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Valuation of Heineken N.V.

A fundamental analysis of a Dutch beer company

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Abstract

The main objective of this paper is to determine the intrinsic value of one Heineken share as of May 15, 2020. The primary method that is used in order to achieve this objective is fundamental valuation (absolute valuation). This valuation technique, however, is also complemented by the use of relative valuation.

Based on our analyses, we believe that Heineken's fair share price should be **€92.55**. This price results from our forecasts for the company's performance in the future. Specifically, troubled by the coronavirus-made pandemic, its revenue growth is forecasted to contract by 12% in 2020 before bouncing back by 6.8% and 8.4% in 2021 and 2022, respectively. Thanks to its ownership of a fair number of internationally leading brands and its geographically diversified operation, we believe that, for the next 15 years that follow 2022, the company will enjoy relatively attractive revenue growths before reaching a constant growth of 2.6% from 2038 onwards. Furthermore, the company's return on invested capital (ROIC) is forecasted to gradually increase to 25.1% by 2027 and maintain at this level afterward, while its weighted average cost of capital (WACC) is forecasted to be 6.84%.

Built upon the estimation of Heineken's fair share price, we make our recommendation on investment strategy. A margin of safety of +/- 10% is added to the intrinsic value in order to account for uncertainties around the estimate, resulting in the confidence interval [€83.3; €101.8]. If the stock is trading at a price lower than €83.3, a buy strategy is recommended. By contrast, if the stock is trading at a price higher than €101.8, a sell strategy is recommended. Finally, if the stock price is between €83.3 and €101.8, a hold strategy is recommended.

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Aalok Thapa

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1. Introduction

Before delving into the details, we believe that it is vital to grasp the rationale, purpose, and structure of the whole thesis. This is the aim of this chapter. Specifically, the chapter will start with explanations for our choice of topic and company. Then the main objective of the thesis will be pointed out. Finally, the structure of the rest of the paper will be laid out to give readers an overview of what is coming next.

1.1. Motivation and choice of company

As finance students, we believe that valuation is one of the fundamental building blocks in the finance world. Although the topic is not novel, it is of great importance. Thus, our main motivation for choosing valuation as our thesis topic is that, after having finished the paper, we will have managed to learn a great deal of knowledge and skills regarding various important aspects, in our opinion, in finance including valuation techniques, business models, accounting standards, financial statement analysis, forecasting, the financial market, and researching.

The target company of which we wish to carry out the valuation is the Dutch brewing company Heineken N.V. This choice is attributable to two reasons. Firstly, we have a strong interest in the beer industry. Secondly, as the world's second-largest beer company by volume, Heineken has an extensive operation, which involves a large number of different aspects. In order to properly value Heineken, we have to explore these aspects and, as a result, will have many opportunities to learn.

1.2. Objective of the thesis

The main objective of this thesis is to reliably estimate the intrinsic value of Heineken's shareholders' equity, and subsequently, the company's fair share price on the stock exchange Euronext as of May 15, 2020. It should be stressed that all the analyses presented later in this paper are based on information available to us on or before the valuation date (May 15, 2020).

At the time when this thesis is being written, the coronavirus-made pandemic is still rampaging, and there is a great deal of uncertainty surrounding economies and businesses. It is worth noting that, after the valuation date, things may change drastically in an unpredictable

manner, which could have strong impacts on Heineken's fundamentals and, thus, its intrinsic value. Thus, a constant re-valuation of the company's intrinsic value to reflect the most recent information is of utmost importance. Nevertheless, within the scope of this thesis, we only strive to answer the following research question:

"What is the intrinsic value of one Heineken N.V. share as of May 15, 2020?"

1.3. Structure of the thesis

The rest of the paper is structured in a way that helps answer the research question stated above. Specifically, in order to get acquainted with the company in question, a brief introduction of the beer industry and Heineken N.V. is outlined in chapter 2. Then, different valuation techniques will be presented in chapter 3. These techniques serve as fundamental frameworks on which we base our analyses. Once the most appropriate valuation methods have been identified, chapter 4-9 will focus on the implementation of them.

