberg's value.

8.2 Assumptions

To calculate Carlsberg enterprise value we need several inputs. Since none of them are directly observable we have to make numerous different assumptions and approximations (Koller, Goedhart and Wessels, 2010). Beside the specific assumptions we have to come up with concrete numbers

within the models, the whole calculation of value lies under three main assumptions that are followed throughout the chapter.

We treat Carlsberg as going concern, i.e. continuing its operations at the end of the forecast period. This treatment enables us to estimate the value in the terminal period by assuming the income streams or cash flows will grow at a constant rate until infinity (Damodaran, 2010).

We additionally assume clean surplus accounting. This means that all changes in shareholder equity that do not result from shareholder transaction, e.g. through payment of dividends or share repurchases, are reflected in the income statement. Our last assumption, as mentioned in chapter 7, is that excess cash is either paid out as dividends or is reinvested into a project with a return similar to WACC (Petersen and Plenborg, 2012).

8.3 WACC

The weighted average cost of capital (WACC) represents the opportunity costs for investor's that could have invested in other businesses with similar risk. It is also called return on assets or cost of capital. In the valuation WACC is needed to discount the present value of future cash flows and EVA and is therefore used to calculate the enterprise value (Koller, Goedhart and Wessels, 2010).

$$r_a = \frac{NIBD}{NIBD + Equity} * r_d * (1 - t) + \frac{Equity}{NIBD + Equity} * r_e$$

where

Equity = Market value of equity

NIBD = Net interest-bearing debt

r_d = Required rate of return on debt

r_e = Required rate of return on equity

t = Tax rate

When calculating the cost of capital variables needed are the company's capital structure, tax rate, cost of equity and cost of debt. We will discuss these variables in the following paragraphs.

8.3.1 Capital Structure

The capital structure of a company describes the proportion of debt and equity within the firm's total value. To reflect the true opportunity costs of equity- and debtholders, the capital structure should be based on market values instead of book values (Petersen & Plenborg, 2012).

However, the market value of debt is not that easy to identify. Many companies have debt that is not traded and many analysts therefore just use the book value of debt (Damodaran, 2010). We follow

this approach and use the net-interest bearing debt of DKK 29 million calculated in the analytical balance sheet of 2017.

To estimate the market value of equity for Carlsberg, we multiply the current shares price with the number of shares outstanding which are both displayed in the annual report (Damodaran, 2010)[41]. This results in an equity value of DKK 112 million. The proportion of equity is therefore 79 percent and the proportion of debt of 21 percent.

8.3.2 Tax Rate

Tax is an important factor in the WACC formula. The discount rate has to be an after-tax rate because cash flow- as well as EVA-streams within the calculation of the enterprise value are calculated in after-tax terms as well. However, only taxes on operating profit are included in the calculation of FCFF and EVA and benefits generated through interest tax shields are not included. Thus, we have to include them in the cost of capital. Similar to previous calculations throughout the thesis we use the marginal tax rate to estimate the tax shield (Koller, Goedhart and Wessels, 2010; Damodaran, 2010).

8.3.3 Required Rate of Return on Equity

The required rate of return on equity is the return equity holders expect to receive from investing in company shares. The most common way to calculate the cost of equity is through the Capital Asset Pricing Model (CAPM) (Koller, Goedhart and Wessels, 2010).

The basic idea of CAPM is that shareholders only pay the price for risks that cannot be diversified away (Petersen and Plenborg, 2012). These risks are the company specific systematic risks and the CAPM adjusts for these risks by including beta (Koller, Goedhart and Wessels, 2010). Alternatively, the Fama-French three factor model or the Arbitrage Pricing Theory (APT) can be applied to calculate the required rate of return on equity. However, we think that CAPM is the best model because it is based on solid theory about risk and return and not just historical, empirical data (Koller, Goedhart and Wessels, 2010). Additionally, several statistical tests have proven the strong relationship between beta and return (Kothari, Shanken and Sloan, 1995).

The CAPM defines the shareholder's required rate of return as

$$r_e = r_f + ß * \left(E(r_m) - r_f\right)$$

[41] Calculation of the capital structure in the appendix 44

Where

R_f = Risk-free rate

ß = Stock's sensitivity to the market

$E(r_m)$ = Expected return of the market

$E(r_m)-r_f$ = Market risk premium

In the following, we will discuss and estimate the different input factors of the CAPM.

Beta

Beta illustrates the company-specific risk adjustment. It measures the stock's co-movement with the aggregate stock market and thereby represents the extent to which a stock may diversify the investor's portfolio. A company with a beta of one moves exactly with the market. If products are independent of stock market's value, the beta is low (<1). The lower the beta the more independent the stock (e.g. basic consumer foods). On the other hand, companies with a high beta (>1) are very sensitive to the market development and react even stronger than the market. Therefore, the beta drives the stock's expected return: If the beta is low, i.e. there is a protection against economic downturn, investors are willing to pay for it and the return on equity is lower. On the other hand, stocks with high beta and consequently high company-specific risk demand for a high return on equity (Koller, Goedhart and Wessels, 2010).

The beta used in the CAPM is called systematic risk, equity beta, or more commonly known, levered beta. Other than the unlevered beta it illustrates the risk investing in equity compared to the market portfolio. The unlevered beta or asset beta on the other side illustrates the company's operating risk (Petersen & Plenborg, 2012; Koller, Goedhart and Wessels, 2010).

The equity beta has to be estimated since it cannot be observed. To estimate a company's beta, the raw beta can be measured through a regression analysis (Koller, Goedhart and Wessels, 2010). A regression of returns on the Carlsberg stock against the return on a wide equity market index is performed to receive an estimation of beta (Damodaran, 2018B).

As an index for market returns we use the Morgan Stanley Capital International (MSCI) ACWI Index, because it represents the performance of large- and mid-cap stocks across 47 countries and is thus well-diversified. Other than for example the MSCI World Index which is recommended by Koller, Goedhart and Wessels (2010) the MSCI ACWI includes developed as well as emerging markets and thus represent the markets Carlsberg operates in well. At the moment, the index includes over 2,400 index constituents which cover approximately 85 percent of the free float-adjusted market

capitalization in each market (MSCI, 2017). We choose not to use a local market index such as OMX Copenhagen 20 because it is weighted in only 12 industries and thus is not an appropriate index for measuring systematic risk.

We use monthly returns from the last 5 years. In sum, this gives us 57 data points which we think is a good amount to receive a statistically relevant result. We use monthly and not weekly or daily data because too frequent data points could lead to systematic biases (Koller, Goedhart and Wessels, 2010). The monthly stock prices are derived from Bloomberg's database.
When calculating the return of Carlsberg stock and the MSCI Index we include the change in stock price as well as dividends paid by Carlsberg (Damodaran, 2018B).

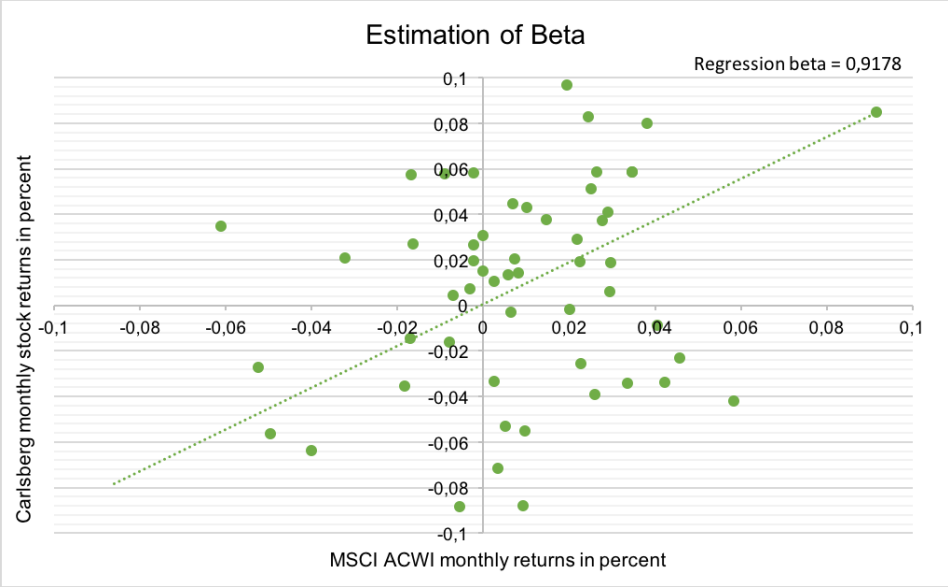

Figure 20: Regression analysis to estimate beta; own creation based on data from Bloomberg (2018)

Our raw beta which is the slope of the line in figure 20 is 0,94. However, this beta is not very precise as the regression's R-square is only 23 percent. This means that only 23 percent of Carlsberg's stock's variance can be explained by the variance in the market. Additionally, the standard error of the estimated beta is 0,23. Therefore, we assume that the true value of beta is between 0,48 and 1,4 and need to make some adjustments to get a more exact estimate of the value (Damodaran, 2018B).
We improve our results by deriving an unlevered industry beta and then levering it to the company's capital structure. The use of industry rather than company-specific beta improves the precision of our estimated beta. Companies in the same industry face similar operating risk and over- or underestimates tend to level out. Damodaran (2018C) calculates an average unlevered beta in the alcoholic beverage industry of 0,64. We use this industry beta and convert it into a Carlsberg-specific

levered beta. Basis for this calculation is Modigliani and Miller's theorem on capital structure (Koller, Goedhart and Wessels, 2010):

$$ß_e = ß_a + (ß_a - ß_d) * \frac{NIBD}{MVE}$$

Since the debt-holders' claim has priority, the beta of debt is usually very low. We thus assume in the following that the beta of debt is zero which leads us to the following formula (Koller, Goedhart and Wessels, 2010):

$$ß_e = ß_a(1 + \frac{NIBD}{MVE})$$

Our calculation results in an adjusted beta of 0,81.

However, there is a high chance that the unlevered industry beta is biased since it includes mainly but not only breweries. Companies that produce other alcoholic beverages are taken into account in Damodaran's calculation of the unlevered beta. Additionally, indirect competitors of Carlsberg who have a very different geographic reach or size are included as well (Damodaran, 2018C).

Another approach to improve our estimate is to smoothen beta through the following formula:

$$Adjusted\ beta = 0{,}33 + 0{,}67 * Raw\ beta$$

This formula smoothens the regression estimate towards the overall average of 1 to reduce extreme observations and adjust them towards the overall average companies are moving towards to (Koller, Goedhart and Wessels, 2010; Damodaran, 1999) Our adjusted beta is now 0,94[42]. The result of a beta very close to 1 means that Carlsberg is sensitive to the market development.

Since we based our estimation on historical data, our beta is backward looking and might be noisy (Damodaran, 2010).

Risk-free rate

The risk-free rate illustrates the return on a portfolio that has no covariance with the market. This means that economic downturns do not present a risk. The returns are guaranteed and thus the expected return is the actual return. The best estimate for the risk-free rate is a portfolio where beta is zero because then the stock is not co-moving with the market at all (Damodaran, 2010; Koller, Goedhart and Wessels, 2010).

The best way to estimate the risk-free rate would be to construct a zero-beta portfolio which is very complex and time-consuming to design (Koller, Goedhart and Wessels, 2010). Therefore, the most common way to estimate the risk-free rate is through a highly liquid, long-term government bond

[42] Calculation of beta in appendix 47

assuming that governments cannot default and will always pay their obligations (Damodaran, 2010). These bonds are not always risk-free but mostly have very low betas. The longer the time horizon of the bond, the better it matches the underlying cash flow stream. However, for example for a 30-year government bond the yield can be impacted by illiquidity issues (Petersen and Plenborg, 2012).

Since the bond has to be denominated in the same currency as its cash-flows to exclude deviations from inflation we choose a 10-year zero-coupon Danish government bond (Koller, Goedhart and Wessels, 2010).

The bond we used (GDGB10YR) yields 0,48 percent in December 2017. However, as the figure in appendix 45[43] illustrates the bonds' returns are very volatile and especially at the end of 2017, the returns were at a very low level. Based on empirical evidence we assume that the return will not stay at this level but rather move back to an average. Therefore, we calculate the average monthly return of the government bond during the last 10 years. This gives us an average risk-free rate of 1,94 percent (Bloomberg, 2018)[44].

Market risk premium

The market premium is the market portfolio's expected return less the return of risk-free bonds. It illustrates the premium investors demand for investing in risky assets instead of saver bonds, e.g. with a risk-free rate (Damodaran, 2010; Koller, Goedhart and Wessels, 2010).
Past market risk premiums are easily calculated as actual data from the past can be used. To estimate the future market risk premium however, is more difficult since the market's expected future returns are very unpredictable (Koller, Goedhart and Wessels, 2010; Mayfield, 2004).

Several analysts and professors have estimated the market risk premium through historical or forecasted data. Their results differ significantly. Until today, there is no certainty about the right determination approach or the true level of risk premium (Petersen and Plenborg, 2012). Therefore, we compare the values from several professors or authors.

Jorion and Goetzmann (1999) find a global risk premium of 4 percent. Fama and French (2002) calculate an equity premium from data of the years between 1951-2002. Their calculation results in an estimated global risk premium of 4,32 percent. Petersen and Plenborg (2012) collect the market risk premium from 884 professors and come up with an average of 5,3 percent in Europe. Dimson,

[43] Development of 10-year Danish government bond in appendix 45
[44] Calculation of risk-free rate in appendix 46

Marsh and Staunton (2002) use historical data from 1990-2008 and calculate a risk premium of 4,6 percent for Denmark. Brealey, Myers and Allen (2010) update this study and come up with an average market risk premium in Denmark of 4,3 percent. Koller et al. (2010) define that an appropriate risk premium lies between 4,5 and 5,5 percent. Damodaran's (2018D) estimated market risk premium in Denmark is 5,08 percent. Fernandez et al. (2017) update their statistics on the average market risk premium in every of our considered years. They always use a high number of references including among others Ibbotson/Morningstar, Damodaran, Bloomberg, Fernandez, Duff & Phelps, DMS, Brealey and Myers, McKinsey, Fama and French and Siegel who again use data from several different professors, analysts, companies or databases. In 2017 their survey estimate an average market risk premium of 6,1 percent in Denmark (Fernandez et al., 2017). Because of the broad variety of high-quality statistics they include, Fernandez et al.'s estimates seem to be a good summary of the above mentioned authors.

All these assumptions and sub-calculations result in a return on equity of 7,7 percent.

8.3.4 Required Rate of Return on Debt

The return of cost on debt is the return a company pays on its debt, for example for receiving loans. It is thus also what debt holders expect to receive when giving loans to Carlsberg. The after-tax return on debt is calculated through the following formula:

$$After\ tax\ r_d = r_f + Default\ spread * (1 - t)$$

Default Spread

The default spread or the debt risk premium is an added spread that lenders demand to compensate for having the risk of not receiving the promised payments. The higher the risk of not receiving payments, the higher the default spread and thus cost of capital (Damodaran, 2010).

We base our estimation of the default spread on the bond ratings of credit agencies for Carlsberg (Damodaran, 2010). Moody's gave Carlsberg a long-term rating of Baa2 in November 2017 (Moody's, 2017). According to Damodaran (2018D) this credit rating can be translated into an estimated debt risk premium of 195 basis points or 1,95 percent. This default risk is relatively low which means that the market trusts Carlsberg to meet its financial obligations. Also, the debt risk premium is lower than the equity risk premium because debt is generally less risky than equity and there are tax savings (interests are tax-deductible) associated with debt that does not exist with equity (Damodaran, 2010).

Using the same risk-free rate as for the calculation for return on capital (Damodaran, 2010) and adjusting for tax shields with the marginal tax rate, we receive a required rate of return on debt of 3 percent.

8.3.5 WACC result

Based on these assumption, we estimate a cost of capital of 6,59 percent[45].

8.4 Growth Rate

The idea of the two-stage discount models is that it includes our forecast assumptions in the first part of the formula but also illustrates the company's value beyond the forecast period, i.e. the continuing value. As discussed in chapter 7, we assume that one year after the conclusion of SAIL'22, Carlsberg reaches its steady state. For this period, we make simplifying assumptions, one of which is the terminal growth rate (Koller, Goedhart and Wessels, 2010).
The present value of the terminal period accounts for a large part of the final enterprise value, as evaluated in the sensitivity analysis later. Thus, the terminal growth rate needs to be chosen with care (Koller, Goedhart and Wessels, 2010).
The general assumption is that the terminal growth rate of a company will eventually approach the long-term growth rate of the economy in which the company operates (Petersen and Plenborg, 2012). However, it is unrealistic that the company grows as fast as or even faster than the economy. Therefore, as a rule of thumb our constant growth rate should never exceed the overall growth rate of the economy (Damodaran, 2010). In most of the countries worldwide, the beer market is expected to grow on average by 1,9 percent in the future (Euromonitor, 2018)[46].

Damodaran (2010) outlines three options to estimate the long-term growth rate: Based on historical data, analysts' or managers' opinion or our own estimation. He argues that the assumption that past data are a good proxy for future performance is not very reliable, especially if the company is going through significant changes, e.g. in form of restructuring. Analysts or managers on the other side are often biased or focused on short-term growth (Damodaran, 2010). Therefore, we decide not to rely on those estimates and calculate the growth rate ourselves.

Damodaran (2010) defines that the company's fundamental growth rate is based on how much and how well a company invests. How much the company reinvests is measured through the payout

[45] Calculation of WACC in appendix 48
[46] Overview of the future growth rate of the beer market per country in appendix 49

ratio, the second part of the formula. The first part illustrates how well the company invests is captured by the return on equity (Petersen and Plenborg, 2012).

$$g = \left(ROIC + (ROIC - NBC) * \frac{NIBD}{BVE}\right) * (1 - \frac{Dividends}{net\ profit})$$

This calculation leaves us a sustainable growth rate in operating earnings of 1,7 percent.

8.5 Discounted Cash Flow Calculation

We now have collected all the information required to calculate Carlsberg's enterprise value. We use the free cash flows to the firm forecasted in chapter 7. From chapter 8, we include the WACC to calculate the discount rate as well as the long-term growth rate to receive the terminal value. Figure 21 illustrates the calculation.

Discounted cash flow model							
in DKK mio	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E*	*Terminal period*
Free Cash Flow to the Firm	11.117	7.638	7.955	8.314	8.668	9.026	9.382
WACC	0,0659	0,0659	0,0659	0,0659	0,0659	0,0659	0,0659
Discount factor	0,9382	0,8802	0,8258	0,7747	0,7268	0,6819	
Present Value, FCFF	10.429	6.723	6.569	6.441	6.300	6.154	
Present value, FCFF in forecast peri	42.617						
Present value, FCFF in terminal peri	130.826						
Estimated enterprise value	**173.442**						
NIBD	29.582						
Estimated market Value of Equity	143.860						
Share price	**942,99**						

Figure 21: DCF calculation; own creation

The DCF model results in estimated enterprise value of DKK 173.442 million. To calculate whether the share price is over- or undervalued, we derive the equity value from the enterprise value and divide it by the numbers of shares outstanding. As a result, we get a share price of DKK 942,99.

8.6 Economic Value Added Calculation

As a sanity test, we calculate the enterprise value through the EVA model. First, EVA is calculated by subtracting WACC multiplied with invested capital at the beginning of the period from NOPAT.

$$EVA_t = NOPAT_t - (WACC * Invested\ capital_t)$$

Here again, we use forecasted data from chapter 7. After that, we discount the economic value added the same way as we did with the cash flows previously. After calculating the present value of

EVA in the forecast as well as terminal period, we add the invested capital from the beginning of the 2018.

Economic value added approach							
in DKK mio	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E*	*Terminal period*
NOPAT	7.427	7.806	8.158	8.505	8.856	9.210	9.528
Invested capital, begin	11.314	7.624	7.792	7.995	8.186	8.375	8.559
WACC	0,0659	0,0659	0,0659	0,0659	0,0659	0,0659	0,0659
Cost of Capital	746	502	513	527	539	552	564
EVA	6.681	7.304	7.644	7.979	8.317	8.658	8.964
Discount factor	0,9382	0,8802	0,8258	0,7747	0,7268	0,6819	
Present value of EVA	6.268	6.428	6.312	6.181	6.045	5.904	
Invested capital, begin	11.314						
Present value of EVA in forecast per	37.139						
Present value of EVA in terminal per	124.990						
Estimated enterprise value	**173.442**						
NIBD	29.582						
Estimated market Value of Equity	143.860						
Share price	**942,99**						

Figure 22: EVA calculation; own creation

The resulting enterprise value as well as the share price is the same as the result from the DCF calculation.

Thus, our estimated enterprise value of Carlsberg as of December 31st 2017 is 173.442.

Comparing our estimated share price of DKK 943 to the stock price as of December 29th, 2017 of DKK 745, we conclude that Carlsberg's share price is currently undervalued.

8.7 Sensitivity Analysis

The sensitivity analysis is useful for understanding how some key value drivers affect the share price (Petersen and Plenborg, 2012). Although our drivers are at this point carefully and reliably estimated they are very likely to change. Especially the estimated long-term growth rate is difficult to estimate and thus highly uncertain. Since many inputs are needed to calculate the WACC it is exposed to changes as well. Therefore, we explore valuation consequences on the share price for changing the growth rate and the WACC by up to 1 percentage point up- and downwards.

Table 2 shows the result of the sensitivity analysis. We can see that by only changing the growth rate by 0,5 percent upwards and keeping all other estimates constant the share price changes from DKK 943 to DKK 1041 per share. This proves that the inputs in the terminal value are very sensitive to changes and have a huge impact on our estimated share price.

From this result, we can derive that our share price result is very sensitive to its inputs.

This highlights the importance that our careful consideration and thorough background research has on the final result.

		Growth Rate				
		0,7%	1,2%	1,7%	2,2%	2,7%
WACC	5,59%	1.061	1.105	1.235	1.403	1.630
	6,09%	890	972	1.072	1.199	1.362
	6,59%	836	863	**943**	1.041	1.254
	7,09%	719	774	838	951	1.010
	7,59%	679	698	750	813	941

Table 2: Sensitivity analysis illustrating the impact of the change of a value estimate; own creation

8.8 Effect of SAIL'22 on Share Price

In the previous section we have calculated a value per share that is higher than the actual share price. Since the SAIL'22 initiative and all the activities planned within the program have a major influence on our estimation of Carlsberg's future performance, we will now analyze whether and how SAIL'22 affects the share price as well. This helps us understanding and interpreting our result of an undervalued share value.

We will take a closer look at the reaction to the announcement of SAIL'22 as well as the long-term effect of the restructuring initiative considering the time period from the announcement until the 31st of December 2017.

As discussed in the literature, announcements regarding operating restructuring usually provoke a reaction in the share price and thus represent shareholders' opinion on the content announced. The SAIL'22 initiative was communicated on the 16th of March 2016. The announcement included an explanation of the background, content and goals of SAIL'22 (Carlsberg SAIL'22 announcement, 2016). The announcement was made and further elaborated on by CEO Cees t'Hart, SVP for Asia and Head of *Funding the Journey* Christopher Warmoth, Head of Finance and interim CFO Jan Thieme Rasmussen and VP of Investor Relations Peter Kondrup through a conference call (Carlsberg conference call, 2016; Carlsberg corporate presentation 2017). Shareholders were able to ask questions in the last part of the call. Additionally, a press release was published (Carlsberg SAIL'22 announcement, 2016).

Figure 23 illustrates the development of Carlsberg's share price during March 2016. From the 15th to the 16th of March 2017, the stock price declined by 3,29 percent from DKK 612 to DKK 592. Compared to the average fluctuations in March of 0,2 percent and a much smaller reaction in peers' stocks, we assume that this reaction is caused by the announcement of SAIL'22.