Specifically, in chapters 4 and 5, the beer industry and Heineken will be analyzed carefully in both a qualitative and quantitative manner. While chapter 4 will shed light on the opportunities and threats facing Heineken as well as how the company is positioned to respond to them, chapter 5 will produce insights into how Heineken has performed financially. The information from the two chapters forms vital foundations for making reliable forecasts of the company's performance in the future, which will be outlined in chapter 6. As the last necessary input for the valuation, Heineken's weighted average cost of capital (WACC) will be estimated in chapter 7.

Once all the inputs are already in place, the valuation of the company will be carried out in chapter 8. In order to put it into perspective, this valuation result will then be compared with that resulting from a different valuation technique, namely multiple valuation, in chapter 9. This comparison will be taken into consideration when recommendations about investing actions are made in chapter 10.

2. Introduction of the Beer Industry and Heineken N.V.

As outlined in chapter 1, the objective of this paper is to determine the fair share price of Heineken and, consequently, a recommendation for investment actions. To achieve that goal, it is necessary to cast some lights on Heineken and the industry in which it operates. This chapter aims to give an overview of the beer industry and Heineken before more thorough analyses of them are performed in the following chapters. The chapter will start with an introduction to the beer industry before moving on to the presentation of Heineken. It will end with briefs about the company's main competitors.

2.1. The beer industry

2.1.1. Main traits of the industry

The beer industry serves consumers with its beer products. Beer is made by the fermentation of cereal grains, the most common of which is barley. Moreover, in order to add bitterness and other flavors to beer products, hops are used in the brewing process. They also work as a natural preservative and stabilizing agent. Other flavoring agents such as gruit, herbs, or fruits can also be deployed. Another indispensable, but sometimes ignored, ingredient for the production is water, whose volume required in the brewing process is considerable compared to the volume of beer produced. For an average brewery, to produce 1 liter of beer, 7 liters of water is needed (Marry Kate, 2020).

Beer products are broken down into different categories according to their alcohol by volume (ABV) or quality. The main types are premium, craft, low-alcohol, and no-alcohol. Specifically, premium beers are those whose ABVs are relatively high (usually above 4.5%). The beer market is dominated by this type of beer, and they are mass-produced by companies in the industry, especially big ones. By contrast, low- and non-alcoholic beers refer to those with fairly low ABVs. Although the exact definition varies among countries, in general, low-alcoholic beers have ABVs below 2.5%, while non-alcoholic beers contain less than 0.5% alcohol. As shown later in chapter 4, low- and non-alcoholic beer products are increasingly sought-after by consumers. Another important category is craft beers. They are usually produced by small independent brewers and characterized by unique tastes and high quality, which helps differentiate them from other types. Recently, craft beers are also produced by large companies in the industry.

Beer products are distributed to final consumers via two main channels: on-trade and off-trade. While on-trade channel refers to on-premise services provided by restaurants, cafes, bars, hotels, and similar hospitality service establishments, off-trade channel covers all retail sales via super- and hypermarkets, convenience stores or similar sales channels. By 2019, the total sales of the global beer market were split evenly between the two channels. However, in terms of sales volume, the off-trade channel accounted for 65% (Statista, 2020a). This indicates that retail prices from the on-trade channel are much higher than those from the off-trade channel.

Beer products are quite distinctive among one another. Brewers can easily differentiate their products to a large extent in a variety of ways (Market Line, 2015). They can first differentiate their products by segment. Then flavor, color, and aroma, style, ingredients, strength, and brand can be used to further differentiate their products in a given segment. This fact makes the beer industry at first resemble a monopolistic competition market where there are numerous firms offering products that are similar but not perfect substitutes. However, the beer industry has actually become an oligopolistic market where there are just a few players that, together, control a significantly large part of the market.