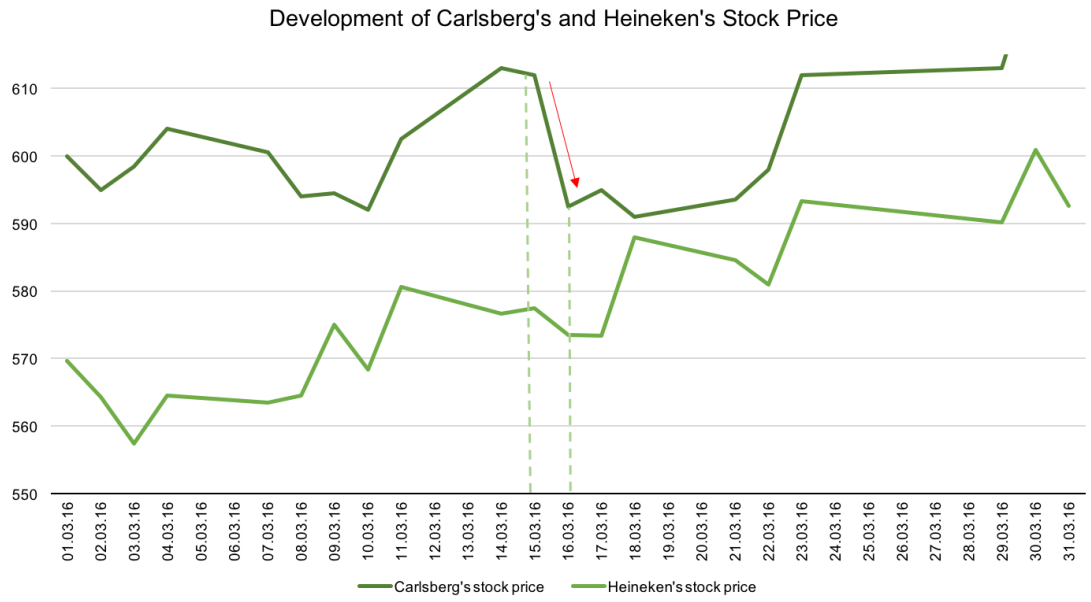

Figure 23: Development of Carlsberg's and Heineken's shares between March and December 2017; own creation based on data from Bloomberg

Looking at the overall development of share prices, the decline of 3,29 percent is not significant but still reflects a negative perception from shareholders.
The negative reaction can be explained with the loss of trust from shareholders. In chapter 5.5.4 we identify that SAIL'22 is Carlsberg's third restructuring initiative since 2003. The content and goals of the previous restructurings were very similar to SAIL'22. The *Excellence Program* for example aimed at improving profitability and conducted activities including efficiency improvement projects, down-sizing and refocusing. This might have the effect that shareholders do not expect a significant long-term influence and thus have rather negative expectations of restructuring activities.

The small level of reaction can also be explained with the pre-announcement in November 2015. The announcement in March 2016 is not the first time Carlsberg mentions SAIL'22 to shareholders. The initiative is already mentioned in Carlsberg's annual report 2015, published on the 10th of February 2016 as well as in the financial statement as at 30 September 2015, published on the 11th November 2015. Consequently, shareholders are already aware of the restructuring and do not show a strong reaction anymore.

Based on this assumption, we would expect that shareholders react in November 2015 when hearing first about the SAIL'22 initiative. Exploring the development of Carlsberg's share price reveals that there is an increase in stock price from the 10th to the 11th of November of 5,86 percent and during the following days. However, first of all it is difficult to isolate the reaction caused by the mention of

SAIL'22 from the reaction caused by the other content of the earnings report. Since SAIL'22 is mentioned very briefly, a relation between the naming of SAIL'22 and the stock reaction is very unlikely. Secondly, especially during the following days, the share price development of peers is increasing as well[47].
Consequently, the reaction in November is most probably not caused by pre-announcements of SAIL'22 but rather the earnings report as a whole or the general development of the market.

In conclusion, the shareholders' reaction to the announcement of a new restructuring initiative is small but negative and thus reflects skeptical perceptions on the operational restructuring initiative SAIL'22.

The aim of SAIL'22 is to improve long-term profitability. Therefore, we also take the development of the share price after the announcement into consideration. This is important as the long-term development of shares can reflect changes in shareholders' perception or preliminary results of the SAIL'22 initiative.

Figure 24 shows the development of Carlsberg's share price from the announcement of the initiative until the 31st of December 2017. The share price is developing positively and has increased by more than 27 percent overall during the considered period.

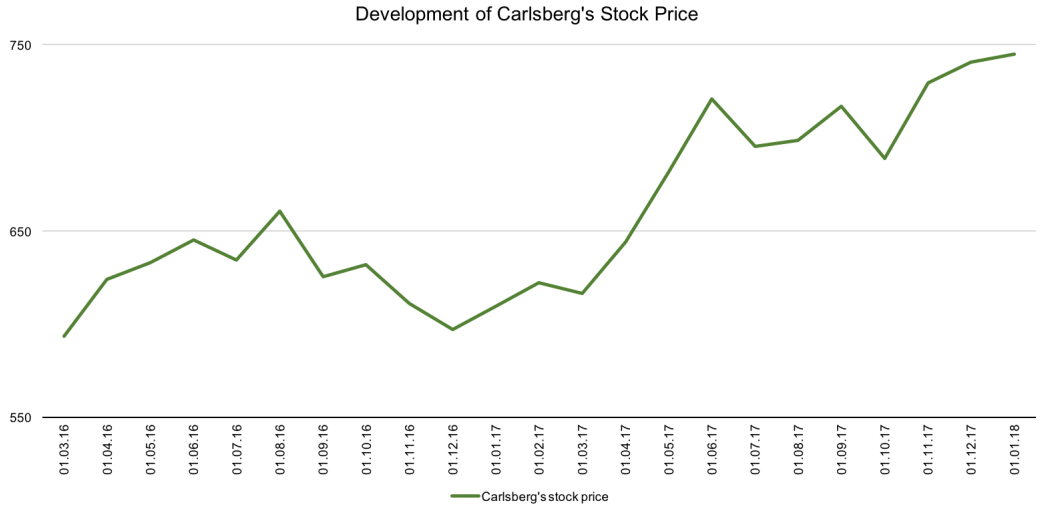

Figure 24: Development of Carlsberg's stock price since announcement of SAIL'22; own creation based on Bloomberg data

[47] Development of Carlsberg's share price compared to Heineken's share price in the appendix 50

This improvement seems to be a very good indicator of a successful implementation and execution of SAIL'22 activities. When looking at peers as well as market indices however, it becomes clear that the increase of the share price cannot solely be attributed to the restructuring initiative.

Figure 25 compares Carlsberg's stock price to stock prices of peers as well as a market index. In line with previously conducted analyses, we compare Carlsberg to Heineken and CRB and use the MSCI ACWI as an index representing a comprehensive overview on market developments.

Figure 25: Comparison of changes in share price between Carlsberg (CARL-B.CO), Heineken (HEIA.AS), China Resources Beer (Holdings) Company Limited (0291.HK) and MSCI ACWI (ACWI); Yahoo Finance

The figure illustrates that there is an upward trend not only in the industry represented by the two peers but also in the whole economy represented by the MSCI ACWI index.
Therefore, the growth of Carlsberg's share price cannot be solely related to the SAIL'22 initiative. However, the developments show that Carlsberg is able to stay competitive although facing massive challenges in key regions. Despite the hesitation in the beginning of the SAIL'22 execution, investors seem to be gaining trust in Carlsberg's success again. This process is in line with our result of the valuation: The share price is currently undervalued because shareholders are not convinced of the effectiveness of SAIL'22 yet. The upward trend of the share price however, supports our result that the share price is currently lower than it is worth and will most likely increase within the next years.

9. Conclusion

In this chapter, we summarize our findings from previous analysis. As explained in the introduction, our thesis determines the value per share of Carlsberg taking into account the restructuring initiative SAIL'22 and the thereto related effects on the company value. To give a comprehensive answer to our research question we derived the following three sub-questions:

1) What business environment does Carlsberg face and how does the restructuring initiative SAIL'22 contribute to the company's future performance?
2) How has Carlsberg's operating performance developed during the last five year and can an influence of the restructuring initiative SAIL'22 on operating performance be determined?
3) How does SAIL'22 influence our estimated enterprise value and is this in line with shareholders' perception of the company value reflected in the share price?

Following the structure of the thesis the answer to these questions will then guide us to our estimated value per share of Carlsberg as of 31st of December 2017.

Our strategic analysis identifies the challenges of consumers increasing health consciousness and thus a reduced beer consumption especially in Western Europe as well as challenging macro-environmental circumstances in one of the company's key markets Russia resulting in a decline in revenue. On the other side, growth opportunities in Asia, big cities as well as in the craft-, specialty- and non-alcoholic beer segment are analyzed. SAIL'22 responses to this environment by including activities that mitigate these threats and exploit opportunities. Making use of their strong international and local brands, outstanding operating capabilities and extensive distribution network when expanding the geographic reach as well as the product portfolio will increase revenues thus drive organic growth in operating profit.
We further recognize that Carlsberg includes several factors that are identified as success factors for operational restructuring in various literature. This leads to the conclusion that based on the information we have and although some challenges with highly significant influence on the Group's operations such as changing rules and regulations in Carlsberg's key market Russia cannot be foreseen and thus controlled, SAIL'22 greatly reacts to current challenges and thus supports the company to stay competitive in the current business environment.

An analysis of the Group's operating profitability reveals that measures of operating profitability such as ROIC or ROE are mainly impacted by the revenue-expense ratio. More specifically, the Group's profits are negatively affected in years with extensive impairments of brands. This results in highly

volatile profitability expressed through a ROIC after tax ranging from -1,56 to 6,87 percent between 2012 and 2017. In proportion to WACC, ROIC is at a very unfavorable level as the costs investors face for investing their capital are almost constantly higher than the return they receive. However, when measuring the effect the restructuring initiative SAIL'22 has on the company's return on equity, excluding variations that were expected before the program was implemented and uncontrollable macroeconomic events that affected the whole industry, the restructuring initiative proves to have a positive effect on Carlsberg's operating profitability. Considering that additional activities aiming at reduction of costs and profit growth will be implemented in the next years, an improvement in the Group's profitability can be expected.

When forecasting balance sheet and income statement items, we strongly consider the effects we expect SAIL'22 activities to have based on our previous analysis. Thus, we predict growth in revenue for all three regions in which Carlsberg operates. In combination with cost cutting activities and thus declining estimated operating expenses, we estimate increasing earnings and free cash flows to the firm in the future. However, this positive influence of SAIL'22 on Carlsberg's future performance is not in line with shareholders' expectations. We analyze the public reaction to the restructuring program based on the development of the share price and conclude that shareholders are not convinced of a positive influence of SAIL'22 on the company's value.

Our valuation based on the DCF- and EVA-approach results in an estimated enterprise value of DKK 137,44 billion and an estimated value per share of DKK 943 as of 31st December 2017. Our previous analysis shows that our estimated value per share exceeds the actual share price because we expect the restricting initiative SAIL'22 to have a positive effect on Carlsberg's future performance. The actual share price however, reflects hesitant expectations from shareholders based on a lack of reaction to SAIL'22 activities and thus triggers the value difference. The share price is currently undervalued but is expected to rise in future when shareholders gain trust activities are fully implemented and profitability increases.

10. Limitations

Although our research and valuation have been carefully prepared, we face some unavoidable limitations.

The most severe limitation is the availability of data. Our main sources for company-specific data are annual reports and corporate presentations that are provided by Carlsberg. This already can create biases as the Group most probably only publishes refined information. Especially regarding the SAIL'22 initiative we only have access to data Carlsberg wants to share. Consequently, we are only able to find positive updates on the restructuring progress. An external viewpoint on the project would have most likely broadened and enhanced our analysis. The lack of disclosure additionally limits the accuracy of our analysis. Since Carlsberg does not always disclose what exactly is included in the line items in the financial statement we are left making assumptions based on Carlsberg's classification. This brings along a high risk of misclassifying items and thus miscalculating operating performance. Furthermore, we are not able to make adjustments in the financial statement of 2012 to have comparable accounting policies throughout the considered period.

When calculating the effect SAIL'22 has on Carlsberg's operating performance, our calculations are restricted to comparisons of ROE since forecasts of ROIC or the operating margin from the perspective of 2014 are not available in databases we have access to. As mentioned in chapter 3.3.1 ROE is more prone to accounting effects as ROIC or operating margin and thus this limitation might lead to biased results.

In the strategic analysis, we base many trends on statistical data. Sometimes however, we only have limited access to what we are looking for. This makes it necessary for us to make assumptions and own calculations which might lead to imprecise results. Additionally, some figures are not available for countries such as Nepal, Cambodia and Myanmar so that averages for the Asian region might be distorted.

In conclusion, a wider access to data would have reduced bias and improved precision of our analysis.

Due to time and page limitations, we focus our analysis mainly on beer and disregard other products in Carlsberg's portfolio, such as soft drinks, water etc. This is reasonable, as beer makes up 84 percent of the Group's sales in 2017. Further, there is no initiative within SAIL'22 that specifically

addresses a product other than beer. This supports that other products are not as relevant for our analysis.
We chose to calculate the company's enterprise value through the DCFF and EVA model. These models require many inputs and thus offer a high potential for noise. Moreover, both models are short-term oriented as they treat sustainable investments negatively and reward managers who take on projects with quick returns. Further, the models do not reflect the market's moods which influence the share price. Thus, value and price cannot always be directly compared and our results have to be interpreted with care. The fact that market's moods are excluded from the valuation can be seen as an advantage as well as a disadvantage at the same time: Solely basing the estimates on our estimates, we can make sure that high-quality, rational factors are considered. However, a broad range of perceptions from many investors can be a better indicator than just the opinion of single analysts. Additionally, it is very difficult to conduct a completely unbiased valuation. Since we already had some knowledge about Carlsberg, we most probably include some of our preconceptions into the valuation.

Regarding the measurement of the effect of SAIL'22 on operating performance we face some general limitations. First, we have difficulties finding peers that have not conducted any kind of restructuring activity during the last five years. Companies of similar size as Carlsberg usually perform some form of restructuring on a frequent basis to keep up with quickly changing lifestyles and competition. Additionally, we were not able to generate a significant result of the effect of SAIL'22 activities on operating performance in 2017 due to the lack of adequate peers that operate in the same markets as Carlsberg and e.g. suffered from changing regulations in Russia. These two limitations make it difficult to completely isolate the effect restructuring and exclude uncontrollable events that affect the whole industry.

Additionally, the fact that restructuring activities are still going on makes it difficult to draw conclusions on the success of the project. Several activities have not been implemented yet and as some literature points out, the effect might only be visible years after the project is concluded.
This however, opens the door for further research. Measurements of the effect SAIL'22 activities have on operating performance can be conducted and analyzed on a frequent basis, supporting a successful execution and completion of the restructuring.

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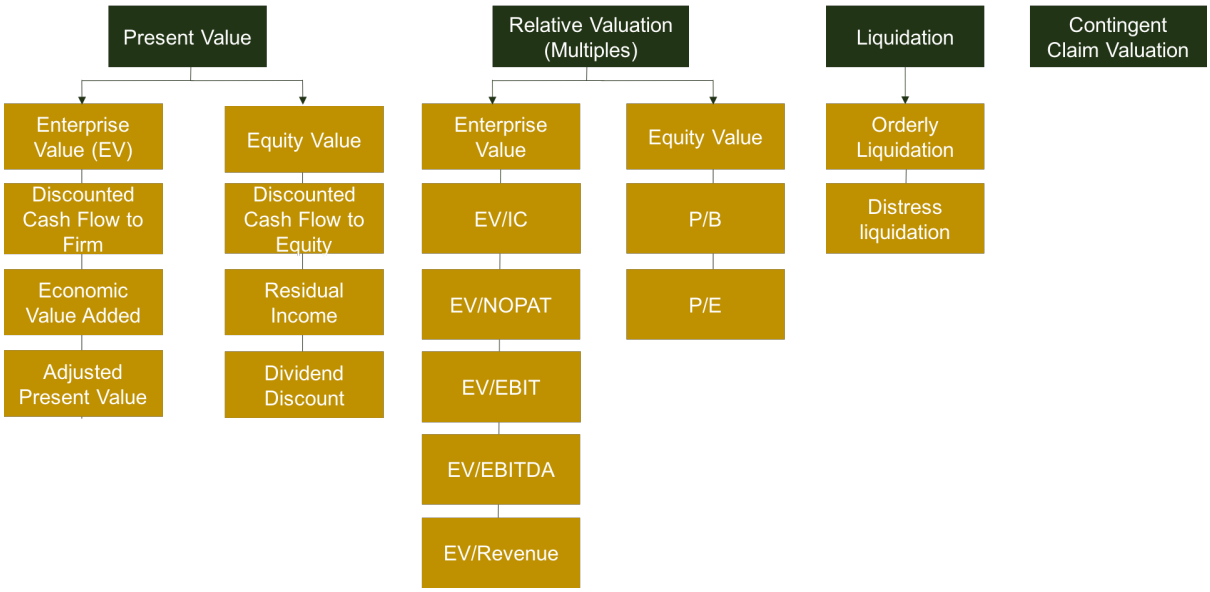
V Appendix

Appendix 1: Overview Valuation Models



Source: own creation, based on Petersen and Plenborg (2012)

Appendix 2: Market share in volume terms of top four breweries

Western Europe	2017	
	Total volume in mio liters	Market share
Heineken	4302	16,1%
Carlsberg	3.667	13,7%
Anheuser-Busch	2.157	8,0%
Oetker-Gruppe	1.197	4,5%
Market share of top 4	11.323	42,3%
Total Volume	26.799	100%

Eastern Europe	2017	
	Total volume in mio liters	Market share
Heineken	920	8,8%
Carlsberg	3239	31,0%
Anheuser-Busch	1404	13,5%
Anadolu Group	867	8,3%
Market share of top 4	6430	61,6%
Total Volume	10432	100%

Asia	2017	
	Total volume in mio liters	Market share
Heineken	1237	2,3%
Carlsberg	3153	6,0%
Anheuser-Busch	8151	15,5%
China Resources Holdings Co Ltd	11681	22,2%
Market share of top 4	24222	46,0%
Total Volume	52648	100%

Source: own creation, based on Euromonitor (2018)

Appendix 3: Market volume per region and country

Western Europe

Country	Category	Data Type	Unit	2012	2013	2014	2015	2016	2017
Denmark	Beer	Total Volume	million litres	380	357	353	366	344	346
Sweden	Beer	Total Volume	million litres	480	466	471	464	462	462
Norway	Beer	Total Volume	million litres	246	243	248	255	258	268
Finland	Beer	Total Volume	million litres	460	438	442	433	424	422
France	Beer	Total Volume	million litres	1.904	1.898	1.861	1.903	1.954	2.004
Switzerland	Beer	Total Volume	million litres	445	445	442	447	449	450
United Kingdom	Beer	Total Volume	million litres	4.863	4.733	4.720	4.748	4.736	4.740
Poland	Beer	Total Volume	million litres	3.580	3.824	3.825	3.868	3.915	3.988
Germany	Beer	Total Volume	million litres	9.451	9.343	9.228	9.175	9.103	9.088
Italy	Beer	Total Volume	million litres	1.619	1.621	1.588	1.563	1.563	1.576
Portugal	Beer	Total Volume	million litres	539	482	480	463	463	468
Lithuania	Beer	Total Volume	million litres	324	301	280	292	290	272
Latvia	Beer	Total Volume	million litres	167	163	160	161	158	156
Estonia	Beer	Total Volume	million litres	135	137	131	130	127	118
Bulgaria	Beer	Total Volume	million litres	508	552	541	516	535	555
Croatia	Beer	Total Volume	million litres	357	344	349	322	346	357
Greece	Beer	Total Volume	million litres	386	387	386	381	381	386
Hungary	Beer	Total Volume	million litres	634	652	644	655	674	679
Serbia	Beer	Total Volume	million litres	495	488	482	480	466	465
Total				**26.971**	**26.873**	**26.631**	**26.618**	**26.646**	**26.799**

Eastern Europe

Country	Category	Data Type	Unit	2012	2013	2014	2015	2016	2017
Russia	Beer	Total Volume	million litres	10.315	10.186	9.612	8.920	7.913	7.689
Ukraine	Beer	Total Volume	million litres	2.902	2.916	2.713	2.375	1.900	1.761
Belarus	Beer	Total Volume	million litres	498	480	496	478	437	426
Kazakhstan	Beer	Total Volume	million litres	504	507	513	500	479	501
Azerbaijan	Beer	Total Volume	million litres	44	52	60	61	57	55
Total				**14.263**	**14.141**	**13.394**	**12.334**	**10.785**	**10.432**

Asia

Country	Category	Data Type	Unit	2012	2013	2014	2015	2016	2017
China	Beer	Total Volume	million litres	47.744	48.994	50.582	50.081	47.727	45.627
Vietnam	Beer	Total Volume	million litres	2.599	2.832	3.038	3.152	3.364	3.636
India	Beer	Total Volume	million litres	1.885	2.098	2.316	2.544	2.739	2.922
Malaysia	Beer	Total Volume	million litres	153	158	164	166	166	167
Singapore	Beer	Total Volume	million litres	110	115	119	122	126	129
Hong Kong, China	Beer	Total Volume	million litres	156	161	164	163	164	167
Total				**52.647**	**54.358**	**56.382**	**56.229**	**54.286**	**52.648**

Source: own creation, based on Euromonitor (2018)

Appendix 4: Carlsberg's market position

Western Europe

Country	Market position (no.)				
Year	2017	2016	2015	2014	2013
Denmark	1	1	1	1	1
Sweden	1	1	1	1	1
Norway	1	1	1	1	1
Finland	2	2	1	1	1
France	2	2	2	1	1
Switzerland	1	1	1	1	1
UK	4	4	4	4	4
Poland	3	3	3	3	3
Germany	1	1	2	1	2
Italy	3	4	4	4	4
Portugal	1	1	1	1	1
The Baltics	1-2	1-2	1-2	1-2	1
Lithuania					
Latvia					
Estonia					
South East Europe	1-3	2-3	2-3	2-3	2-3
Bulgaria					
Croatia					
Greece					
Hungary					
Serbia					
Average					
Sum					

Eastern Europe

Country	Market position (no.)				
Year	2017	2016	2015	2014	2013
Russia	1	1	1	1	1
Ukraine	1	2	2	2	2
Belarus	1	1	1	1	1
Kazakhstan	2	2	2	2	2
Azerbaijan	1	1	1	1	1
Average					
Sum					

Asia

Country	Market position (no.)				
Year	2017	2016	2015	2014	2013
China	1	1	1	5	1
Vietnam	4	4	4	2	2
Laos	1	1	1	1	1
Cambodia	1	1	1	1	1
Nepal	1	1	1	1	1
India	3	3	3	3	3
Myanmar	4	4	4		
Malaysia	2	2	2	2	2
Singapore	2	2	2	2	2
Hong Kong	2	2	2	1	2
Average					
Sum					

Source: own creation, based on data of Carlsberg's annual report

Appendix 5: Number of Carlsberg's breweries

Western Europe

Country	Number of breweries				
Year	2017	2016	2015	2014	2013
Denmark	1	1	1	1	1
Sweden	1	1	1	1	1
Norway	2	2	2	2	2
Finland	1	1	1	1	1
France	1	1	1	1	1
Switzerland	1	1	1	1	1
UK	1	1	1	1	1
Poland	3	3	3	3	3
Germany	2	2	2	2	2
Italy	1	1	1	1	1
Portugal	1	1	1	1	1
The Baltics	2	3	3	3	4
Lithuania					
Latvia					
Estonia					
South East Europe	6	5	6	5	5
Bulgaria					
Croatia					
Greece					
Hungary					
Serbia					
Average					
Sum					

Eastern Europe

Country	Number of breweries				
Year	2017	2016	2015	2014	2013
Russia	8	8	8	8	10
Ukraine	3	3	3	3	3
Belarus	1	1	1	1	1
Kazakhstan	1	1	1	1	1
Azerbaijan	1	1	1	1	1
Average					
Sum					

Asia

Country	Number of breweries				
Year	2017	2016	2015	2014	2013
China	25	27	37	44	39
Vietnam	2	2	3	6	6
Laos	2	2	2	2	2
Cambodia	2	1	1	1	1
Nepal	1	1	1	1	1
India	8	7	7	6	6
Myanmar	1	1	1		
Malaysia	1	1	1	1	1
Singapore	-	-	-	-	-
Hong Kong	-	-	-	-	-
Average					
Sum					

Source: own creation, based on data of Carlsberg's annual report

Appendix 6: Beer market growth in volume terms

Western Europe

Country	market growth in volume terms			
Year	2017	2016	2015	2014
Denmark	-0,2%	0,5%	-6,0%	3,7%
Sweden	0,0%	0,0%	-0,4%	-1,5%
Norway	2,2%	3,9%	1,2%	2,8%
Finland	0,2%	-0,5%	-2,1%	-2,0%
France	1,9%	2,6%	2,7%	2,3%
Switzerland	0,4%	0,2%	0,4%	1,1%
UK	0,3%	0,1%	-0,3%	0,6%
Poland	1,1%	1,9%	1,2%	1,1%
Germany	-0,5%	-0,2%	-0,8%	-0,6%
Italy	1,3%	0,8%	0,0%	-1,6%
Portugal	-1,5%	3,7%	0,0%	-1,1%
The Baltics				
Lithuania	-15,7%	-6,3%	-0,5%	4,0%
Latvia	-0,5%	-1,1%	-2,1%	0,3%
Estonia	-3,7%	-6,8%	-2,4%	-0,3%
South East Europe				
Bulgaria	3,3%	3,8%	3,6%	-4,6%
Croatia	2,7%	3,4%	7,4%	-7,8%
Greece	0,8%	1,3%	0,0%	-1,3%
Hungary	2,0%	0,8%	2,9%	1,7%
Serbia	1,1%	-0,3%	-2,9%	-0,3%
Average				
Sum	-0,2%	0,4%	0,4%	-0,4%

Eastern Europe

Country	market growth in volume terms			
Year	2017	2016	2015	2014
Russia	-3,1%	-2,8%	-11,3%	-7,2%
Ukraine	-1,1%	-7,3%	-20,0%	-12,5%
Belarus	-0,5%	-2,5%	-8,6%	-3,6%
Kazakhstan	2,6%	4,6%	-4,2%	-2,5%
Azerbaijan	0,0%	-3,5%	-8,1%	3,3%
Average				
Sum	-2,4%	-3,3%	-12,6%	-7,9%

Asia

Country	market growth in volume terms			
Year	2017	2016	2015	2014
China	-3,4%	-4,4%	-4,7%	-1,0%
Vietnam	6,6%	8,1%	6,7%	3,8%
Laos				
Cambodia				
Nepal				
India	6,1%	6,7%	7,7%	9,8%
Myanmar				
Malaysia	0,6%	0,6%	0,0%	1,2%
Singapore	2,3%	2,4%	3,3%	2,5%
Hong Kong	1,8%	1,8%	0,6%	-0,6%
Average				
Sum	-2,1%	-3,0%	-3,5%	-0,3%

Source: own creation, based on Euromonitor (2018)

Appendix 7: Overview of excise duties

Western Europe

Country	Excise duties - Beer (local currency)	Excise duties - Beer (DKK)	Excise duties - Wine (local currency)	Excise duties - Wine (EUR)
Year	2017	2017	2017	2017
Denmark	56,02 DKK	56,02	1.555,00 DKK	208,43
Sweden	194,00 SEK	20,69	2.517,00 SEK	268,47
Norway				
Finland				
France	7,41 €	7,41	3,77 €	3,77
Switzerland				
UK	18,37 GBP	24,94	273,00 GBP	370,99
Poland	7,79 PLN	1,83	158,00 PLN	37,21
Germany	0,79 €	0,79	- €	0,00
Italy	3,04 €	3,04	- €	0,00
Portugal				
The Baltics	7,31 €	7,31	146,12 €	146,12
Lithuania	3,11 €	3,11	72,12 €	72,12
Latvia	4,20 €	4,20	74,00 €	74,00
Estonia				
South East Europe				
Bulgaria				
Croatia				
Greece				
Hungary				
Serbia				
Average		6,81		62,16
Sum		4,22		54,47

Source: own creation, based on data from the European Commission (2018)

Appendix 8: Corruption perception ranking

Western Europe

Country	Corruption Perception Ranking					
Year	2012	2013	2014	2015	2016	2017
Denmark	1	1	1	1	1	2
Sweden	4	3	4	3	4	6
Norway	7	5	5	5	6	3
Finland	1	3	3	2	3	3
France	22	22	26	23	23	23
Switzerland	6	7	5	7	5	3
UK	17	14	14	10	10	8
Poland	41	38	35	30	29	36
Germany	13	12	12	10	10	12
Italy	72	69	69	61	60	54
Portugal	33	33	31	28	29	29
The Baltics						
Lithuania	48	43	39	32	38	38
Latvia	54	49	43	40	44	40
Estonia	32	28	26	23	22	21
South East Europe						
Bulgaria	75	77	69	69	75	71
Croatia	62	57	61	50	55	57
Greece	94	80	69	58	69	59
Hungary	46	47	47	50	57	66
Serbia	80	72	78	71	72	77
Average	70,8	66	63,7	57,3	61,2	60,8
Sum						

Eastern Europe

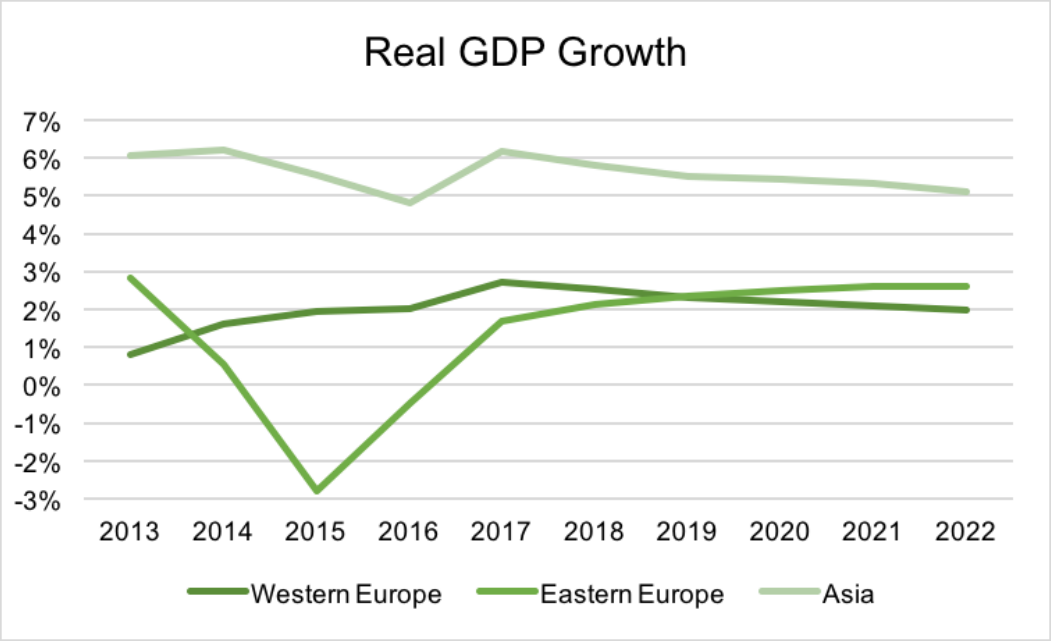
Country	Corruption Perception Ranking					
Year	2012	2013	2014	2015	2016	2017
Russia	133	127	136	119	131	135
Ukraine	144	144	142	130	131	130
Belarus	123	123	119	107	79	68
Kazakhstan	133	140	126	123	131	122
Azerbaijan	139	127	126	119	123	122
Average	134,4	132,2	129,8	119,6	119	115,4
Sum						

Asia

Country	Corruption Perception Ranking					
Year	2012	2013	2014	2015	2016	2017
China	80	80	100	83	79	77
Vietnam	123	116	119	112	113	107
Laos	160	140	145	139	123	135
Cambodia	157	160	156	150	156	161
Nepal	139	116	126	130	131	122
India	94	94	85	76	79	81
Myanmar	172	157	156	147	136	130
Malaysia	54	53	50	54	55	62
Singapore	5	5	7	8	7	6
Hong Kong	14	15	17	18	15	13
Average	99,8	93,6	96,1	91,7	89,4	89,4
Sum						

Source: own creation, based on data from Euromonitor (2018)

Appendix 9: GPD



Western Europe

Country	GDP Growth (%)									
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Denmark	0,9	1,6	1,6	2,0	2,1	1,0	1,6	1,6	1,5	1,5
Sweden	1,2	2,6	4,1	3,2	2,4	2,5	2,3	2,0	2,0	2,0
Norway	1,0	2,0	2,0	1,1	1,8	1,9	2,0	2,1	2,0	1,9
Finland	-0,8	-0,6	0,0	1,9	3,0	2,2	1,8	1,7	1,6	1,6
France	0,6	0,9	1,1	1,2	1,8	2,0	1,8	1,6	1,5	1,5
Switzerland	1,9	2,4	1,2	1,4	1,0	2,0	1,6	1,6	1,5	1,5
UK	2,1	3,1	2,3	1,8	1,7	1,4	1,3	1,4	1,5	1,7
Poland	1,4	3,3	3,8	2,9	4,6	3,8	3,3	2,9	2,8	2,5
Germany	0,5	1,6	1,7	1,9	2,2	2,4	1,9	1,7	1,5	0,9
Italy	-1,7	0,1	1,0	0,9	1,5	1,4	1,2	1,0	1,0	1,0
Portugal	-1,1	0,9	1,8	1,5	2,7	2,3	1,8	1,5	1,4	1,3
The Baltics										
Lithuania	3,5	3,5	2,0	2,3	3,8	3,6	3,0	2,9	2,7	2,5
Latvia	2,4	1,9	2,8	2,1	4,5	3,7	3,4	3,1	2,7	2,7
Estonia	1,9	2,9	1,7	2,1	4,9	3,6	2,9	3,0	3,0	3,0
South East Europe										
Bulgaria	0,9	1,3	3,6	3,9	3,6	3,5	3,1	2,8	2,7	2,5
Croatia	-0,6	-0,1	2,3	3,2	2,8	2,3	2,4	2,3	2,2	2,0
Greece	-3,2	0,7	-0,3	-0,2	1,4	2,0	2,1	2,0	1,9	1,5
Hungary	2,1	4,2	3,4	2,2	4,0	3,7	3,0	2,6	2,2	2,2
Serbia	2,6	-1,8	0,8	2,8	1,9	3,0	3,1	4,0	4,0	4,0
Average	0,82	1,61	1,94	2,01	2,72	2,54	2,29	2,20	2,09	1,99
Sum										

Eastern Europe

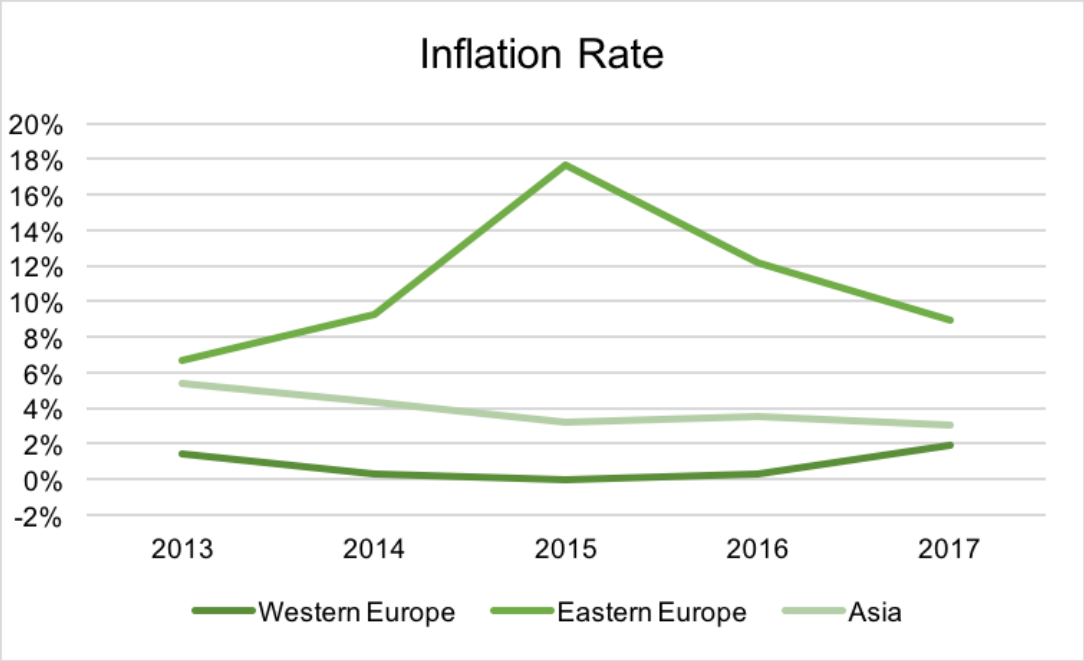
Country	GDP Growth (%)									
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Russia	1,3	0,7	-2,8	-0,2	1,5	1,3	1,7	1,6	1,6	1,5
Ukraine	0,0	-6,6	-9,8	2,3	1,9	2,7	3,1	3,2	3,0	3,0
Belarus	1,0	1,8	-3,8	-2,5	2,3	1,9	1,6	1,6	1,9	2,0
Kazakhstan	6,0	4,2	1,5	0,6	3,7	3,2	3,4	3,5	3,5	3,5
Azerbaijan	5,8	2,6	1,0	-2,6	-0,9	1,5	1,9	2,6	3,0	3,1
Average	2,82	0,54	-2,78	-0,48	1,70	2,12	2,34	2,50	2,60	2,62
Sum										

Asia

Country	GDP Growth (%)									
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
China	7,8	7,3	6,9	6,7	6,9	6,6	6,3	6,0	5,7	5,1
Vietnam	5,4	6,0	6,7	6,2	6,8	6,8	6,2	6,3	6,1	6,0
Laos	8,0	7,6	7,3	7,0	6,9	6,9	7,1	7,1	7,0	7,0
Cambodia	7,5	7,1	7,0	6,9	6,9	6,8	6,8	6,5	6,3	6,0
Nepal	4,1	6,0	3,3	0,4	7,5	5,0	3,8	3,8	3,8	3,8
India	6,4	7,5	8,0	7,1	6,6	7,5	7,5	7,6	7,2	6,2
Myanmar	8,4	8,0	7,0	5,7	6,9	7,3	7,4	7,5	7,5	7,5
Malaysia	4,7	6,0	5,0	4,2	5,9	5,0	4,5	4,5	4,5	4,5
Singapore	5,0	3,6	1,9	2,0	3,6	3,1	2,5	2,5	2,5	2,5
Hong Kong	3,1	2,8	2,4	2,0	3,8	3,0	2,8	2,5	2,5	2,5
Average	6,0	6,2	5,6	4,8	6,2	5,8	5,5	5,4	5,3	5,1
Sum										

Source: own creation, based on data from Euromonitor (2018)

Appendix 10: Inflation



Western Europe

Country	Inflation (%)				
Year	2013	2014	2015	2016	2017
Denmark	0,80	0,60	0,50	0,30	1,10
Sweden	0,00	-0,20	0,00	1,00	1,80
Norway	2,10	2,00	2,20	3,50	1,90
Finland	1,50	1,00	-0,20	0,40	0,80
France	0,90	0,50	0,00	0,20	1,00
Switzerland	-0,20	0,00	-1,10	-0,40	0,50
UK	2,60	1,50	0,10	0,60	2,70
Poland	1,00	0,10	-0,90	-0,70	2,10
Germany	1,50	0,90	0,20	0,50	1,70
Italy	1,20	0,20	0,00	-0,10	1,20
Portugal	0,30	-0,30	0,50	0,60	1,40
The Baltics					
Lithuania	1,10	0,10	-0,90	0,90	3,70
Latvia	0,00	0,60	0,20	0,10	2,90
Estonia	2,80	-0,10	-0,50	0,20	3,40
South East Europe					
Bulgaria	0,90	-1,40	-0,10	-0,80	2,10
Croatia	2,20	-0,20	-0,50	-1,10	1,10
Greece	-0,90	-1,30	-1,70	-0,80	1,10
Hungary	1,70	-0,20	-0,10	0,40	2,30
Serbia	7,90	2,10	1,40	1,10	3,10
Average	1,44	0,31	-0,05	0,31	1,89
Sum					

Eastern Europe

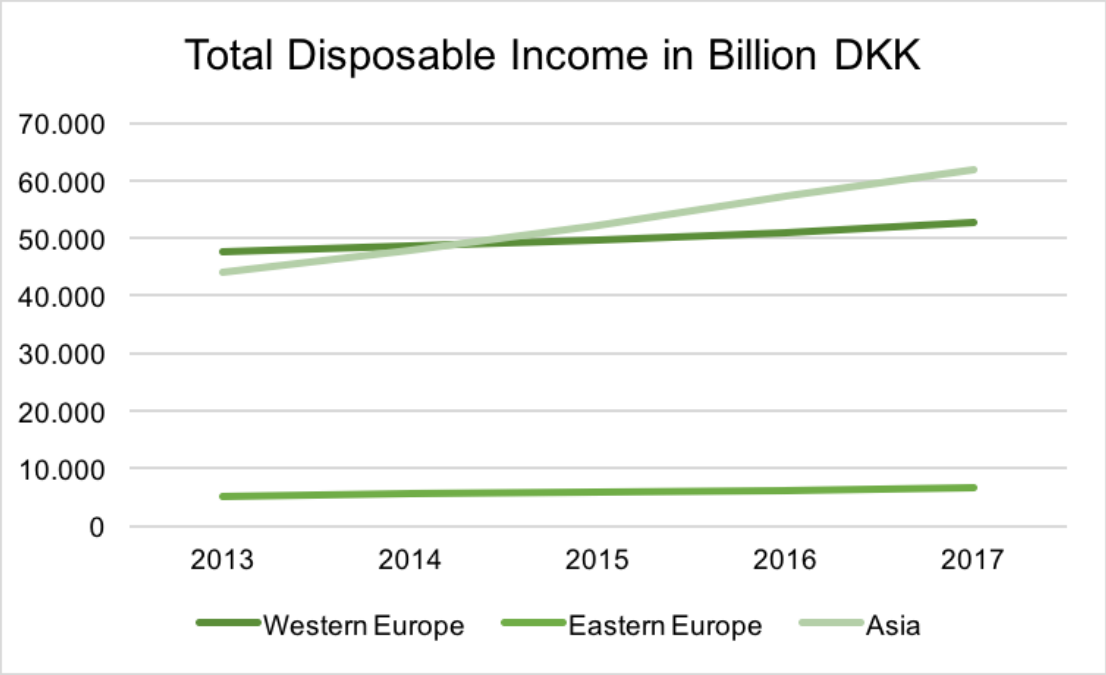
Country	Inflation (%)				
Year	2013	2014	2015	2016	2017
Russia	6,80	7,80	15,60	7,10	3,70
Ukraine	-0,30	12,20	48,50	14,90	14,40
Belarus	18,50	18,10	13,60	11,80	6,10
Kazakhstan	5,80	6,70	6,60	14,70	7,40
Azerbaijan	2,40	1,40	4,00	12,40	12,90
Average	6,64	9,24	17,66	12,18	8,90
Sum					

Asia

Country	Inflation (%)				
Year	2013	2014	2015	2016	2017
China	2,60	1,90	1,40	2,00	1,60
Vietnam	6,60	4,10	0,90	3,20	3,50
Laos	6,40	4,10	1,30	1,50	2,30
Cambodia	2,90	3,90	1,20	3,00	3,70
Nepal	9,90	9,00	7,20	9,90	4,50
India	10,90	6,40	5,90	5,00	2,50
Myanmar	5,50	5,50	9,50	7,00	6,50
Malaysia	2,10	3,10	2,10	1,80	4,10
Singapore	2,40	1,00	-0,50	-0,50	0,60
Hong Kong	4,30	4,40	3,00	2,40	1,50
Average	5,36	4,34	3,20	3,53	3,08
Sum					

Source: own creation, based on data from Euromonitor (2018)

Appendix 11: Total disposable income



Western Europe

Country	Disposable Income in Million DKK				
Year	2013	2014	2015	2016	2017
Denmark	830.641	836.878	880.184	915.090	941.495
Sweden	1.359.061	1.412.552	1.459.270	1.519.172	1.597.333
Norway	933.488	979.364	1.053.912	1.072.911	1.110.060
Finland	795.038	800.234	814.076	830.269	854.127
France	9.013.484	9.087.655	9.218.631	9.412.277	9.595.246
Switzerland	2.386.979	2.424.208	2.418.600	2.489.707	2.552.779
UK	8.609.408	8.897.484	9.259.850	9.513.205	9.964.743
Poland	1.615.173	1.657.513	1.701.531	1.758.323	1.864.314
Germany	12.015.242	12.293.570	12.680.087	13.022.526	13.554.971
Italy	7.246.575	7.292.394	7.350.979	7.465.517	7.652.070
Portugal	799.146	796.037	823.378	853.700	886.373
The Baltics					
Lithuania	151.436	154.222	158.655	167.276	180.459
Latvia	88.233	91.501	97.142	101.702	110.031
Estonia	69.164	72.694	76.511	80.169	84.863
South East Europe					
Bulgaria	169.448	170.148	186.220	204.986	218.314
Croatia	195.345	196.143	198.495	203.170	212.409
Greece	833.208	823.703	793.975	775.940	820.386
Hungary	370.687	387.268	395.320	408.635	433.906
Serbia	156.483	158.958	163.014	166.387	176.218
Average	2.507.276	2.554.344	2.617.359	2.682.156	2.779.479
Sum	47.638.239	48.532.528	49.729.829	50.960.963	52.810.099