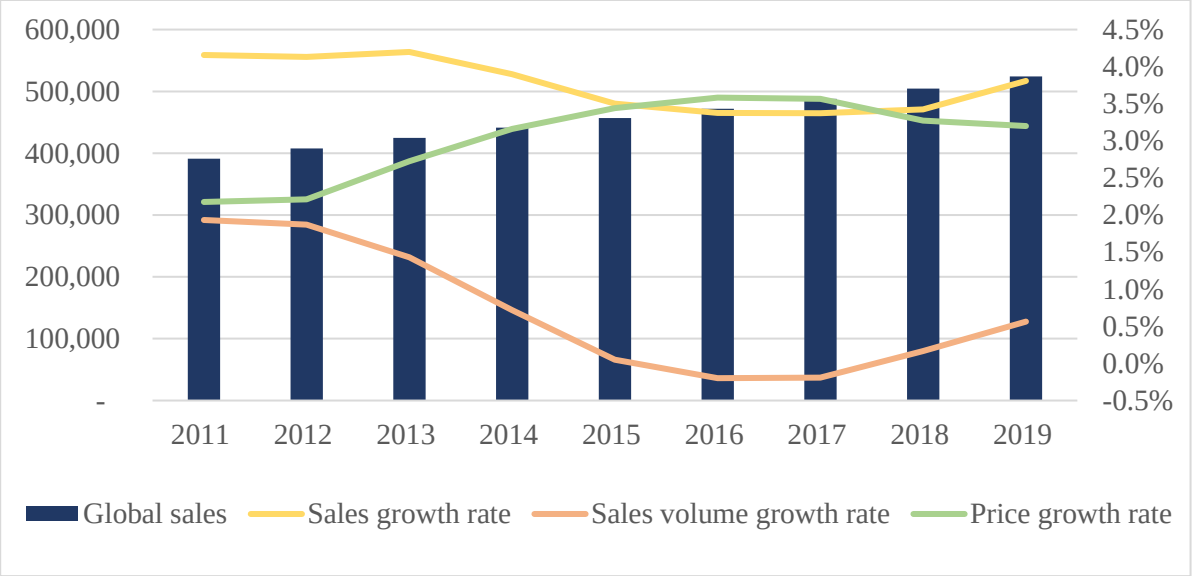
Due to a large number of merger and acquisition (M&A) deals that have taken place over the last ten years, the global beer market has become quite concentrated. The four largest multi-national beer companies, namely Anheuser-Busch InBev, Heineken, Carlsberg, and Molson Coors, accounted for more than half (54%) of the global market's sales volume in 2019. It is worth noting that, as the market leader, AB InBev alone represented nearly 30% sales volume of the global market, while the figure for Heineken, the second-largest beer company, was nearly 13%. However, beer markets are considered as local. Each individual market is usually dominated by just a small number of brewers whose brands resonate with local consumers. It is quite challenging for other players to enter and outcompete the incumbents (Koller, GoedHart, & Wessels, 2015).

2.1.2. Recent developments of the industry

Graph 1 illustrates the global beer market's sales and its growth rate over the period 2011 – 2019, with the left axis representing the nominal sales (in a million euros) and the right axis representing growth rates. It can be seen that beer is a large market. Over the last ten years, sales of the global beer market have constantly been increasing, rising from about 391.4 billion euros in 2011 to around 524 billion euros in 2019. And its annual growth rate has steadily

stayed above 3.4% over the same period, which seems at first that despite its already large size, the beer market is growing fast. However, a closer look at the break-down of the revenue growth reveals an interesting insight. In terms of sales volume, the growth of the global beer market has steadily dropped over the period 2011 – 2017 before slightly bouncing back over the last three years. In fact, most of the revenue growth has been driven by the growth of price per liter, which has been steadily climbing over the last ten years. Put it another way; consumers have been relatively reducing their consumption of while paying more for beer products.

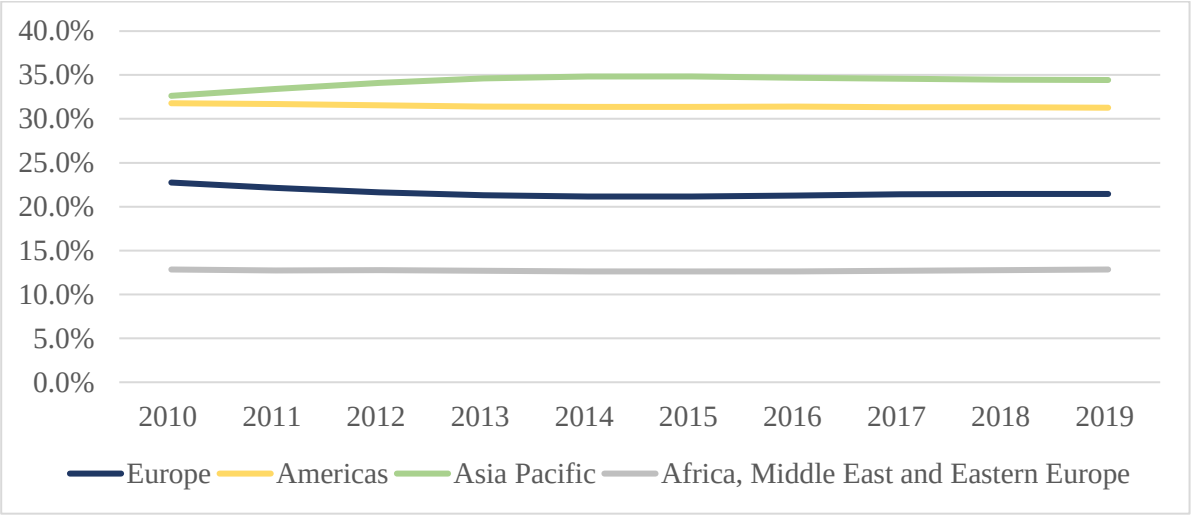
Graph 1: Sales of the global beer market over the period 2011 – 2019, in a million euros