Eastern Europe

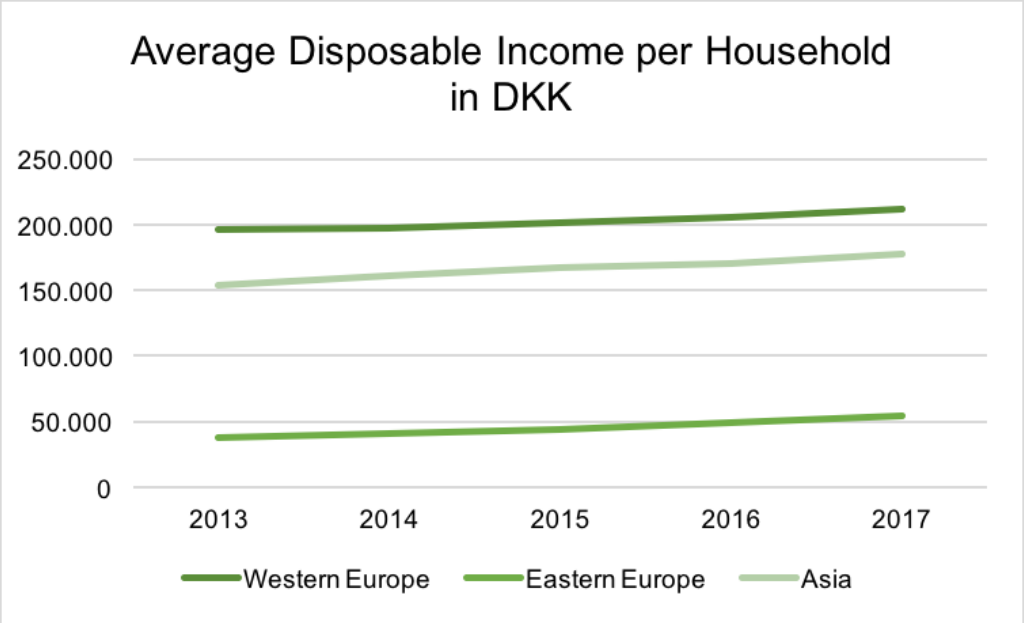
Country	Disposable Income in Million DKK				
Year	2013	2014	2015	2016	2017
Russia	4.306.859	4.742.715	4.969.614	5.069.811	5.436.349
Ukraine	283.399	268.623	310.725	362.389	433.241
Belarus	129.825	149.541	163.586	176.995	197.375
Kazakhstan	333.251	358.279	391.134	468.178	519.253
Azerbaijan	90.607	99.026	105.007	121.845	142.338
Average	1.028.788	1.123.637	1.188.013	1.239.844	1.345.711
Sum	5.143.941	5.618.185	5.940.066	6.199.218	6.728.556

Asia

Country	Disposable Income in Million DKK				
Year	2013	2014	2015	2016	2017
China	31.965.499	35.008.561	38.270.943	41.779.535	45.793.781
Vietnam	656.876	725.639	798.028	882.583	977.801
Laos	n/a	n/a	n/a	n/a	n/a
Cambodia	n/a	n/a	n/a	n/a	n/a
Nepal	n/a	n/a	n/a	n/a	n/a
India	8.372.167	8.959.839	9.847.848	11.109.979	12.198.101
Myanmar	n/a	n/a	n/a	n/a	n/a
Malaysia	801.001	879.969	949.918	1.023.303	1.138.344
Singapore	861.323	893.184	937.166	935.399	966.529
Hong Kong	1.369.654	1.452.793	1.537.316	1.587.398	1.688.488
Average	6.289.503	6.845.712	7.477.317	8.188.314	8.966.149
Sum	44.026.522	47.919.985	52.341.220	57.318.197	62.763.044

Source: own creation, based on data from Euromonitor (2018)

Appendix 12: Average disposable income per household



Western Europe

Country	Average Disposable Income per Household (DKK)									
Year	2013 (USD)	2013	2014	2014 (USD)	2015	2015 (USD)	2016	2016 (USD)	2017 (USD)	2017
Denmark	43.732	264.576	263.231	43.509	273.656	45.232	281.631	46.551	47.540	287.619
Sweden	44.243	267.668	275.506	45.538	280.079	46.294	287.446	47.512	49.182	297.550
Norway	58.989	356.880	366.686	60.609	381.004	62.976	390.256	64.505	65.778	397.956
Finland	45.579	275.755	274.781	45.418	277.186	45.816	280.537	46.370	47.337	286.386
France	48.104	291.026	291.525	48.186	294.057	48.605	298.607	49.357	50.044	302.764
Switzerland	94.129	569.479	567.619	93.821	556.254	91.943	563.642	93.164	94.168	569.716
UK	43.878	265.463	271.410	44.861	279.778	46.244	285.002	47.108	49.277	298.125
Poland	16.660	100.794	105.409	17.423	108.412	17.919	113.759	18.803	19.994	120.961
Germany	42.445	256.791	260.714	43.093	266.481	44.047	269.548	44.553	45.994	278.266
Italy	36.119	218.519	215.431	35.608	216.675	35.814	218.710	36.150	36.808	222.686
Portugal	23.591	142.723	141.881	23.451	146.535	24.221	151.698	25.074	26.001	157.306
The Baltics		-	-		-		-			
Lithuania	16.405	99.247	101.609	16.795	104.992	17.354	111.605	18.447	20.105	121.636
Latvia	13.619	82.392	88.933	14.700	96.161	15.894	100.426	16.599	17.916	108.391
Estonia	16.293	98.570	103.640	17.131	109.380	18.079	112.589	18.610	19.588	118.507
South East Europe		-	-		-		-			
Bulgaria	7.187	43.478	43.491	7.189	47.432	7.840	52.129	8.616	9.170	55.478
Croatia	17.651	106.786	106.803	17.653	107.925	17.839	110.682	18.295	19.147	115.839
Greece	24.969	151.064	145.602	24.067	139.083	22.989	135.564	22.407	23.611	142.845
Hungary	12.855	77.775	81.034	13.394	82.289	13.602	85.362	14.109	14.934	90.349
Serbia	8.574	51.870	52.767	8.722	54.190	8.957	55.422	9.161	9.718	58.793
Average Sum	32.369	195.835	197.793	32.693	201.135	33.246	205.506	33.968	35.069	212.167

Eastern Europe

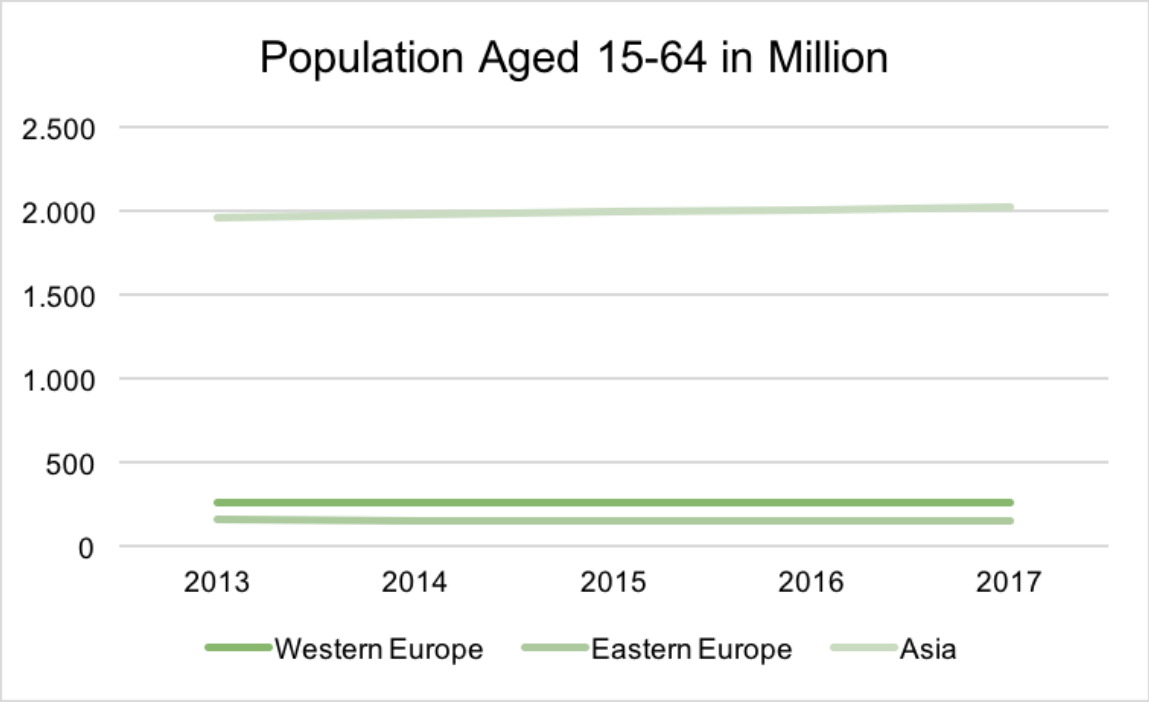
Country	Average Disposable Income per Household (DKK)									
Year	2013	2013	2014	2014	2015	2015	2016	2016	2017 (USD)	2017
Russia	9.460	57.235	63.311	10.465	66.025	10.913	67.168	11.102	11.871	71.817
Ukraine	2.200	13.308	13.326	2.203	15.441	2.552	18.051	2.984	3.577	21.638
Belarus	4.329	26.193	29.992	4.957	32.590	5.387	35.027	5.790	6.418	38.830
Kazakhstan	10.628	64.301	67.876	11.219	72.886	12.047	85.787	14.180	15.417	93.275
Azerbaijan	4.886	29.560	31.805	5.257	33.107	5.472	38.149	6.306	7.265	43.951
Average Sum	6.301	38.119	41.262	6.820	44.010	7.274	48.837	8.072	8.909	53.902

Asia

Country	Average Disposable Income per Household (DKK)									
Year	2013	2013	2014	2014	2015	2015	2016	2016	2017	2017
China	8.438	51.052	55.463	9.167	58.828	9.724	63.777	10.542	11.449	69.265
Vietnam	3.109	18.808	20.010	3.308	21.281	3.518	22.838	3.775	4.060	24.565
Laos		-	-		-		-			
Cambodia		-	-		-		-			
Nepal		-	-		-		-			
India	4.124	24.951	26.017	4.300	27.906	4.613	30.743	5.082	5.459	33.028
Myanmar		-	-		-		-			
Malaysia	14.680	88.812	99.931	16.518	103.746	17.148	110.567	18.276	20.172	122.038
Singapore	63.498	384.164	388.295	64.181	400.248	66.157	399.311	66.002	65.955	399.029
Hong Kong	59.037	357.176	373.708	61.770	389.825	64.434	396.930	65.608	68.850	416.544
Average Sum	25.481	154.161	160.571	26.541	166.972	27.599	170.694	28.214	29.324	177.411

Source: own creation, based on data from Euromonitor (2018)

Appendix 13: Population



Western Europe

Country	Population Aged 15-64				
Year	2013	2014	2015	2016	2017
Denmark	3.625.200	3.631.800	3.645.900	3.672.600	3.692.000
Sweden	6.115.800	6.126.600	6.152.400	6.186.600	6.240.600
Norway	3.333.300	3.365.700	3.399.100	3.424.900	3.457.200
Finland	3.517.100	3.499.700	3.483.800	3.468.200	3.458.500
France	40.651.200	40.600.200	40.541.400	40.512.800	40.509.200
Switzerland	5.439.800	5.494.600	5.547.100	5.593.700	5.629.800
UK	41.658.400	41.724.400	41.898.500	42.059.600	42.158.200
Poland	27.249.000	27.051.600	26.840.400	26.606.300	26.356.200
Germany	53.281.100	53.272.200	53.422.100	54.118.000	54.227.500
Italy	38.697.100	39.319.600	39.193.400	39.013.900	38.896.500
Portugal	6.904.500	6.835.600	6.779.400	6.739.700	6.692.500
The Baltics					
Lithuania	1.993.100	1.970.600	1.948.700	1.916.300	1.877.200
Latvia	1.351.700	1.325.500	1.303.300	1.282.100	1.260.600
Estonia	875.300	866.000	857.300	854.200	848.900
South East Europe					
Bulgaria	4.899.100	4.831.900	4.763.700	4.696.100	4.638.300
Croatia	2.852.500	2.836.500	2.809.100	2.775.000	2.745.600
Greece	7.180.200	7.088.200	7.011.000	6.950.400	6.901.400
Hungary	6.776.300	6.719.700	6.664.200	6.609.500	6.561.300
Serbia	4.886.400	4.833.500	4.776.800	4.712.300	4.662.100
Average					
Sum	261.287.100	261.393.900	261.037.600	261.192.200	260.813.600

Eastern Europe

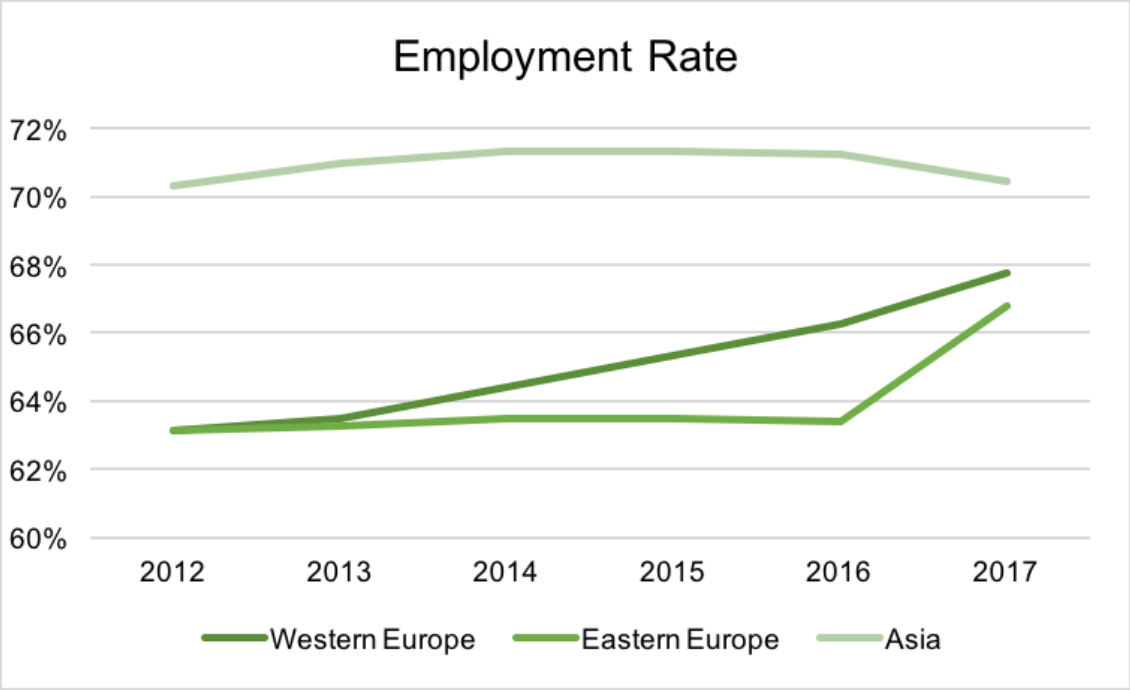
Country	Population Aged 15-64				
Year	2013	2014	2015	2016	2017
Russia	101.977.700	101.427.400	100.500.500	99.753.000	99.011.600
Ukraine	31.846.800	29.970.100	29.634.700	29.327.700	29.023.000
Belarus	6.697.900	6.661.500	6.613.400	6.577.300	6.529.900
Kazakhstan	11.456.300	11.520.000	11.569.100	11.603.800	11.630.000
Azerbaijan	6.731.200	6.804.800	6.870.000	6.921.300	6.975.100
Average					
Sum	158.709.900	156.383.800	155.187.700	154.183.100	153.169.600

Asia

Country	Population Aged 15-64				
Year	2013	2014	2015	2016	2017
China	991.320.800	993.822.000	995.480.100	994.274.300	991.806.000
Vietnam	64.316.500	65.025.200	65.651.400	66.205.100	66.692.400
Laos	4.004.500	4.080.900	4.158.500	4.239.000	4.322.900
Cambodia	9.612.500	9.799.700	9.974.500	10.134.600	10.287.000
Nepal	16.899.400	17.333.800	17.758.000	18.157.600	18.543.200
India	811.411.700	825.415.700	839.148.900	852.408.200	865.308.500
Myanmar	33.988.700	34.494.700	35.007.900	35.520.900	36.028.900
Malaysia	20.749.000	21.070.400	21.429.700	21.765.800	22.070.700
Singapore	4.053.600	4.084.200	4.112.800	4.131.600	4.145.400
Hong Kong	5.368.900	5.371.400	5.354.200	5.346.500	5.332.800
Average					
Sum	1.961.725.600	1.980.498.000	1.998.076.000	2.012.183.600	2.024.537.800

Source: own creation, based on data from Euromonitor (2018

Appendix 14: Employment rate



Western Europe

Country	Emplyoment Rate (%)					
Year	2012	2013	2014	2015	2016	2017
Denmark	72	73	73	74	75	74
Sweden	74	75	75	76	77	77
Norway	77	76	76	75	75	74
Finland	69	68	68	68	69	70
France	64	64	64	64	65	65
Switzerland	78	78	78	79	79	79
UK	69	70	71	72	73	73
Poland	56	56	57	59	60	62
Germany	72	72	73	73	74	75
Italy	57	56	56	56	57	58
Portugal	60	59	61	63	64	67
The Baltics						
Lithuania	62	63	65	67	68	68
Latvia	62	64	65	67	67	69
Estonia	68	69	70	72	73	74
South East Europe						
Bulgaria	58	59	61	62	63	67
Croatia	53	52	54	55	56	58
Greece	50	48	49	50	52	53
Hungary	56	57	61	63	65	67
Serbia	44	46	47	48	49	57
Average	63	63	64	65	66	68
Sum						

Eastern Europe

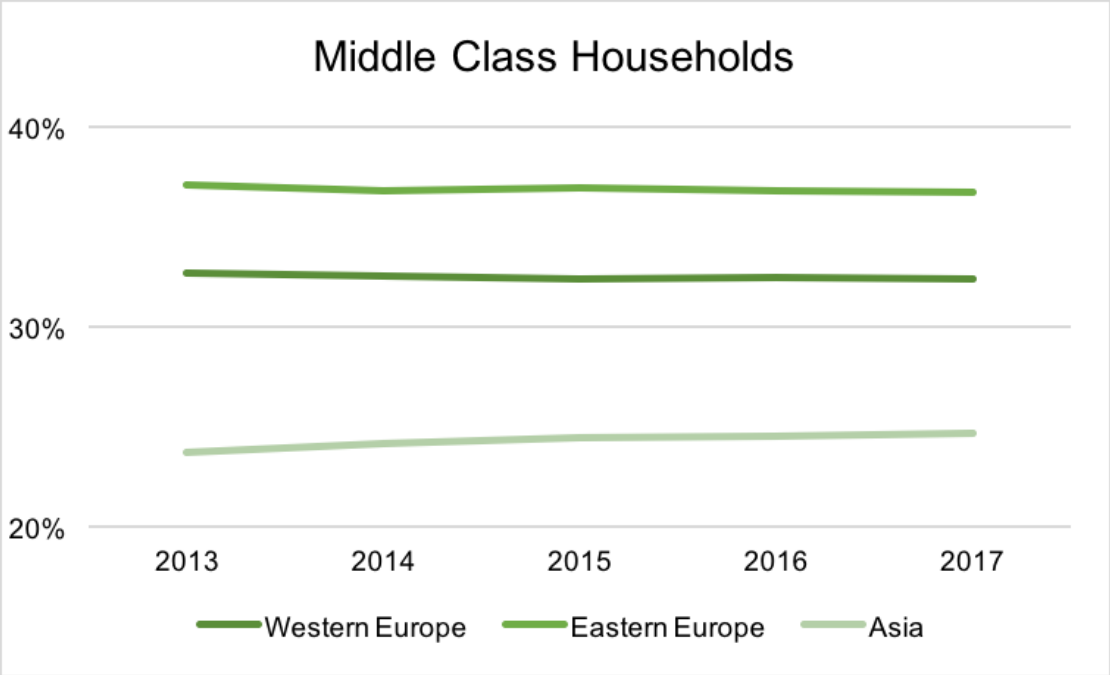
Country	Emplyoment Rate (%)					
Year	2012	2013	2014	2015	2016	2017
Russia	68	69	69	70	71	71
Ukraine	40	39	39	39	39	55
Belarus	68	68	68	68	67	67
Kazakhstan	74	75	75	73	73	73
Azerbaijan	66	66	67	67	68	68
Average	63	63	64	64	63	67
Sum						

Asia

Country	Emplyoment Rate (%)					
Year	2012	2013	2014	2015	2016	2017
China	75	75	75	75	76	76
Vietnam	78	78	78	77	77	77
Laos	78	79	79	79	80	80
Cambodia	77	78	80	79	79	79
Nepal	75	74	75	74	74	75
India	45	45	45	44	44	44
Myanmar	64	66	66	66	65	58
Malaysia	64	66	66	66	65	66
Singapore	80	80	82	83	82	81
Hong Kong	67	68	68	69	69	69
Average	70	71	71	71	71	70
Sum						

Source: own creation, based on data from Euromonitor (2018)

Appendix 15: Middle class



Western Europe

Country	Middle Class Households (%)				
Year	2013	2014	2015	2016	2017
Denmark	31,9	32,3	32,6	32,7	32,6
Sweden	27,8	27,7	27,6	27,5	27,5
Norway	33,0	32,3	30,6	31,8	31,6
Finland	40,5	40,2	39,8	39,6	39,4
France	31,3	31,5	31,7	31,9	32,0
Switzerland	33,2	33,0	32,7	32,6	32,4
UK	35,0	34,8	34,8	34,7	34,2
Poland	33,1	33,8	34,4	36,6	37,0
Germany	31,7	31,6	31,6	31,6	31,6
Italy	38,0	37,6	37,0	37,0	37,0
Portugal	32,2	32,2	32,2	32,1	32,1
The Baltics					
Lithuania	26,4	26,4	26,3	26,3	26,3
Latvia	33,9	30,3	30,1	30,1	30,1
Estonia	33,7	33,1	32,9	32,1	32,0
South East Europe					
Bulgaria	35,6	35,5	35,5	35,4	35,4
Croatia	26,7	26,6	26,6	26,6	26,5
Greece	27,1	28,7	29,1	29,1	29,0
Hungary	38,0	37,8	37,5	36,9	36,8
Serbia	32,4	32,4	32,3	32,3	32,2
Average	32,71	32,52	32,38	32,47	32,41
Sum					

Eastern Europe

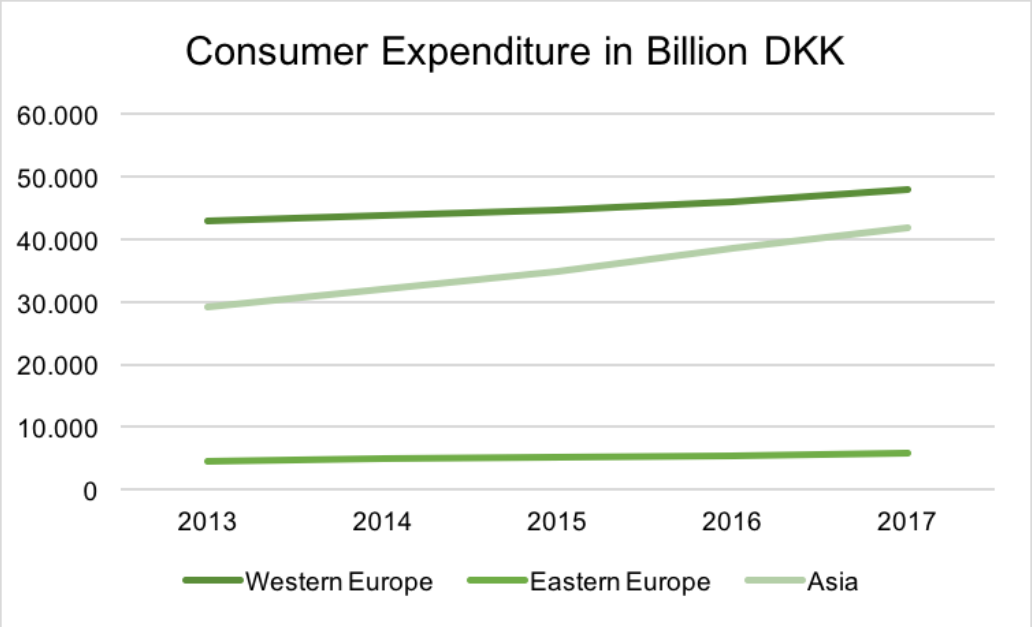
Country	Middle Class Households (%)				
Year	2013	2014	2015	2016	2017
Russia	29,2	28,6	29,2	29,3	29,4
Ukraine	33,0	32,9	32,9	32,9	32,9
Belarus	39,4	39,4	39,3	39,2	39,2
Kazakhstan	40,9	40,6	40,6	40,6	40,3
Azerbaijan	43,0	42,6	42,9	41,9	41,9
Average	37,10	36,82	36,98	36,78	36,74
Sum					