(Source: Statista, 2020a)

By regional market, illustrated by graph 2, Asia Pacific has been the largest market by sales volume. Its contribution to the sales volume of the global beer market has increased quite steadily over the last ten years, rising from about 32.6% in 2010 to nearly 34.5% in 2019. The biggest market in the Asia Pacific region is China, which accounted for more than 65% of the sales volume in the region in 2019. China is also the largest beer market in the world on a country-by-country basis (Statista, 2020a). By contrast, the Americas have been the second-largest regional market over 2011 – 2019. Unlike the Asia Pacific, its share of volume sales has been relatively constant, staying at the level of about 31%. The most significant markets in the region are the United States, Canada, Mexico, and Brazil, which collectively represented more than 81.5% of the regional sales volume in 2019. Among them, the United States is the largest, with its sales volume being greater than the sum of those of the other three countries in 2019 (Statista, 2020a).

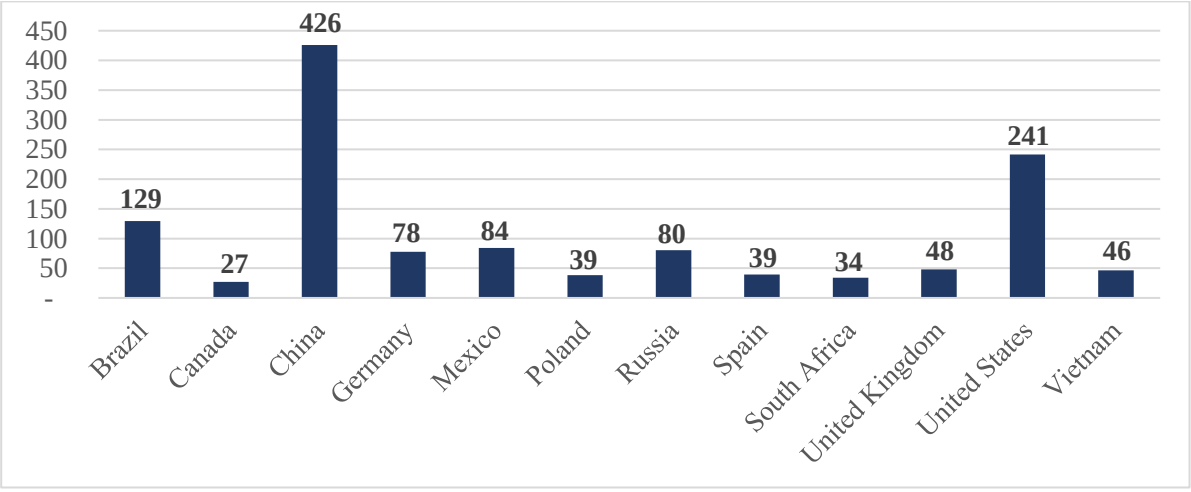
Graph 2: Share of global sales volume of different regional beer markets over the period 2011 – 2019



(Source: Statista, 2020a)

Furthermore, Europe has been the third-largest market, with its sales volume share dropping slightly from about 22.7% in 2010 to around 21.6% in 2012 before being stable over the period 2012 – 2019. The largest markets in the region include Germany, the United Kingdom, Poland, and Spain, which collectively accounted for more than half of the regional sales volume in 2019. By contrast, Africa, the Middle East, and Eastern Europe have constantly accounted for about 13% of the global sales volume. Its biggest markets include Russia, South Africa, Nigeria, and Angola, which together accounted for more than 60.5% of the regional sales volume in 2019.