Asia

Country	Middle Class Households (%)				
Year	2013	2014	2015	2016	2017
China	22,4	22,6	25,4	25,6	25,7
Vietnam	23,7	23,5	23,3	23,2	23,2
Laos	n/a	n/a	n/a	n/a	n/a
Cambodia	n/a	n/a	n/a	n/a	n/a
Nepal	n/a	n/a	n/a	n/a	n/a
India	28,3	28,1	27,9	27,7	27,6
Myanmar	n/a	n/a	n/a	n/a	n/a
Malaysia	23,3	26,0	25,2	25,9	26,8
Singapore	24,7	25,1	25,4	25,1	25,0
Hong Kong	19,9	19,8	19,8	19,8	19,7
Average	23,72	24,18	24,50	24,55	24,67
Sum					

Source: own creation, based on data from Euromonitor (2018)

Appendix 16: Consumer expenditure



Western Europe

Country	Consumer Expenditure in Million DKK									
Year	2013	2013 (USD)	2014 (USD)	2014	2015 (USD)	2015	2016 (USD)	2016	2017 (USD)	2017
Denmark	818.552	135.298	137.673	832.922	141.154	853.980	145.030	877.430	149.248	902.948
Sweden	1.200.577	198.443	205.382	1.242.560	214.070	1.295.123	220.936	1.336.665	231.692	1.401.736
Norway	819.319	135.425	140.414	849.505	146.984	889.252	154.114	932.390	160.180	969.086
Finland	723.131	119.526	121.633	735.881	123.335	746.176	126.317	764.217	130.079	786.979
France	7.788.242	1.287.313	1.294.135	7.829.519	1.314.679	7.953.807	1.340.696	8.111.211	1.366.159	8.265.259
Switzerland	2.036.377	336.591	339.835	2.056.004	342.816	2.074.034	347.393	2.101.729	354.514	2.144.808
UK	8.485.738	1.402.601	1.460.377	8.835.281	1.505.651	9.109.190	1.565.328	9.470.234	1.635.626	9.895.535
Poland	1.607.124	265.640	272.562	1.648.998	277.422	1.678.402	287.277	1.738.026	304.740	1.843.674
Germany	10.024.086	1.656.874	1.688.105	10.213.036	1.726.557	10.445.670	1.769.974	10.708.344	1.844.897	11.161.625
Italy	6.745.057	1.114.885	1.120.036	6.776.220	1.144.805	6.926.073	1.162.610	7.033.790	1.198.724	7.252.278
Portugal	776.185	128.295	132.494	801.587	137.335	830.879	141.729	857.463	147.205	890.590
The Baltics	-			-		-		-		-
Lithuania	149.152	24.653	25.659	155.235	26.447	160.001	27.968	169.206	30.010	181.557
Latvia	94.666	15.647	16.170	97.831	16.534	100.029	17.294	104.628	18.746	113.415
Estonia	68.093	11.255	11.728	70.953	12.106	73.241	12.750	77.139	13.513	81.753
South East Europe	-			-		-		-		-
Bulgaria	190.594	31.503	32.244	195.079	33.660	203.644	34.791	210.486	36.851	222.951
Croatia	224.597	37.123	36.819	222.756	37.540	227.115	39.060	236.315	40.996	248.025
Greece	908.398	150.149	148.714	899.717	146.979	889.222	146.468	886.128	149.193	902.620
Hungary	149.152	24.653	25.659	155.235	26.447	160.001	27.968	169.206	70.706	427.772
Serbia	161.685	26.725	27.091	163.898	27.623	167.121	28.169	170.424	29.538	178.705
Average	2.261.617	373.821	380.881	2.304.327	389.586	2.356.998	399.783	2.418.686	416.453	2.519.543
Sum	42.970.726	7.102.599	7.236.730	43.782.216	7.402.142	44.782.960	7.595.873	45.955.033	7.912.614	47.871.317

Eastern Europe

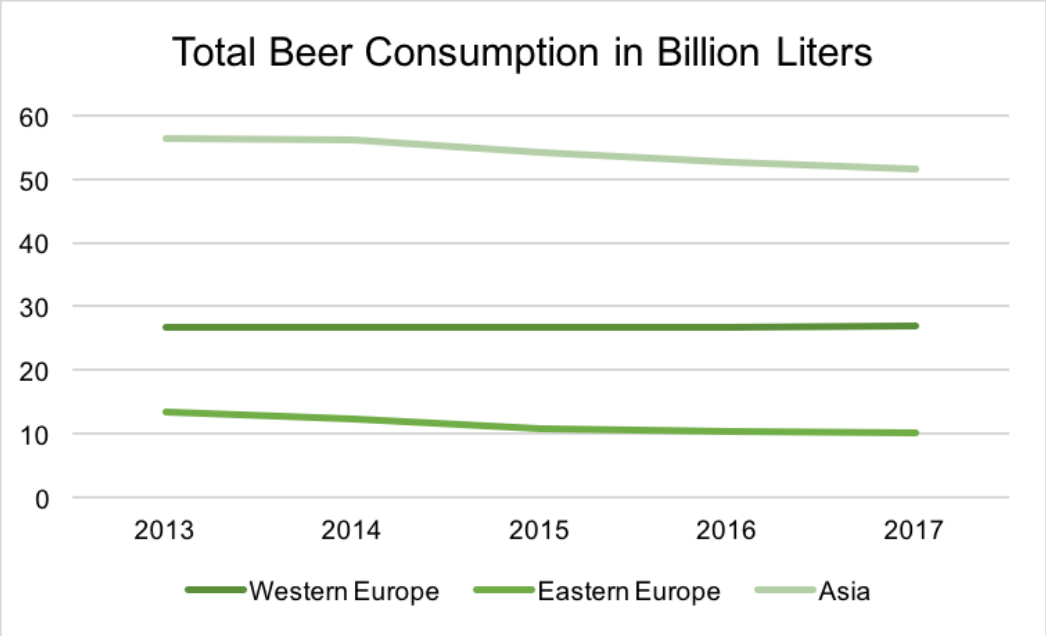
Country	Consumer Expenditure in Million DKK									
Year	2013	2013	2014	2014	2015	2015	2016	2016	2017 (USD)	2017
Russia	3.812.277	630.129	695.521	4.207.903	714.235	4.321.120	724.903	4.385.661	773.931	4.682.284
Ukraine	246.191	40.693	41.323	250.002	48.074	290.845	56.107	339.449	67.060	405.714
Belarus	104.140	17.213	21.402	129.484	23.953	144.915	26.035	157.511	29.139	176.289
Kazakhstan	327.916	54.201	58.033	351.101	63.242	382.613	75.766	458.383	84.062	508.572
Azerbaijan	86.248	14.256	15.699	94.977	17.941	108.543	20.820	125.962	24.236	146.627
Average	915.355	151.298	166.396	1.006.693	173.489	1.049.607	180.726	1.093.393	195.685	1.183.897
Sum	4.576.773	756.491	831.978	5.033.466	867.444	5.248.036	903.631	5.466.965	978.427	5.919.486

Asia

Country	Consumer Expenditure in Million DKK									
Year	2013	2013	2014	2014	2015	2015	2016	2016	2017 (USD)	2017
China	19.488.569	3.221.251	3.534.374	21.382.965	3.876.773	23.454.475	4.268.026	25.821.554	4.650.207	28.133.751
Vietnam	665.591	110.015	120.966	731.842	132.966	804.446	147.044	889.615	162.738	984.567
Laos	50.562	8.357	9.742	58.942	10.306	62.351	11.167	67.560	12.270	74.234
Cambodia	83.250	13.760	14.954	90.472	16.265	98.403	17.703	107.104	19.380	117.250
Nepal	77.484	12.807	14.547	88.011	16.179	97.884	17.991	108.844	20.204	122.236
India	6.053.573	1.000.591	1.115.935	6.751.409	1.225.236	7.412.675	1.378.796	8.341.717	1.509.559	9.132.833
Myanmar	141.310	23.357	26.765	161.927	30.677	185.595	34.577	209.192	39.510	239.032
Malaysia	783.208	129.456	142.547	862.408	151.867	918.792	164.224	993.555	182.826	1.106.095
Singapore	608.376	100.558	103.975	629.048	108.126	654.164	109.617	663.180	111.658	675.531
Hong Kong	1.183.051	195.546	205.230	1.241.640	213.273	1.290.300	215.595	1.304.350	228.595	1.382.997
Average	2.913.497	481.570	528.904	3.199.866	578.167	3.497.908	636.474	3.850.667	693.695	4.196.853
Sum	29.134.975	4.815.698	5.289.035	31.998.663	5.781.667	34.979.084	6.364.739	38.506.671	6.936.947	41.968.527

Source: own creation, based on data from Euromonitor (2018)

Appendix 17: Total Beer consumption



Western Europe

Country	Total Consumption in Million Liters*				
Year	2013	2014	2015	2016	*2017*
Denmark	353	366	344	345,7	*345*
Sweden	471	464	462	462	*462*
Norway	248	255	258	268	*274*
Finland	442	433	424	422	*423*
France	1861	1903	1954	2004	*2043*
Switzerland	442	447	449	450	*452*
UK	4720	4748	4736	4740	*4753*
Poland	3824,5	3867,6	3915	3988,1	*4030*
Germany	9228	9175	9103	9088	*9042*
Italy	1588	1563	1563	1576	*1596*
Portugal	468	463	463	480	*473*
The Baltics					
Lithuania	280,3	291,6	290	271,8	*229*
Latvia	160,4	160,9	157,6	155,8	*155*
Estonia	130,6	130,2	127,1	118,4	*114*
South East Europe					
Bulgaria	541,2	516,2	535	555,4	*574*
Croatia	349,4	322	345,7	357,3	*367*
Greece	386	381	381	386	*389*
Hungary	643,6	654,6	673,6	679,2	*693*
Serbia	481,7	480,1	466,1	464,9	*470*
Average Sum	26.619	26.621	26.647	26.813	26.884

Eastern Europe

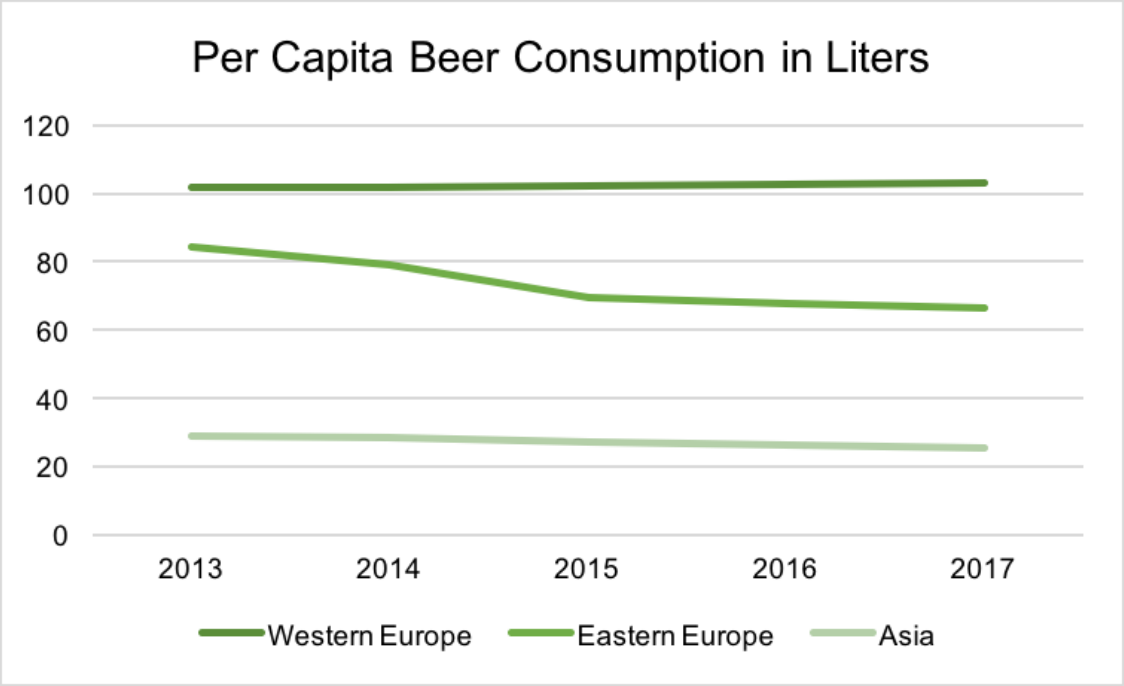
Country	Total Consumption in Million Liters				
Year	2013	2014	2015	2016	2017
Russia	9612	8920	7913	7689	*7449*
Ukraine	2713	2375	1900	1761	*1742*
Belarus	496	478	437	426	*424*
Kazakhstan	513	500	479	501	*514*
Azerbaijan	60	62	57	55	*55*
Average Sum	13.394	12.335	10.786	10.432	10.184

Asia

Country	Total Consumption in Million Liters				
Year	2013	2014	2015	2016	2017
China	50582	50081	47727	45627	*44083*
Vietnam	3038	3152	3364	3636	*3877*
Laos					
Cambodia					
Nepal					
India	2316	2544	2739	2922	*3099*
Myanmar					
Malaysia	164	166	166	167	*168*
Singapore	119	122	126	129	*132*
Hong Kong	164	163	164	167	*170*
Average Sum	56.383	56.228	54.286	52.648	51.529

Source: own creation, based on data from Euromonitor (2018)

Appendix 18: Beer Consumption per capita



Western Europe

Country	Per Capita Beer Consumption in Liters				
Year	2013	2014	2015	2016	2017
Denmark	97	101	94	94	93
Sweden	77	76	75	75	74
Norway	74	76	76	78	79
Finland	126	124	122	122	122
France	46	47	48	49	50
Switzerland	81	81	81	80	80
UK	113	114	113	113	113
Poland	140	143	146	150	153
Germany	173	172	170	168	167
Italy	41	40	40	40	41
Portugal	68	68	68	71	71
The Baltics					
Lithuania	141	148	149	142	122
Latvia	119	121	121	122	123
Estonia	149	150	148	139	134
South East Europe					
Bulgaria	110	107	112	118	124
Croatia	122	114	123	129	134
Greece	54	54	54	56	56
Hungary	95	97	101	103	106
Serbia	99	99	98	99	101
Average					
Sum	102	102	102	103	103

Eastern Europe

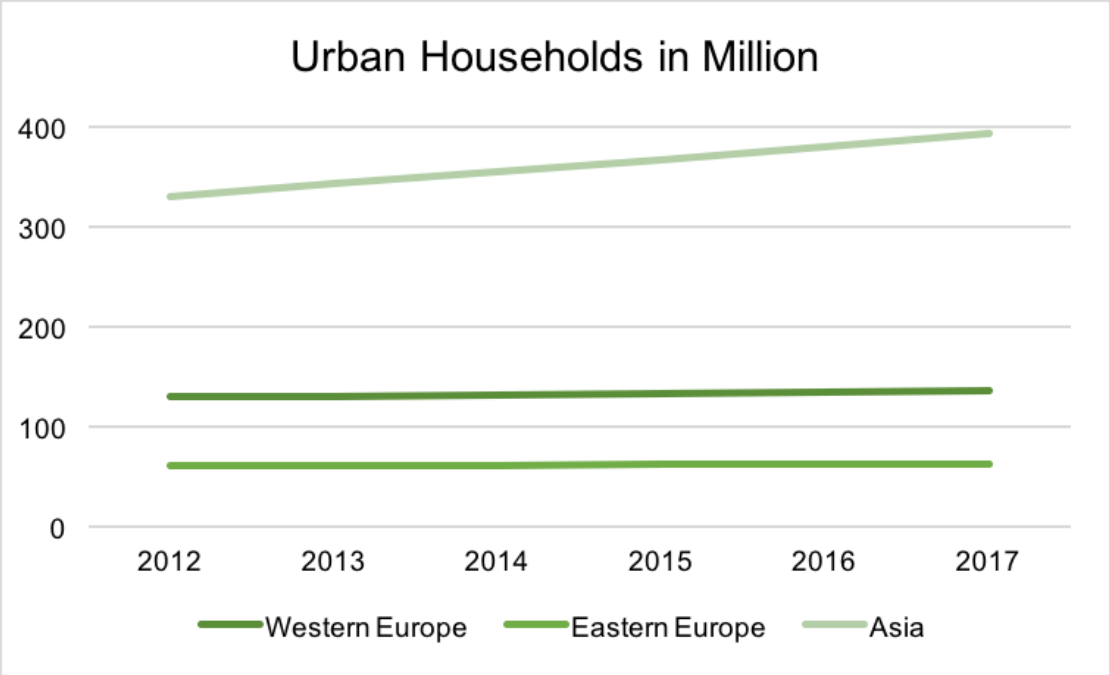
Country	Per Capita Beer Consumption in Liters				
Year	2013	2014	2015	2016	2017
Russia	94	88	79	77	75
Ukraine	85	79	64	60	60
Belarus	74	72	66	65	65
Kazakhstan	45	43	41	43	44
Azerbaijan	9	9	8	8	8
Average					
Sum	84	79	70	68	66

Asia

Country	Per Capita Beer Consumption in Liters				
Year	2013	2014	2015	2016	2017
China	51	50	48	46	44
Vietnam	47	48	51	55	58
Laos					
Cambodia					
Nepal					
India	3	3	3	3	4
Myanmar					
Malaysia	8	8	8	8	8
Singapore	29	30	31	31	32
Hong Kong	31	30	31	31	32
Average					
Sum	29	28	27	26	25

Source: own creation, based on data from Euromonitor (2018)

Appendix 19: Urban households



Western Europe

Country	Urban Households in Mio					
Year	2012	2013	2014	2015	2016	2017
Denmark	2,26	2,28	2,30	2,31	2,34	2,35
Sweden	3,61	3,63	3,67	3,73	3,79	3,85
Norway	1,81	1,84	1,87	1,90	1,93	1,95
Finland	2,18	2,20	2,22	2,24	2,25	2,27
France	22,02	22,28	22,53	22,77	22,99	23,20
Switzerland	2,74	2,78	2,82	2,87	2,91	2,95
UK	21,68	21,90	22,12	22,37	22,62	22,84
Poland	9,17	9,18	9,18	9,19	9,19	9,20
Germany	30,74	30,99	31,29	31,65	32,20	32,53
Italy	18,21	18,54	19,12	19,35	19,52	19,69
Portugal	2,55	2,57	2,60	2,62	2,64	2,66
The Baltics						
Lithuania	0,86	0,86	0,85	0,85	0,84	0,83
Latvia	0,61	0,61	0,62	0,62	0,62	0,63
Estonia	0,43	0,42	0,42	0,42	0,43	0,43
South East Europe						
Bulgaria	2,21	2,22	2,23	2,24	2,24	2,24
Croatia	0,94	0,95	0,96	0,96	0,96	0,97
Greece	3,23	3,25	3,26	3,28	3,29	3,31
Hungary	2,98	2,99	2,99	3,00	3,00	3,01
Serbia	1,44	1,44	1,44	1,45	1,44	1,44
Average						
Sum	130	131	132	134	135	136

Eastern Europe

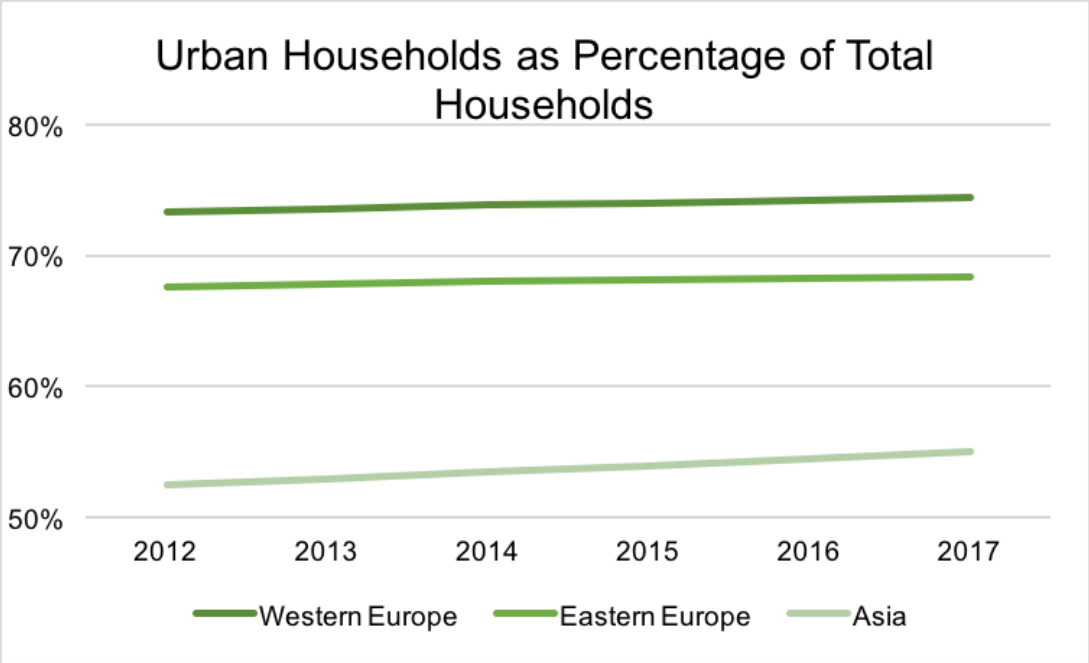
Country	Urban Households in Mio					
Year	2012	2013	2014	2015	2016	2017
Russia	41,97	42,37	42,79	43,19	43,56	43,92
Ukraine	12,61	12,61	11,95	11,95	11,92	11,92
Belarus	2,92	2,96	2,99	3,03	3,06	3,08
Kazakhstan	2,85	2,89	2,94	2,99	3,05	3,10
Azerbaijan	1,08	1,09	1,11	1,12	1,13	1,14
Average						
Sum	61	62	62	62	63	63

Asia

Country	Urban Households in Mio					
Year	2012	2013	2014	2015	2016	2017
China	225,95	234,98	243,55	251,81	261,43	271,14
Vietnam	8,22	8,66	9,11	9,54	9,97	10,40
Laos	0,35	0,36	0,37	0,39	0,41	0,43
Cambodia	0,61	0,64	0,66	0,68	0,71	0,73
Nepal						
India	83,21	85,99	88,77	91,56	94,37	97,19
Myanmar	3,17	3,29	3,41	3,54	3,68	3,81
Malaysia	5,02	5,25	5,42	5,60	5,77	5,95
Singapore	1,54	1,57	1,60	1,63	1,65	1,68
Hong Kong	2,41	2,43	2,46	2,49	2,52	2,56
Average						
Sum	330	343	355	367	381	394

Source: own creation, based on data from Euromonitor (2018)