Graph 3: Sales volume of the world's largest markets, by sales volume (million hectoliters) in 2019



(Source: Statista, 2020a)

Moreover, on a country-by-country basis, graph 3 illustrates the largest beer markets in the world, by sales volume, in 2019. The three world's biggest markets are China, the United States, and Brazil, with gaps between their sales volume being considerably large. Specifically, sales volume in China was almost double that of the United States in 2019, while the size of the United States beer market was nearly twice as much as that of Brazil.

2.2. Heineken N.V.

Heineken N.V. is a Dutch brewing company, headquartered in Amsterdam, the Netherlands. The company was founded by Gerald Adriaan Heineken on February 15, 1864. Its stock is now listed on NYSE Euronext Amsterdam with the ticker symbol HEIA NA/ HEIN. AS. At the end of 2019, its workforce was about 85,853 full-time equivalent employees, excluding contractors (Heineken, 2010a – 2019a). It is the world's second-largest beer company by sales volume, only behind the Belgian brewer Anheuser-Busch InBev. In 2019, it accounted for nearly 13% of the beer volume sold globally (Statista, 2020a; Heineken, 2010a – 2019a; Anheuser-Busch InBev, 2010 – 2019).

- **Main product categories**

The company's main product category is beer, which accounts for the vast majority of revenue generated. In 2019, beer products alone contributed more than 87% of the company's consolidated sales volume made during the year (Heineken, 2010b – 2019b). The category is broken down into premium, craft, and low- and -non-alcoholic segments. Among them, the premium segment is the most significant for Heineken. In this category, the company is famous for its well-recognized brands such as Heineken, Amstel, Tiger, Desperados, Birra Moretti, Affligem, and Lagunitas.

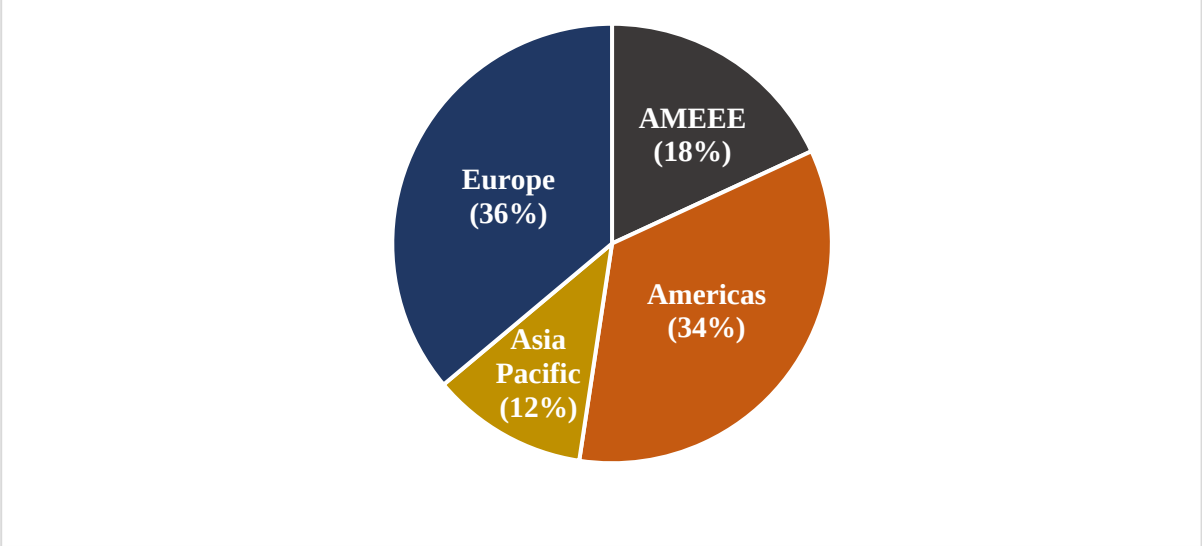
Besides beer, Heineken also offers non-beer products, which include cider, soft drink, and water. Cider is an alcoholic beverage that is made by the fermentation of fruit, which commonly is apples. Non-beer category contributes about under 10% of the company's consolidated sales volume (Heineken, 2010b – 2019b). It is worth noting that, as the world's largest cider producer (Heineken, 2010a – 2019a), Heineken is dominating the global cider market with its sought-after brands, including Strong Bow, Orchard Thieves, Bulmers and Old Mount. Moreover, the company, mainly in Europe, owns a number of retail stores, pubs, and bars, where it also sells products of third parties along with its own products. In 2019, the sales

volume stemming from third parties' products accounted for about 3% of the company's consolidated sales volume (Heineken, 2010b – 2019b).