Appendix 20: Urban households as percentage of total households



Western Europe

Country	Urban Households as Percentage of Total Households					
Year	2012	2013	2014	2015	2016	2017
Denmark	0,87	0,87	0,88	0,88	0,88	0,88
Sweden	0,87	0,87	0,87	0,87	0,87	0,88
Norway	0,81	0,81	0,82	0,82	0,82	0,82
Finland	0,85	0,85	0,85	0,85	0,85	0,85
France	0,80	0,80	0,80	0,81	0,81	0,81
Switzerland	0,76	0,76	0,76	0,76	0,76	0,76
UK	0,81	0,82	0,82	0,82	0,82	0,83
Poland	0,52	0,52	0,55	0,55	0,55	0,55
Germany	0,77	0,78	0,78	0,78	0,78	0,78
Italy	0,71	0,71	0,71	0,71	0,71	0,72
Portugal	0,63	0,64	0,64	0,65	0,65	0,66
The Baltics						
Lithuania	0,69	0,69	0,69	0,69	0,69	0,69
Latvia	0,71	0,71	0,71	0,71	0,71	0,71
Estonia	0,71	0,71	0,71	0,72	0,72	0,72
South East Europe						
Bulgaria	0,73	0,74	0,74	0,74	0,74	0,74
Croatia	0,61	0,61	0,61	0,62	0,62	0,62
Greece	0,78	0,78	0,78	0,79	0,79	0,79
Hungary	0,72	0,73	0,73	0,73	0,73	0,73
Serbia	0,58	0,58	0,58	0,59	0,59	0,59
Average	0,73	0,73	0,74	0,74	0,74	0,74
Sum						

Eastern Europe

Country	Urban Households as Percentage of Total Households					
Year	2012	2013	2014	2015	2016	2017
Russia	0,76	0,76	0,76	0,76	0,77	0,77
Ukraine	0,71	0,71	0,71	0,71	0,71	0,71
Belarus	0,75	0,75	0,76	0,77	0,77	0,77
Kazakhstan	0,62	0,62	0,62	0,62	0,62	0,62
Azerbaijan	0,54	0,55	0,55	0,54	0,54	0,54
Average	0,68	0,68	0,68	0,68	0,68	0,68
Sum						

Asia

Country	Urban Households as Percentage of Total Households					
Year	2012	2013	2014	2015	2016	2017
China	0,52	0,54	0,55	0,56	0,57	0,58
Vietnam	0,33	0,33	0,34	0,35	0,35	0,36
Laos	0,30	0,31	0,31	0,32	0,33	0,34
Cambodia	0,20	0,20	0,20	0,20	0,21	0,21
Nepal	-	-	-	-	-	-
India	0,33	0,33	0,34	0,34	0,35	0,35
Myanmar	0,30	0,31	0,31	0,32	0,32	0,33
Malaysia	0,75	0,75	0,76	0,77	0,77	0,78
Singapore	1,00	1,00	1,00	1,00	1,00	1,00
Hong Kong	1,00	1,00	1,00	1,00	1,00	1,00
Average	0,53	0,53	0,53	0,54	0,54	0,55
Sum						

Source: own creation, based on data from Euromonitor (2018)

Appendix 21: CAPEX of top four beer producers

CAPEX		
mio DKK	2016	2017
AB InBev	29.903	25.864
Heineken	13.088	12.634
Carlsberg	4.100	3.800
China Resource Beer Holdings	1.592	835
Average	**12.171**	**10.783**

Revenue		
mio DKK	2016	2017
AB InBev	285.463	353.992
Heineken	154.887	163.200
Carlsberg	62.614	61.808
China Resource Beer Holdings	29.202	27.291

CAPEX to Sales Ratio		
mio DKK	2016	2017
AB InBev	10,5%	7,3%
Heineken	8,5%	7,7%
Carlsberg	6,5%	6,1%
China Resource Beer Holdings	5,5%	3,1%

Source: own creation, based on Carlsberg's annual report (2016, 2017), AB InBev annual report(2016, 2017), Heineken annual report (2016, 2017) and China Resource Beer Holdings annual report (2016, 2017)

Appendix 22: Carlsberg's marketing spend

mio DKK	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Marketing spend	7.009	5.973	5.859	6.342	6.211	5.980
Net Revenue	66.468	66.552	64.506	65.354	62.614	61.808
Marketing spend/Revenue	**10,5%**	**9,0%**	**9,1%**	**9,7%**	**9,9%**	**9,7%**

Source: own creation based on Carlsberg's annual report (2012-2017)

Appendix 23: Volume sold of top four beer producers

	Volume sold	
in mio hl	**2016**	**2017**
AB InBev	500	613
Heineken	200	218
China Resource Beer Holdi	117	126
Carlsberg	117	112

Source: own creation, based on Carlsberg's annual report (2016, 2017), AB InBev annual report(2016, 2017), Heineken annual report (2016, 2017) and China Resource Beer Holdings annual report (2016, 2017)

Appendix 24: Share of on-trade and off-trade buyers

Geography	Category	Categorization	Data Type	2012	2013	2014	2015	2016	2017
World	Beer	Off-Trade Volume %	Total Volume	61,7	61,5	61,3	61	61	61,1
World	Beer	On-Trade Volume %	Total Volume	36,2	36,2	36,3	36,4	36,1	35,9
World	**Beer**	**Total**	**Total Volume**	**97,9**	**97,8**	**97,6**	**97,5**	**97,2**	**97**
Asia	Beer	Off-Trade Volume %	Total Volume	53,4	52,9	52,8	52,6	52,4	52,5
Asia	Beer	On-Trade Volume %	Total Volume	45,7	45,9	45,9	45,9	45,6	45,3
Asia	**Beer**	**Total**	**Total Volume**	**99,1**	**98,8**	**98,7**	**98,5**	**98,1**	**97,8**
Eastern Europe	Beer	Off-Trade Volume %	Total Volume	84,5	84,6	84,6	84,4	83,8	83,4
Eastern Europe	Beer	On-Trade Volume %	Total Volume	15,5	15,4	15,4	15,6	16,2	16,6
Eastern Europe	**Beer**	**Total**	**Total Volume**	**100**	**100**	**100**	**100**	**100**	**100**
Western Europe	Beer	Off-Trade Volume %	Total Volume	59,5	60,2	60,5	60,6	60,7	60,8
Western Europe	Beer	On-Trade Volume %	Total Volume	40,5	39,8	39,5	39,4	39,3	39,2
Western Europe	**Beer**	**Total**	**Total Volume**	**100**	**100**	**100**	**100**	**100**	**100**

Source: own creation, based on Euromonitor (2018)

Appendix 25: Share of alcoholic drinks

Geography	Category	Data Type	Unit	2012	2013	2014	2015	2016	2017
World	**Alcoholic Drinks**	**Total Volume**	**million litres**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
World	Beer	Total Volume	million litres	78,2%	78,2%	78,2%	78,2%	77,8%	77,6%
World	Cider/Perry	Total Volume	million litres	0,8%	0,8%	0,8%	0,9%	0,9%	0,9%
World	RTDs/High-Strength Premixes	Total Volume	million litres	1,4%	1,4%	1,4%	1,5%	1,5%	1,6%
World	Spirits	Total Volume	million litres	8,2%	8,4%	8,4%	8,4%	8,5%	8,7%
World	Wine	Total Volume	million litres	11,4%	11,2%	11,1%	11,0%	11,2%	11,3%
Asia	**Alcoholic Drinks**	**Total Volume**	**million litres**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Asia	Beer	Total Volume	million litres	79,3%	78,8%	79,0%	78,7%	77,8%	77,0%
Asia	Cider/Perry	Total Volume	million litres	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Asia	RTDs/High-Strength Premixes	Total Volume	million litres	1,0%	1,0%	1,0%	1,2%	1,3%	1,4%
Asia	Spirits	Total Volume	million litres	13,2%	13,5%	13,4%	13,7%	14,1%	14,6%
Asia	Wine	Total Volume	million litres	6,5%	6,7%	6,5%	6,4%	6,7%	7,0%
Eastern Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**100%**	**90%**	**100%**	**100%**	**100%**	**100%**
Eastern Europe	Beer	Total Volume	million litres	78,0%	78,9%	79,1%	79,5%	79,4%	79,4%
Eastern Europe	Cider/Perry	Total Volume	million litres	0,2%	0,2%	0,2%	0,3%	0,4%	0,6%
Eastern Europe	RTDs/High-Strength Premixes	Total Volume	million litres	1,6%	1,3%	1,3%	1,2%	1,0%	0,9%
Eastern Europe	Spirits	Total Volume	million litres	9,6%	0,0%	9,2%	8,9%	8,6%	8,5%
Eastern Europe	Wine	Total Volume	million litres	10,7%	10,1%	10,2%	10,2%	10,5%	10,6%
Western Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Western Europe	Beer	Total Volume	million litres	64,4%	64,5%	64,5%	64,7%	64,8%	64,9%
Western Europe	Cider/Perry	Total Volume	million litres	2,8%	2,9%	3,0%	3,0%	2,9%	2,8%
Western Europe	RTDs/High-Strength Premixes	Total Volume	million litres	1,1%	1,1%	1,1%	1,1%	1,1%	1,1%
Western Europe	Spirits	Total Volume	million litres	4,4%	4,4%	4,4%	4,3%	4,3%	4,3%
Western Europe	Wine	Total Volume	million litres	27,3%	27,1%	27,0%	26,8%	26,9%	26,8%

Geography	Category	Data Type	Unit	2012	2013	2014	2015	2016	2017
World	**Alcoholic Drinks**	**Total Volume**	**million litres**	**245.598**	**249.962**	**250.730**	**251.347**	**249.585**	**249.496**
World	Beer	Total Volume	million litres	192.098	195.439	196.027	196.570	194.301	193.504
World	Cider/Perry	Total Volume	million litres	1.872	1.991	2.122	2.246	2.315	2.323
World	RTDs/High-Strength Premixes	Total Volume	million litres	3.377	3.443	3.590	3.719	3.813	3.887
World	Spirits	Total Volume	million litres	20.234	21.002	21.086	21.225	21.210	21.589
World	Wine	Total Volume	million litres	28.015	28.084	27.903	27.586	27.944	28.193
Asia	**Alcoholic Drinks**	**Total Volume**	**million litres**	**84.176**	**87.423**	**90.000**	**90.405**	**89.301**	**88.919**
Asia	Beer	Total Volume	million litres	66.760	68.848	71.092	71.147	69.518	68.480
Asia	Cider/Perry	Total Volume	million litres	05	06	07	09	11	13
Asia	RTDs/High-Strength Premixes	Total Volume	million litres	824	863	928	1.054	1.169	1.241
Asia	Spirits	Total Volume	million litres	11.075	11.815	12.094	12.427	12.626	12.989
Asia	Wine	Total Volume	million litres	5.512	5.890	5.878	5.768	5.976	6.195
Eastern Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**31.381**	**31.412**	**30.037**	**28.441**	**26.769**	**26.417**
Eastern Europe	Beer	Total Volume	million litres	24.478	24.776	23.750	22.601	21.263	20.985
Eastern Europe	Cider/Perry	Total Volume	million litres	50	55	66	80	119	154
Eastern Europe	RTDs/High-Strength Premixes	Total Volume	million litres	489	413	386	341	278	227
Eastern Europe	Spirits	Total Volume	million litres	3.018		2.776	2.523	2.291	2.255
Eastern Europe	Wine	Total Volume	million litres	3.344	3.168	3.057	2.894	2.817	2.796
Western Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**44.742**	**44.064**	**43.424**	**43.299**	**43.319**	**43.405**
Western Europe	Beer	Total Volume	million litres	28.813	28.429	28.019	28.025	28.050	28.167
Western Europe	Cider/Perry	Total Volume	million litres	1.256	1.274	1.284	1.280	1.245	1.235
Western Europe	RTDs/High-Strength Premixes	Total Volume	million litres	475	484	491	495	488	482
Western Europe	Spirits	Total Volume	million litres	1.968	1.926	1.899	1.882	1.874	1.867
Western Europe	Wine	Total Volume	million litres	12.228	11.950	11.729	11.616	11.660	11.653

Source: own creation, based on Euromonitor (2018)

Appendix 26: Volume growth of different alcohol categories

in %

Geography	Category	Data Type	Unit	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016-2017
Asia	**Alcoholic Drinks**	**Total Volume**	**million litres**	**04**	**03**	**00**	**-01**	**00**
Asia	Beer	Total Volume	million litres	03	03	00	-02	-02
Asia	Cider/Perry	Total Volume	000 litres	21	22	22	24	20
Asia	RTDs/High-Strength Premixes	Total Volume	000 litres	05	08	14	11	06
Asia	Spirits	Total Volume	000 litres	07	02	03	02	03
Asia	Wine	Total Volume	million litres	07	00	-02	04	04
Eastern Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**00**	**-04**	**-05**	**-06**	**-01**
Eastern Europe	Beer	Total Volume	million litres	01	-04	-05	-06	-01
Eastern Europe	Cider/Perry	Total Volume	000 litres	10	20	22	48	29
Eastern Europe	RTDs/High-Strength Premixes	Total Volume	000 litres	-15	-07	-12	-19	-18
Eastern Europe	Spirits	Total Volume	000 litres	-01	-07	-09	-09	-02
Eastern Europe	Wine	Total Volume	million litres	-05	-04	-05	-03	-01
Western Europe	**Alcoholic Drinks**	**Total Volume**	**million litres**	**-02**	**-02**	**00**	**00**	**00**
Western Europe	Beer	Total Volume	million litres	-01	-01	00	00	00
Western Europe	Cider/Perry	Total Volume	000 litres	01	01	00	-03	-01
Western Europe	RTDs/High-Strength Premixes	Total Volume	000 litres	02	02	01	-01	-01
Western Europe	Spirits	Total Volume	000 litres	-02	-01	-01	00	00
Western Europe	Wine	Total Volume	million litres	-02	-02	-01	00	00

Source: own creation, based on Euromonitor (2018)

Appendix 27: Market volume forecast

Western Europe

Geography	Category	Data Type	Unit	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Bulgaria	Beer	Total Volume	in percent	08,70	-01,90	-04,60	03,70	03,80	03,30	02,30	02,30	01,50	01,00
Croatia	Beer	Total Volume	in percent	-03,60	01,60	-07,80	07,40	03,40	02,70	02,40	02,40	02,20	02,00
Estonia	Beer	Total Volume	in percent	02,00	-04,90	-00,30	-02,40	-06,80	-04,20	-02,90	-01,60	-01,00	-00,70
Hungary	Beer	Total Volume	in percent	02,80	-01,30	01,70	02,90	00,80	02,10	02,00	01,70	01,70	01,60
Latvia	Beer	Total Volume	in percent	-02,50	-01,40	00,30	-02,00	-01,20	-00,80	-00,60	-00,30	00,00	00,10
Lithuania	Beer	Total Volume	in percent	-07,00	-06,80	04,00	-00,50	-06,30	-15,70	-09,40	-05,50	-03,80	-02,80
Poland	Beer	Total Volume	in percent	06,80	00,00	01,10	01,20	01,90	01,00	01,30	01,10	01,00	00,90
Denmark	Beer	Total Volume	in percent	-06,10	-01,00	03,50	-06,00	00,50	-00,10	-00,10	-00,10	-00,10	-00,10
Finland	Beer	Total Volume	in percent	-04,70	00,80	-02,00	-02,10	-00,50	00,30	00,20	00,40	00,00	00,00
France	Beer	Total Volume	in percent	-00,30	-02,00	02,20	02,70	02,50	02,00	01,40	01,20	01,00	00,90
Germany	Beer	Total Volume	in percent	-01,10	-01,20	-00,60	-00,80	-00,20	-00,50	-00,70	-00,90	-01,10	-01,20
Greece	Beer	Total Volume	in percent	00,30	-00,40	-01,20	-00,10	01,30	00,80	00,70	01,20	01,20	01,10
Italy	Beer	Total Volume	in percent	00,10	-02,00	-01,60	00,10	00,80	01,30	01,50	01,40	01,40	01,40
Norway	Beer	Total Volume	in percent	-01,30	02,20	02,70	01,00	04,20	02,10	01,30	00,80	00,60	00,40
Portugal	Beer	Total Volume	in percent	-10,70	-00,40	-03,60	00,00	01,20	01,00	01,60	01,80	02,00	02,10
Sweden	Beer	Total Volume	in percent	-02,80	01,10	-01,60	-00,30	-00,10	00,10	00,20	00,20	-00,10	00,00
Switzerland	Beer	Total Volume	in percent	00,00	-00,50	00,90	00,50	00,40	00,30	00,20	00,20	00,20	00,20
United Kingdom	Beer	Total Volume	in percent	-02,70	-00,30	00,60	-00,20	00,10	00,30	00,50	00,50	00,60	00,60

Eastern Europe

Geography	Category	Data Type	Unit	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Azerbaijan	Beer	Total Volume	in percent	17,8	15,1	1,1	-6,9	-2,2	-0,5	1,9	3,3	4,3	5,5
Kazakhstan	Beer	Total Volume	in percent	0,7	1,2	-2,5	-4,4	4,6	2,7	2,3	2,3	2,4	2,6
Belarus	Beer	Total Volume	in percent	-3,7	3,5	-3,7	-8,6	-2,5	-0,6	0,4	0,5	0,6	0,7
Russia	Beer	Total Volume	in percent	-1,2	-5,6	-7,2	-11,3	-2,8	-3,1	-2,7	-2,1	-1,6	-1,1
Ukraine	Beer	Total Volume	in percent	0,5	-7	-12,5	-20	-7,3	-1,1	0,9	2,1	2,7	3,2

Asia

Geography	Category	Data Type	Unit	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
China	Beer	Total Volume	in percent	02,60	03,20	-01,00	-04,70	-04,40	-03,40	-02,70	-01,90	-01,20	-00,40
Hong Kong, China	Beer	Total Volume	in percent	02,60	02,00	-00,40	00,80	01,50	01,70	01,70	01,70	01,70	01,70
India	Beer	Total Volume	in percent	11,30	10,30	09,90	07,60	06,70	06,00	07,00	08,10	09,00	10,30
Malaysia	Beer	Total Volume	in percent	03,70	03,70	01,10	00,00	00,30	00,80	01,00	03,00	03,40	03,70
Singapore	Beer	Total Volume	in percent	04,70	03,10	03,10	03,00	02,50	02,50	02,80	02,80	02,70	02,60
Vietnam	Beer	Total Volume	in percent	09,00	07,20	03,80	06,70	08,10	06,60	06,00	05,50	04,90	04,40

Source: own creation, based on Euromonitor (2018)

Appendix 28: Calculation of tax on profit of associates

Carlsberg's share of profit, associates						
DKK million	*2012*	*2013*	2014	*2015*	*2016*	*2017*
Corporation tax, marginal	25,0%	25,0%	24,5%	23,5%	22,0%	22,0%
Share of profit after tax of associates and joint ventures	108	370	408	364	324	262
Tax on profit from associates	36	123	132	112	91	74
Share of profit before tax, associates	**144**	**493**	**540**	**476**	**415**	**336**

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 29: Carlsberg's calculation of invested capital

Invested capital calculation by Carlsberg						
DKK million	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
Total assets	147.714	153.965	152.308	136.983	124.901	126.906	114.251
Less							
Deferred tax assets	- 1.199	- 1.170	- 1.130	- 1.430	- 1.697	- 1.610	- 1.663
Loans to associates and joint ventures (current)	- 105	- 126	- 59	- 64	- 252	- 246	
Interest receivables, fair value of hedging instruments, receivables sold and financial rece	- 529	- 613	- 534	- 1.812	- 762	- 664	1.386
Securities	- 158	- 154					
Cash and cash equivalents	- 3.145	- 5.760	- 3.612	- 2.418	- 3.131	- 3.502	- 3.462
Assets held for sale	- 570	- 27		1.068	469	125	
Assets included	**142.008**	**146.115**	**146.973**	**132.327**	**119.528**	**121.009**	**110.512**
Trade payables	- 11.021	- 11.862	- 12.614	- 12.031	- 12.260	- 13.497	- 13.474
Depositis on returnable packaging	- 1.291	- 1.381	- 1.812	- 2.046	- 1.819	- 1.681	- 1.576
Provisions, excluding deferred income, interest payable and fair value of hedging instrume	- 1.176	- 1.274	- 2.571	- 2.731	- 3.534	- 3.703	- 3.709
Corporation tax	- 527	- 537	- 614	- 775	- 601	- 935	- 931
Deferred income	- 1.127	- 1.146	- 1.064	- 1.059	- 1.051	- 941	- 721
Finance lease liabilities, included in borrowings	- 52	- 39	- 46	- 36	- 31	- 25	- 19
Other liabilities, excluding deferred income, interest payable and fair value of hedging	- 8.618	- 8.409	- 9.140	- 8.994	- 9.661	- 9.999	- 6.544
Liabilities offset	**- 23.812**	**- 24.648**	**- 27.861**	**- 27.672**	**- 28.957**	**- 30.781**	**- 26.974**
Invested capital	**118.196**	**121.467**	**119.112**	**104.655**	**90.571**	**90.228**	**83.538**
Goodwill			- 57.166	- 52.546	- 50.270	- 52.864	- 50.497
Invested capital excluding goodwill		**121.467**	**61.946**	**52.109**	**40.301**	**37.364**	**33.041**
Invested capital average		**119.832**	**119.630**	**114.886**	**103.982**	**89.579**	**91.688**

Operating liabilities — Financial assets

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 30: Calculation other receivables

Other receivables							
DKK million	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
Total receivables	1.846	2.045	1.795	2.614	2.532	2.488	2.138
Operating receivables	1.212	1.306	1.202	738	1.518	1.578	3.524
Financing receivables	529	613	534	1.812	762	664	- 1.386
Loans to associates	105	126	59	64	252	246	-

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 31: Calculation borrowings

Borrowings							
DKK million	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
Total other borrowings	36.239	40.058	39.656	40.525	36.028	30.204	24.189
Finance lease liabilities	52	39	46	36	31	25	19
Financial borrowings	36.187	40.019	39.610	40.489	35.997	30.179	24.170

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 32: Calculation other liabilities

Other liabilities etc.							
DKK million	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
Operating liabilities	9.745	9.555	10.204	10.053	10.712	10.940	7.265
Financing liabilities	2.007	1.412	892	715	981	492	4.137
Total other liabilities	11.752	10.967	11.096	10.768	11.693	11.432	11.402

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 33: Analytical Balance sheet

Analytical Balance sheet								
DKK million	*31 Dec 2011*	*31 Dec 2012*	*31 Dec 2013*	*31 Dec 2014*	*31 Dec 2015*	*31 Dec 2016*	*31 Dec 2017*	Notes
Assets								
Non-current assets								
Intangible assets	89.041	91.216	94.236	81.754	72.920	76.736	67.793	
Property, plant and equipment	31.848	31.991	31.738	28.748	26.678	25.810	24.325	
Investment in associates and joint ventures	5.051	6.241	3.771	4.277	4.676	4.701	4.266	6.2.1
Receivables	1.650	2.075	2.049	2.131	1.854	1.071	952	
Deferred tax assets	1.199	1.170	1.130	1.430	1.697	1.610	1.663	6.2.2
Total non-current assets	**128.789**	**132.693**	**132.924**	**118.340**	**107.825**	**109.928**	**98.999**	
Current assets								
Inventories	4.350	4.541	4.592	4.498	3.817	3.963	3.834	
Trade receivables	7.855	7.828	7.681	6.872	5.729	5.485	4.611	6.2.3
Tax receivables	129	60	203	196	324	278	181	6.2.5
Other receivables	1.212	1.306	1.202	738	1.518	1.578	3.524	6.2.4
Prepayments	867	853	1.501	977	1.074	1.137	1.026	
Total current assets	**14.413**	**14.588**	**15.179**	**13.281**	**12.462**	**12.441**	**13.176**	
Total operating assets	**143.202**	**147.281**	**148.103**	**131.621**	**120.287**	**122.369**	**112.175**	
Non-interest-bearing debt								
Finance lease liabilities, included in borrowings	52	39	46	36	31	25	19	6.2.6
Deferred tax liabilities	9.652	9.682	9.215	7.105	5.924	6.250	5.601	6.2.2
Trade payables	11.021	11.862	12.614	12.031	12.260	13.497	13.474	
Deposits on returnable packaging	1.291	1.381	1.812	2.046	1.819	1.681	1.576	
Current provision	511	619	441	510	648	722	591	
Non-current provisions	1.001	1.230	2.567	2.646	3.374	3.642	3.611	
Corporation tax	527	537	614	775	601	935	931	6.2.5
Current and non-current other liabilities etc.	9.745	9.555	10.204	10.053	10.712	10.940	7.265	6.2.7
Total operating liabilities	**33.800**	**34.905**	**37.513**	**35.202**	**35.369**	**37.692**	**33.068**	
Invested Capital	**109.402**	**112.376**	**110.590**	**96.419**	**84.918**	**84.677**	**79.107**	
Total equity	**71.629**	**73.650**	**71.001**	**55.997**	**47.231**	**53.650**	**49.525**	
Net-interest-bearing debt								
Current and non-current borrowings	36.187	40.019	39.610	40.489	35.997	30.179	24.170	6.2.6
Retirement benefit obligations and similar obligations	3.263	3.961	3.292	4.580	5.235	4.878	3.351	6.2.8
Liabilities associated with assets held for sale	828	18	-	-	88	15	-	6.2.9
Other liabilities (deferred income, interest payable and fair value of hedging instruments)	2.007	1.412	892	715	981	492	4.137	6.2.7
Interest-bearing debt	**42.285**	**45.410**	**43.794**	**45.784**	**42.301**	**35.564**	**31.658**	
Interest-bearing assets								
Non-current securities	134	133	-	-	-	-	-	
Retirement benefit plan assets	5	4	-	-	-	-	-	6.2.8
Current securities	24	21	-	-	-	-	-	
Interest receivables, fair value of hedging instruments and financial receivables	529	613	534	1.812	762	664	1.386	6.2.4
Loans to associates and joint ventures (current)	105	126	59	64	252	246	-	6.2.4
Cash and cash equivalents	3.145	5.760	3.612	2.418	3.131	3.502	3.462	6.2.10
Assets held for sale	570	27	-	1.068	469	125	-	6.2.9
Interest bearing assets	**4.512**	**6.684**	**4.205**	**5.362**	**4.614**	**4.537**	**2.076**	
Net interest bearing debt	**37.773**	**38.726**	**39.589**	**40.422**	**37.687**	**31.027**	**29.582**	
Invested capital	**109.402**	**112.376**	**110.590**	**96.419**	**84.918**	**84.677**	**79.107**	

Operating assets | Operating liabilities | Financial liabilities | Financial assets

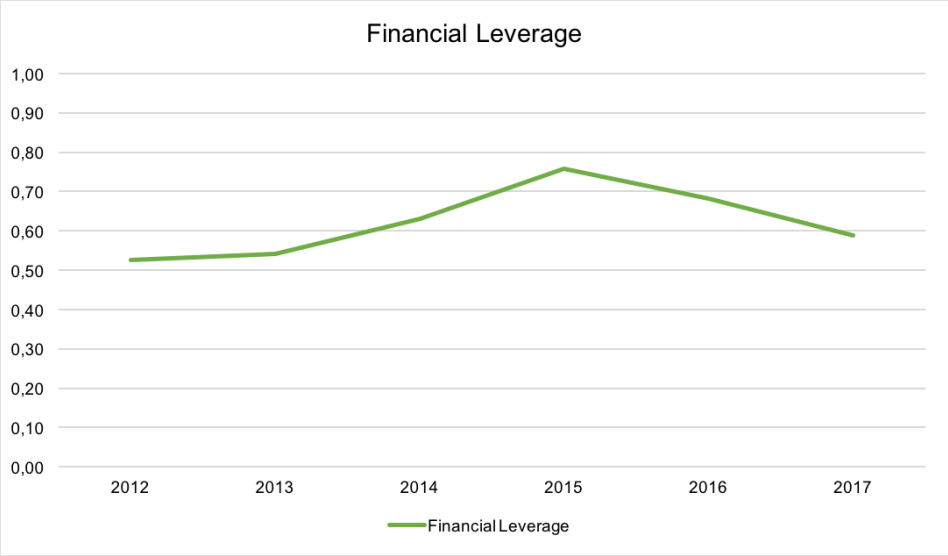
Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 34: Analytical Income Statement

Analytical Income Statement							
DKK million	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	Notes
Revenue	92.367	91.237	91.569	91.012	86.957	86.942	
Excise duties on beer and soft drinks etc.	-25.899	-26.887	-27.063	-25.658	-24.343	-25.134	
Net revenue	**66.468**	**64.350**	**64.506**	**65.354**	**62.614**	**61.808**	
Cost of sales	-31.016	-29.560	-29.835	-30.341	-27.928	-27.062	
Gross profit	**35.452**	**34.790**	**34.671**	**35.013**	**34.686**	**34.746**	
Sales and distribution expenses	-18.045	-17.388	-17.937	-18.290	-17.438	-17.125	6.2.11 & 6.2.12
Administrative expenses	- 3.848	- 4.084	- 4.173	- 4.109	- 4.764	- 4.413	6.2.11 & 6.2.12
Other operating activities, net	145	22	369	235	198	113	
Share of profit after tax, associates and joint ventures	108	370	408	364	324	262	6.2.1
Tax on profits from associates	36	123	132	112	91	74	6.2.1
Operating profit before special items	**13.848**	**13.833**	**13.470**	**13.325**	**13.097**	**13.657**	
Special items, net	988	- 66	- 425	- 569	1.458	123	6.2.11 & 6.2.12 & 6.2.13
EBITDA	**14.836**	**13.767**	**13.045**	**12.756**	**14.555**	**13.780**	
Depreciation and amortisation	- 4.922	- 4.356	- 5.036	-12.846	- 5.968	- 9.395	6.2.11
EBIT	**9.914**	**9.411**	**8.009**	**- 90**	**8.587**	**4.385**	
Corporation tax	- 1.861	- 1.833	- 1.748	- 849	- 2.392	- 1.458	
Tax on profit from associates	- 36	- 123	- 132	- 112	- 91	- 74	6.2.1
Tax shield, net financial expenses	- 443	- 377	- 292	- 360	- 274	- 173	6.2.5
NOPAT	**7.574**	**7.079**	**5.837**	**- 1.411**	**5.830**	**2.680**	
Financial income	900	717	806	490	919	803	
Financial expenses	- 2.672	- 2.223	- 1.997	- 2.021	- 2.166	- 1.591	
Tax on net financial expenses	443	377	292	360	274	173	6.2.5
Net financial expenses	**- 1.329**	**- 1.130**	**- 899**	**- 1.171**	**- 973**	**- 615**	
Group profit after tax (Analyst)	**6.245**	**5.949**	**4.938**	**- 2.582**	**4.857**	**2.065**	

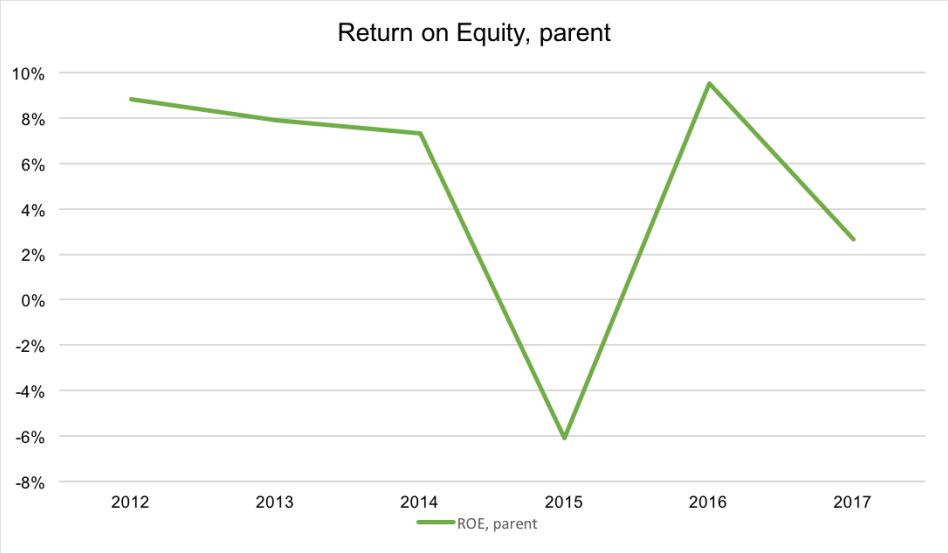
Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 35: Carlsberg's financial leverage between 2012 and 2017



Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 36: Carlsberg's return on capital excluding minority interests between 2012 and 2017



Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 37: Calculation of restructuring effect on ROE

Effect of restructuring on ROE by Smart &Waldfogel	**2017**	**2016**
Carlsberg's current ROE	2,58	9,51
Carlsberg's forecasted ROE in 2014	8,9	8,49
Heineken's current ROE	14,57	11,5
Heineken's forecasted ROE in 2014	14,06	14
Effect of restructuring	**-6,83**	**3,52**
China Resources Beer Holdings' current ROE	6,51	4,64
China Resources Beer Holding forecasted ROE in 2014	7,474	5,388
Effect of restructuring	**-5,356**	**1,768**

Source: own calculation, based on Smart and Waldfogel (1994)

Appendix 38: Value driver map

Value driver map												
	2012	*2013*	*2014*	*2015*	*2016*	*2017*	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E Terminal period*
Growth drivers												
Revenue growth		-1,2%	0,4%	-0,6%	-4,5%	0,0%						
Excercise duties on beer and soft drinks as a percentage of revenue	28,0%	29,5%	29,6%	28,2%	28,0%	28,9%						
Organic growth	3,0%	1,0%	2,0%	2,0%	2,0%	0,0%						
Net revenue growth		**-3,2%**	**0,2%**	**1,3%**	**-4,2%**	**-1,3%**	**-2,1%**	**2,2%**	**2,6%**	**2,4%**	**2,3%**	**2,2%**	**1,7%**
Cost drivers												
Cost of sales as a percentage of net revenue	46,7%	45,9%	46,3%	46,4%	44,6%	43,8%	43,1%	42,9%	42,7%	42,5%	42,3%	42,1%	41,9%
Sales and distribution expenses as a percentage of net revenue	27,1%	27,0%	27,8%	28,0%	27,9%	27,7%	27,6%	27,5%	27,4%	27,3%	27,2%	27,1%	27,0%
Administrative expenses as a percentage of net revenue	5,8%	6,3%	6,5%	6,3%	7,6%	7,1%	6,9%	6,9%	6,9%	6,9%	6,9%	6,9%	6,9%
Other operating activities, net as a percentage of net revenue	0,2%	0,0%	0,6%	0,4%	0,3%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%
Income before tax from associates as a percentage of net revenue	0,2%	0,8%	0,8%	0,7%	0,7%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%
EBITDA margin (before special items)	**20,8%**	**21,5%**	**20,9%**	**20,4%**	**20,9%**	**22,1%**	**23,0%**	**23,3%**	**23,6%**	**23,9%**	**24,2%**	**24,5%**	**24,8%**
Special items, net as a percentage of net revenue	1,5%	-0,1%	-0,7%	-0,9%	2,3%	0,2%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%
EBITDA margin	**22,3%**	**21,4%**	**20,2%**	**19,5%**	**23,2%**	**22,3%**	**22,5%**	**22,8%**	**23,1%**	**23,4%**	**23,7%**	**24,0%**	**24,3%**
Depreciation as a percentage of PPE	14,5%	12,2%	16,3%	20,6%	16,4%	15,9%	15,9%	15,9%	15,9%	15,9%	15,9%	15,9%	15,9%
Amortisation as a percentage of intangible assets	0,3%	0,5%	0,4%	10,1%	2,3%	8,2%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
EBIT margin	**14,9%**	**14,6%**	**12,4%**	**-0,1%**	**13,7%**	**7,1%**	**16,3%**	**16,6%**	**16,9%**	**17,2%**	**17,5%**	**17,8%**	**18,1%**
Marginal tax rate	25,0%	25,0%	24,5%	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%
NOPAT margin	**11,4%**	**11,0%**	**9,0%**	**-2,2%**	**9,3%**	**4,3%**	**12,3%**	**12,6%**	**12,9%**	**13,1%**	**13,3%**	**13,6%**	**13,8%**
Investment drivers												
Intangible assets as a percentage of net revenue	137,2%	146,4%	126,7%	111,6%	122,6%	109,7%						
Property, plant and equipment as a percentage of net revenue	48,1%	49,3%	44,6%	40,8%	41,2%	39,4%	39,0%	39,0%	39,0%	39,0%	39,0%	39,0%	39,0%
Other non-current assets as a percentage of net revenue	14,3%	10,8%	12,2%	12,6%	11,8%	11,1%	11,1%	11,1%	11,1%	11,1%	11,1%	11,1%	11,1%
Non-current assets as a percentage of net revenue	**199,6%**	**206,6%**	**183,5%**	**165,0%**	**175,6%**	**160,2%**	**50,1%**	**50,1%**	**50,1%**	**50,1%**	**50,1%**	**50,1%**	**50,1%**
Inventories as a percentage of net revenue	6,8%	7,1%	7,0%	5,8%	6,3%	6,2%	6,1%	6,1%	6,1%	6,1%	6,1%	6,1%	6,1%
Trade receivables as a percentage of net revenue	11,8%	11,9%	10,7%	8,8%	8,8%	7,5%	7,3%	7,3%	7,3%	7,3%	7,3%	7,3%	7,3%
Other current assets as a percentage of net revenue	3,3%	4,5%	3,0%	4,5%	4,8%	7,7%	6,0%	6,0%	6,0%	6,0%	6,0%	6,0%	6,0%
Deferred tax liabilities as a percentage of net revenue	14,6%	14,3%	11,0%	9,1%	10,0%	9,1%	9,5%	9,5%	9,5%	9,5%	9,5%	9,5%	9,5%
Trade payables a a percentage of net revenue	17,8%	19,6%	18,7%	18,8%	21,6%	21,8%	19,7%	19,7%	19,7%	19,7%	19,7%	19,7%	19,7%
Other liabilities as a percentage of net revenue	21,0%	25,1%	25,7%	27,3%	29,8%	23,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%
Net working capital as a percentage of net revenue	**75,4%**	**82,6%**	**76,0%**	**74,2%**	**81,2%**	**75,8%**	**71,2%**	**71,2%**	**71,2%**	**71,2%**	**71,2%**	**71,2%**	**71,2%**
Financial drivers												
NIBD as a percentage of invested capital excl. Intangibles	183,0%	242,1%	275,6%	314,1%	390,7%	261,5%	260,0%	260,0%	260,0%	260,0%	260,0%	260,0%	260,0%
Net financial expenses as a percentage of NIBD	4,6%	3,8%	2,9%	4,1%	4,0%	2,7%	3,1%	3,1%	3,1%	3,1%	3,1%	3,1%	3,1%

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 39: Revenue forecast

Net reveue growth								
	2017	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E*	*Terminal period*
Net revenue growth								
Group	**-1,3%**	**-2,1%**	**2,2%**	**2,6%**	**2,4%**	**2,3%**	**2,2%**	**1,7%**
Organic revenue growth								
Group	**1,3%**	**2,4%**	**2,2%**	**2,6%**	**2,4%**	**2,3%**	**2,2%**	**1,7%**
Western Europe	0,4%	0,6%	0,4%	0,4%	0,5%	0,5%	0,5%	0,3%
Eastern Europe	-0,7%	3,2%	3,9%	5,0%	4,0%	4,2%	4,3%	3,2%
Asia	5,1%	6,6%	5,8%	6,5%	6,0%	5,6%	5,0%	4,3%
Organic volume growth								
Group	**-1,9%**	**0,7%**	**0,6%**	**1,0%**	**1,0%**	**1,0%**	**1,0%**	**0,8%**
Western Europe	0,1%	0,1%	-0,1%	-0,1%	0,0%	0,0%	0,0%	0,0%
Eastern Europe	-7,7%	0,2%	0,9%	1,6%	2,0%	2,0%	2,2%	1,8%
Asia	0,3%	2,0%	2,4%	2,4%	2,2%	2,2%	2,0%	2,0%
Price/Mix								
Group	**3,2%**	**1,7%**	**1,6%**	**1,6%**	**1,4%**	**1,3%**	**1,2%**	**0,9%**
Western Europe	0,3%	0,5%	0,5%	0,5%	0,5%	0,5%	0,5%	0,5%
Eastern Europe	7,6%	3,0%	2,8%	2,8%	2,8%	2,8%	2,6%	2,4%
Asia	4,7%	4,5%	4,0%	4,0%	3,9%	3,8%	3,7%	3,1%

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 40: Pro forma income statement

Pro Froma Income Statement													
DKK million	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E*	*Terminal period*
Revenue	92.367	91.237	91.569	91.012	86.957	86.942							
Excise duties on beer and soft drinks etc.	- 25.899	- 26.887	- 27.063	- 25.658	- 24.343	- 25.134							
Net revenue	**66.468**	**64.350**	**64.506**	**65.354**	**62.614**	**61.808**	**60.510**	**61.841**	**63.449**	**64.972**	**66.466**	**67.929**	**69.083**
Cost of sales	- 31.016	- 29.560	- 29.835	- 30.341	- 27.928	- 27.062	- 26.070	- 26.520	- 27.083	- 27.603	- 28.105	- 28.587	- 28.935
Gross profit	**35.452**	**34.790**	**34.671**	**35.013**	**34.686**	**34.746**	**34.440**	**35.321**	**36.367**	**37.369**	**38.362**	**39.341**	**40.148**
Sales and distribution expenses	- 18.045	- 17.388	- 17.937	- 18.290	- 17.438	- 17.125	- 16.705	- 17.011	- 17.389	- 17.742	- 18.083	- 18.413	- 18.657
Administrative expenses	- 3.848	- 4.084	- 4.173	- 4.109	- 4.764	- 4.413	- 4.199	- 4.292	- 4.403	- 4.509	- 4.613	- 4.714	- 4.794
Other operating activities, net	145	22	369	235	198	113	111	113	116	119	122	124	126
Share of profit before tax, associates and joint ventures	144	493	540	476	415	262	256	262	269	275	282	288	293
Operating profit before special items	**13.848**	**13.833**	**13.470**	**13.325**	**13.097**	**13.657**	**13.903**	**14.394**	**14.959**	**15.513**	**16.069**	**16.626**	**17.116**
Special items, net	988	- 66	- 425	- 569	1.458	123	- 303	- 309	- 317	- 325	- 332	- 340	- 345
EBITDA	**14.836**	**13.767**	**13.045**	**12.756**	**14.555**	**13.780**	**13.600**	**14.085**	**14.642**	**15.188**	**15.737**	**16.287**	**16.771**
Depreciation and amortisation	- 4.922	- 4.356	- 5.036	- 12.846	- 5.968	- 9.395	- 3.748	- 3.830	- 3.930	- 4.024	- 4.117	- 4.207	- 4.279
thereof depreciation	- 4.644	- 3.885	- 4.682	- 5.493	- 4.226	- 3.863							
thereof amortisation	- 278	- 473	- 354	- 7.353	- 1.742	- 5.532							
EBIT	**9.914**	**9.411**	**8.009**	**- 90**	**8.587**	**4.385**	**9.853**	**10.255**	**10.712**	**11.164**	**11.620**	**12.079**	**12.492**
Corporation tax	- 1.861	- 1.833	- 1.748	- 849	- 2.392	- 1.458	- 2.168	- 2.256	- 2.357	- 2.456	- 2.556	- 2.657	- 2.748
Tax on profit from associates	- 36	- 123	- 132	- 112	- 91	- 74	- 56	- 58	- 59	- 61	- 62	- 63	- 64
Tax shield, net financial expenses	- 443	- 377	- 292	- 360	- 274	- 173	- 202	- 135	- 138	- 142	- 145	- 149	- 152
NOPAT	**7.574**	**7.079**	**5.837**	**- 1.411**	**5.830**	**2.680**	**7.427**	**7.806**	**8.158**	**8.505**	**8.856**	**9.210**	**9.528**
Net financil expenses before tax	- 1.772	- 1.506	- 1.191	- 1.531	- 1.247	- 788	- 917	- 615	- 628	- 644	- 660	- 675	- 690
Tax on net financial expenses	443	377	292	360	274	173	202	135	138	142	145	149	152
Net financial expenses	**- 1.329**	**- 1.130**	**- 899**	**- 1.171**	**- 973**	**- 615**	**- 715**	**- 479**	**- 490**	**- 503**	**- 515**	**- 527**	**- 538**
Group profit after tax	**6.245**	**5.949**	**4.938**	**- 2.582**	**4.857**	**2.065**	**6.712**	**7.327**	**7.668**	**8.003**	**8.342**	**8.684**	**8.990**

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 41: Pro forma balance sheet

	Pro forma balance sheet												
DKK million	*31 Dec 2012*	*31 Dec 2013*	*31 Dec 2014*	*31 Dec 2015*	*31 Dec 2016*	*31 Dec 2017*	*32 Dec 2018*	*33 Dec 2019*	*34 Dec 2020*	*35 Dec 2021*	*36 Dec 2022*	*37 Dec 2023*	*38 Dec 2024*
Assets													
Non-current assets													
Intangible assets	91.216	94.236	81.754	72.920	76.736	67.793	67.793	67.793	67.793	67.793	67.793	67.793	67.793
Property, plant and equipment	31.991	31.738	28.748	26.678	25.810	24.325	23.599	24.118	24.745	25.339	25.922	26.492	26.942
Investment in associates and joint ventures	6.241	3.771	4.277	4.676	4.701	4.266							
Receivables	2.075	2.049	2.131	1.854	1.071	952							
Deferred tax assets	1.170	1.130	1.430	1.697	1.610	1.663	3.631	3.710	3.807	3.898	3.988	4.076	4.145
Total non-current assets	**132.693**	**132.924**	**118.340**	**107.825**	**109.928**	**98.999**	**95.023**	**95.622**	**96.345**	**97.030**	**97.703**	**98.361**	**98.880**
Current assets													
Inventories	4.541	4.592	4.498	3.817	3.963	3.834	3.691	3.772	3.870	3.963	4.054	4.144	4.214
Trade receivables	7.828	7.681	6.872	5.729	5.485	4.611	4.417	4.514	4.632	4.743	4.852	4.959	5.043
Tax receivables	60	203	196	324	278	181							
Other receivables	1.306	1.202	738	1.518	1.578	3.524							
Prepayments	853	1.501	977	1.074	1.137	1.026	3.631	3.710	3.807	3.898	3.988	4.076	4.145
Total current assets	**14.588**	**15.179**	**13.281**	**12.462**	**12.441**	**13.176**	**11.739**	**11.997**	**12.309**	**12.605**	**12.894**	**13.178**	**13.402**
Total operating assets	**147.281**	**148.103**	**131.621**	**120.287**	**122.369**	**112.175**	**106.761**	**107.619**	**108.654**	**109.635**	**110.597**	**111.539**	**112.283**
Non-interest-bearing debt													
Deferred tax liabilities	9.682	9.215	7.105	5.924	6.250	5.601	5.748	5.875	6.028	6.172	6.314	6.453	6.563
Trade payables	11.862	12.614	12.031	12.260	13.497	13.474	11.920	12.183	12.499	12.799	13.094	13.382	13.609
Deposits on returnable packaging	1.381	1.812	2.046	1.819	1.681	1.576							
Current provision	619	441	510	648	722	591							
Non-current provisions	1.230	2.567	2.646	3.374	3.642	3.611							
Corporation tax	537	614	775	601	935	931							
Finance lease liabilities, included in borrowings	39	46	36	31	25	19							
Current and non-current other liabilities etc.	9.555	10.204	10.053	10.712	10.940	7.265	13.675	13.976	14.340	14.684	15.021	15.352	15.613
Total operating liabilities	**34.905**	**37.513**	**35.202**	**35.369**	**37.692**	**33.068**	**31.344**	**32.034**	**32.867**	**33.655**	**34.430**	**35.187**	**35.785**
Invested Capital	**112.376**	**110.590**	**96.419**	**84.918**	**84.677**	**79.107**	**75.417**	**75.585**	**75.788**	**75.979**	**76.168**	**76.352**	**76.497**
Equity													
Toatal equity begin							49.525	55.594	55.326	55.002	54.695	54.393	54.099
Group profit after tax							6.712	7.327	7.668	8.003	8.342	8.684	8.990
Dividends							- 642	- 7.595	- 7.992	- 8.310	- 8.643	- 8.978	- 9.222
Total equity end	**73.650**	**71.001**	**55.997**	**47.231**	**53.650**	**49.525**	**55.594**	**55.326**	**55.002**	**54.695**	**54.393**	**54.099**	**53.866**
Net-interest-bearing debt													
Current and non-current borrowings	40.019	39.610	40.489	35.997	30.179	24.170							
Retirement benefit obligations and similar obligations	3.961	3.292	4.580	5.235	4.878	3.351							
Liabilities associated with assets held for sale	18	-	-	88	15	-							
Other liabilities (deferred income, interest payable and fair value of hedging instruments)	1.412	892	715	981	492	4.137							
Interest-bearing debt	**45.410**	**43.794**	**45.784**	**42.301**	**35.564**	**31.658**							
Interest-bearing assets													
Non-current securities	133	-	-	-	-	-							
Retirement benefit plan assets	4	-	-	-	-	-							
Current securities	21	-	-	-	-	-							
Interest receivables, fair value of hedging instruments and financial receivables	613	534	1.812	762	664	- 1.386							
Loans to associates and joint ventures (current)	126	59	64	252	246	-							
Cash and cash equivalents	5.760	3.612	2.418	3.131	3.502	3.462							
Assets held for sale	27	-	1.068	469	125	-							
Interest-bearing assets	**6.684**	**4.205**	**5.362**	**4.614**	**4.537**	**2.076**							
Net interest bearing debt	**38.726**	**39.589**	**40.422**	**37.687**	**31.027**	**29.582**	**19.823**	**20.259**	**20.786**	**21.285**	**21.774**	**22.253**	**22.632**
Invested capital	**112.376**	**110.590**	**96.419**	**84.918**	**84.677**	**79.107**	**75.417**	**75.585**	**75.788**	**75.979**	**76.168**	**76.352**	**76.497**

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 42: Pro forma cash flow statement

Pro forma cash flow statement														
DKK million	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018 E*	*2019 E*	*2020 E*	*2021 E*	*2022 E*	*2023 E*	*Terminal period*	
NOPAT	**7.574**	**7.079**	**5.837**	**1.411**	**5.830**	**2.680**	**7.427**	**7.806**	**8.158**	**8.505**	**8.856**	**9.210**	**9.528**	
Depreciation and amoritisation	4.922	4.356	5.036	12.846	5.968	9.395	3.748	3.830	3.930	4.024	4.117	4.207	4.279	
Changes in inventories	-	51	94	681	- 146	129	143	- 81	- 98	- 93	- 91	- 89	- 70	
Changes in trade receivables		147	809	1.143	244	874	194	- 97	- 117	- 111	- 109	- 107	- 84	
Changes in other current assets	-	687	995	- 1.005	- 77	- 1.738	1.100	- 80	- 96	- 91	- 90	- 88	- 69	
Changes in deferred tax liabilities	-	467	- 2.110	- 1.181	326	- 649	147	126	153	145	142	139	110	
Changes in trade payables		752	- 583	229	1.237	- 23	- 1.554	262	317	300	294	288	227	
Changes in other operating liabilities		1.674	533	460	532	- 277	- 318	301	363	344	338	330	261	
Cash flow from operations		**12.803**	**10.611**	**11.762**	**13.914**	**10.391**	**10.888**	**12.067**	**12.609**	**13.023**	**13.457**	**13.891**	**14.180**	
Investments, non-current assets	-	1.096	- 2.580	- 3.812	- 2.513	- 1.877	229	- 4.429	- 4.653	- 4.709	- 4.789	- 4.865	- 4.798	
Free cash flow to the firm		**11.707**	**8.031**	**7.950**	**11.401**	**8.514**	**11.117**	**7.638**	**7.955**	**8.314**	**8.668**	**9.026**	**9.382**	
Net financial expenses after tax	-	1.130	- 899	- 1.171	- 973	- 615	- 715	- 479	- 490	- 503	- 515	- 527	- 538	
Changes in NIBD		863	833	- 2.735	- 6.660	- 1.445	- 9.759	436	527	499	490	479	378	
Free cash flow to equity		**11.440**	**7.965**	**4.044**	**3.768**	**6.454**	**642**	**7.595**	**7.992**	**8.310**	**8.643**	**8.978**	**9.222**	
Dividends/issues new shares						-	642	- 7.595	- 7.992	- 8.310	- 8.643	- 8.978	- 9.222	
Cash surplus							-	-	-	-	-	-	-	

Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 43: Budget control

Budget control	2012	2013	2014	2015	2016	2017	2018 E	2019 E	2020 E	2021 E	2022 E	2023 E	Terminal period
ROIC before tax	8,3%	7,9%	7,0%	-0,1%	9,6%	5,4%	12,8%	13,6%	14,2%	14,7%	15,3%	15,8%	16,3%
ROIC after tax	6,3%	5,9%	5,1%	-1,4%	6,5%	3,3%	9,6%	10,3%	10,8%	11,2%	11,6%	12,1%	12,5%
Profit margin before tax	14,9%	14,6%	12,4%	-0,1%	13,7%	7,1%	16,3%	16,6%	16,9%	17,2%	17,5%	17,8%	18,1%
Profit margin after tax	11,4%	11,0%	9,0%	-2,2%	9,3%	4,3%	12,3%	12,6%	12,9%	13,1%	13,3%	13,6%	13,8%
ROE	8,6%	8,2%	7,8%	-5,0%	9,6%	4,0%	12,8%	13,2%	13,9%	14,6%	15,3%	16,0%	16,7%
Free cash flow to the firm	-	11.707	8.031	7.950	11.401	8.514	11.117	7.638	7.955	8.314	8.668	9.026	9.382
Financial leverage	0,53	0,54	0,63	0,76	0,68	0,59	0,47	0,36	0,37	0,38	0,39	0,41	0,42
Turnover rate	0,55	0,54	0,56	0,63	0,70	0,75	0,78	0,82	0,84	0,86	0,87	0,89	0,90

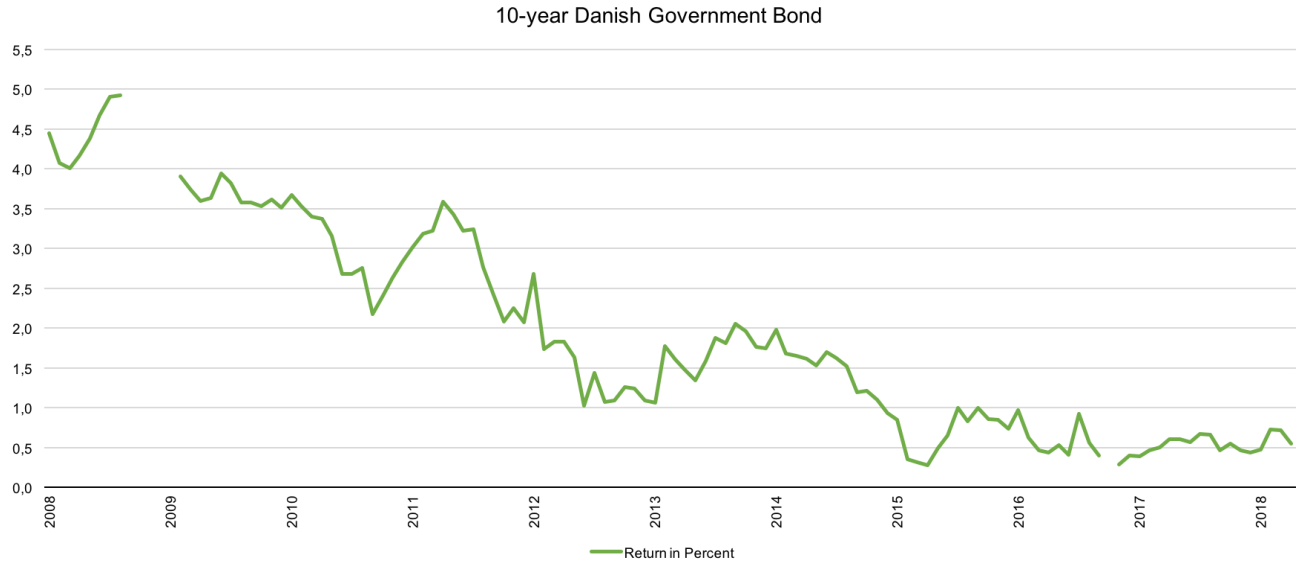
Source: own creation, based on data from Carlsberg's annual report (2012-2017)

Appendix 44: Calculation of Carlsberg's capital structure

Capital structure	
Market value of equity	**2017**
share price, year end	
A-shares	*703,00 DKK*
B-shares	745,00 DKK
shares outstanding in mio	
A-shares	33,70
B-shares	118,86
Market value of equity	**112.239,45**
Book value of debt (=NIBD)	**29.582,00**
Total value	**141.821,45**
Market value of equity/Total value	79,14%
Book value of debt/Total value	20,86%

Source: own creation, based on data from Carlsberg's annual report (2017)

Appendix 45: Development of 10-year Danish Government Bond between 01/01/08 and 01/01/18



Source: Own creation, data derived from Bloomberg (2008)

Appendix 46: Calculation of the risk-free rate

10-year Danish government bond: GDGB10YR			
Date	**Rate of Return in %**	**Date**	**Rate of Return in %**
01.01.08	4,45	01.03.13	1,607
01.02.08	4,07	01.04.13	1,479
01.03.08	4,01	01.05.13	1,347
01.04.08	4,17	01.06.13	1,587
01.05.08	4,38	01.07.13	1,874
01.06.08	4,67	01.08.13	1,81
01.07.08	4,91	01.09.13	2,058
01.08.08	4,92	01.10.13	1,965
01.09.08		01.11.13	1,764
01.10.08		01.12.13	1,751
01.11.08		01.01.14	1,976
01.12.08		01.02.14	1,685
01.01.09		01.03.14	1,655
01.02.09	3,91	01.04.14	1,62
01.03.09	3,74	01.05.14	1,533
01.04.09	3,6	01.06.14	1,699
01.05.09	3,63	01.07.14	1,626
01.06.09	3,94	01.08.14	1,523
01.07.09	3,82	01.09.14	1,196
01.08.09	3,58	01.10.14	1,211
01.09.09	3,58	01.11.14	1,104
01.10.09	3,53	01.12.14	0,931
01.11.09	3,62	01.01.15	0,846
01.12.09	3,51	01.02.15	0,356
01.01.10	3,67	01.03.15	0,313
01.02.10	3,53	01.04.15	0,282
01.03.10	3,4	01.05.15	0,496
01.04.10	3,37	01.06.15	0,658
01.05.10	3,16	01.07.15	1,003
01.06.10	2,68	01.08.15	0,828
01.07.10	2,68	01.09.15	1,002
01.08.10	2,76	01.10.15	0,858
01.09.10	2,18	01.11.15	0,849
01.10.10	2,39	01.12.15	0,736
01.11.10	2,63	01.01.16	0,971
01.12.10	2,83	01.02.16	0,622
01.01.11	3,02	01.03.16	0,462
01.02.11	3,19	01.04.16	0,44
01.03.11	3,22	01.05.16	0,533
01.04.11	3,59	01.06.16	0,409
01.05.11	3,43	01.07.16	0,92
01.06.11	3,22	01.08.16	0,56
01.07.11	3,24	01.09.16	0,4
01.08.11	2,77	01.10.16	
01.09.11	2,42	01.11.16	0,289
01.10.11	2,08	01.12.16	0,398
01.11.11	2,25	01.01.17	0,392
01.12.11	2,07	01.02.17	0,463
01.01.12	2,68	01.03.17	0,503
01.02.12	1,74	01.04.17	0,604
01.03.12	1,827	01.05.17	0,605
01.04.12	1,829	01.06.17	0,572
01.05.12	1,639	01.07.17	0,67
01.06.12	1,031	01.08.17	0,665
01.07.12	1,44	01.09.17	0,469
01.08.12	1,074	01.10.17	0,55
01.09.12	1,096	01.11.17	0,466
01.10.12	1,261	01.12.17	0,435
01.11.12	1,238	01.01.18	**0,477**
01.12.12	1,092	01.02.18	0,725
01.01.13	1,067	01.03.18	0,722
01.02.13	1,775	01.04.18	0,546
Average interest rate (from 01/01/2008-01/01/2018)			
1,94%			

Source: own creation

Appendix 47: Calculation of beta

Regression analysis to estimate beta

Raw beta

Date	Date	Carlsberg's stock price	Dividends	Return on Carlsberg's stock	MSCI ACWI price	Return on MSCI
01.02.13	31.01.13	588				
01.03.13	28.02.13	587				
01.04.13	31.03.13	566			295	
01.05.13	30.04.13	525,5		-0,07155477	296	0,003389831
01.06.13	31.05.13	548		0,042816365	299	0,010135135
01.07.13	30.06.13	513		-0,063868613	287	-0,040133779
01.08.13	31.07.13	555,5		0,082846004	294	0,024390244
01.09.13	31.08.13	547,5		-0,01440144	289	-0,017006803
01.10.13	30.09.13	568		0,037442922	297	0,027681661
01.11.13	31.10.13	548,5		-0,034330986	307	0,033670034
01.12.13	30.11.13	601,5		0,096627165	313	0,019543974
01.01.14	31.12.13	600	6	0,007481297	312	-0,003194888
01.02.14	31.01.14	539		-0,101666667	304	-0,025641026
01.03.14	28.02.14	570,5		0,058441558	312	0,026315789
01.04.14	31.03.14	539		-0,055214724	315	0,009615385
01.05.14	30.04.14	537,5		-0,002782931	317	0,006349206
01.06.14	31.05.14	569		0,058604651	328	0,034700315
01.07.14	30.06.14	586,5		0,030755712	328	0
01.08.14	31.07.14	535		-0,087809037	331	0,009146341
01.09.14	31.08.14	517		-0,03364486	345	0,042296073
01.10.14	30.09.14	524		0,013539652	347	0,005797101
01.11.14	31.10.14	523		-0,001908397	354	0,020172911
01.12.14	30.11.14	533		0,019120459	362	0,02259887
01.01.15	31.12.14	478	8	-0,088180113	360	-0,005524862
01.02.15	31.01.15	458		-0,041841004	381	0,058333333
01.03.15	28.02.15	570,5		0,245633188	406	0,065616798
01.04.15	31.03.15	574		0,006134969	418	0,02955665
01.05.15	30.04.15	607		0,057491289	411	-0,016746411
01.06.15	31.05.15	624,5		0,028830313	420	0,02189781
01.07.15	30.06.15	607,5		-0,027221777	398	-0,052380952
01.08.15	31.07.15	592		-0,025514403	407	0,022613065
01.09.15	31.08.15	502		-0,152027027	372	-0,085995086
01.10.15	30.09.15	512,5		0,020916335	360	-0,032258065
01.11.15	31.10.15	556		0,084878049	393	0,091666667
01.12.15	30.11.15	600,5		0,080035971	408	0,038167939
01.01.16	31.12.15	612,5	9	0,034970858	383	-0,06127451
01.02.16	31.01.16	578		-0,056326531	364	-0,049608355
01.03.16	29.02.16	593,5		0,026816609	358	-0,016483516
01.04.16	31.03.16	624		0,051390059	367	0,025139665
01.05.16	30.04.16	633		0,014423077	370	0,008174387
01.06.16	31.05.16	645		0,018957346	381	0,02972973
01.07.16	30.06.16	634,5		-0,01627907	378	-0,007874016
01.08.16	31.07.16	660,5		0,040977147	389	0,029100529
01.09.16	31.08.16	625,5		-0,052990159	391	0,005141388
01.10.16	30.09.16	632		0,010391687	392	0,002557545
01.11.16	31.10.16	611		-0,033227848	393	0,00255102
01.12.16	30.11.16	597		-0,022913257	411	0,045801527
01.01.17	31.12.16	609,5	10	0,037688442	417	0,01459854
01.02.17	31.01.17	622		0,020508614	420	0,007194245
01.03.17	28.02.17	616,5		-0,008842444	437	0,04047619
01.04.17	31.03.17	644		0,04460665	440	0,006864989
01.05.17	30.04.17	681,5		0,058229814	439	-0,002272727
01.06.17	31.05.17	721		0,057960382	435	-0,009111617
01.07.17	30.06.17	695,5		-0,035367545	427	-0,018390805
01.08.17	31.07.17	698,5		0,004313444	424	-0,007025761
01.09.17	31.08.17	717		0,026485326	423	-0,002358491
01.10.17	30.09.17	689		-0,039051604	434	0,026004728
01.11.17	31.10.17	729,5		0,058780842	449	0,034562212
01.12.17	30.11.17	740,5		0,015078821	449	0
01.01.18	31.12.17	745	10	0,019581364	448	-0,002227171
		*Source: Bloomberg	*Morningstar		*Source: Bloomberg	

Adjusted beta

Smoothing method	0,9449

Relevering unlevered industry beta

Unlevered industry beta	0,64
D/E	0,264
	0,8087

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,470380104
R Square	0,221257442
Adjusted R Square	0,207098487
Standard Error	0,053585099
Observations	57

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0,044869863	0,0448699	15,626678	0,00022233
Residual	55	0,157924957	0,0028714		
Total	56	0,20279482			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	0,000638872	0,007326367	0,0872017	0,9308279	-0,0140435	0,0153212	-0,0140435	0,0153212
X Variable 1	0,917793776	0,232173033	3,9530593	0,0002223	0,45250862	1,3830789	0,45250862	1,3830789

Source: own creation

Appendix 48: Calculation of WACC

Return on equity	
CAPM	
Risk-free rate	1,94%
Beta equity	0,94
Market risk premium	6,10%
Return on equity	**7,70%**
Return on debt	
Risk-free rate	1,94%
Credit default spread	1,95%
Tax rate	22%
Return on debt	**3,0%**
Tax rate	22%
WACC	**6,59%**

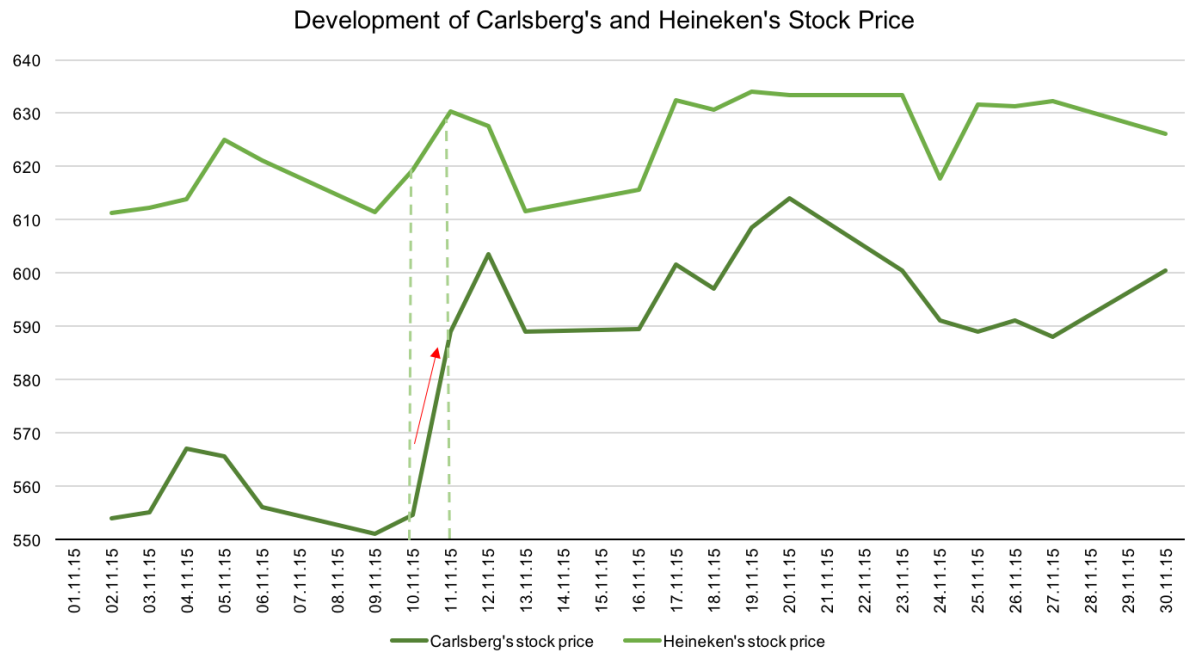
Source: own creation

Appendix 49: Overview of the future growth rate of the beer market per country

CAGR			
Country	2017		
India	8,6	South Africa	1,6
Indonesia	7,9	Brazil	1,5
Egypt	7,6	Costa Rica	1,5
Guatemala	6,9	Netherlands	1,4
Uzbekistan	6,7	Italy	1,4
Georgia	6,5	Taiwan	1,2
Cameroon	6,3	France	1,1
United Arab I	6,3	Poland	1,1
Chile	5,9	Greece	1,0
Algeria	5,9	Australia	1,0
Tunisia	5,4	Peru	1,0
Vietnam	5,2	Bosnia-Herz	0,8
Bolivia	5,1	Macedonia	0,8
Kenya	4,2	Norway	0,8
Pakistan	4,2	Slovenia	0,7
Colombia	3,8	United Kingd	0,5
Nigeria	3,8	Belarus	0,5
Azerbaijan	3,8	Uruguay	0,5
Philippines	3,1	Ireland	0,3
Malaysia	2,8	Switzerland	0,2
Singapore	2,7	Finland	0,2
Argentina	2,7	South Korea	0,1
Spain	2,7	Sweden	0,1
Israel	2,6	New Zealanc	-
Thailand	2,5	Denmark	-0,1
Turkey	2,5	Canada	-0,1
Saudi Arabia	2,4	Austria	-0,1
Kazakhstan	2,4	Latvia	-0,2
Romania	2,4	Czech Repul	-0,3
Ecuador	2,4	USA	-0,3
Serbia	2,3	Belgium	-0,8
Croatia	2,2	Germany	-1,0
Ukraine	2,2	Venezuela	-1,3
Mexico	2,1	Japan	-1,4
Slovakia	1,9	Estonia	-1,5
Portugal	1,9	China	-1,6
Dominican R	1,8	Russia	-1,9
Bulgaria	1,8	Morocco	-4,5
Hungary	1,8	Lithuania	-5,4
Hong Kong, (	1,7		
Average		1,9	

Source: own creation based on data from Euromonitor (2018)

Appendix 50: Development of Carlsberg's and Heineken's share price during November 2015



Source: own creation, based on data from Carlsberg's company homepage