❖ **Global presence**

Heineken operates worldwide and divides its global presence into four different regions: Africa, Middle East, and Eastern Europe (AMEEE); Americas; the Asia Pacific and Europe. Among the regions, Europe and the Americas have been generating the majority of revenue for the company. They collectively accounted for about 70% of the Heineken's consolidated sales volume in 2019. On the other hand, although the Asia Pacific and AMEEE regions are, for the time being, contributing less to the overall performance of the company (together accounted for around 30% of the consolidated sales volume in 2019), they are, as shown in the next chapters, considered as the growth engine for Heineken for the years to come.

Pie chart 1: Share contribution of different regional markets to Heineken's consolidated sales volume in 2019



(Source: Heineken's full-year result report 2019)

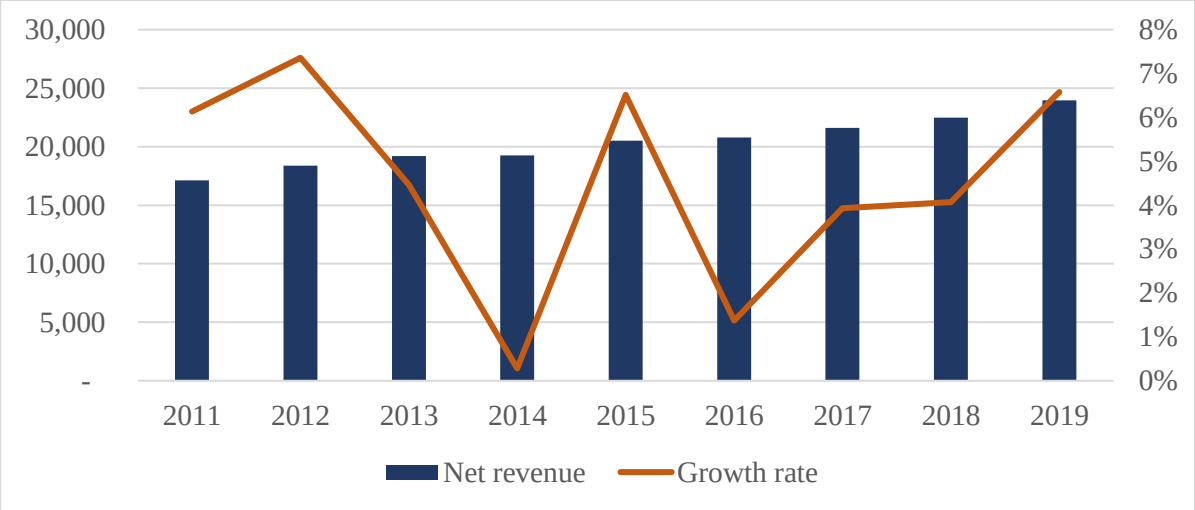
The most significant markets for Heineken in the AMEEE region include South Africa, Nigeria, and Russia. It competes in the region with many of its international and local brands such as Heineken, Amstel, Primus, Mutzig, and Life. By contrast, America, Mexico, and Brazil are the most important markets for Heineken in the Americas region. The company serves consumers there also with both their international and local brands, including Heineken, Tecate, Dos Equis, Schin, and Lagunitas. With regard to the Asia Pacific region, equipped with brands like Heineken, Anchor, Larue, Tiger, and Bintang, the company's main focus is

on Vietnam, the Philippines, and South Korea. Recently, Heineken has tried to foray into China by successfully setting up a joint venture with China Resources Beer, which is the largest beer producer in China, in 2019. Finally, the company serves its consumers in Europe region with its such well-recognized brands as Heineken, Cruzcampo, Birra Moretti, Desperados, and Strongbow.

❖ **Revenue and its growth**

As shown in graph 4, over the period 2011 – 2019, Heineken's net revenue has steadily been climbing, rising from about 17.1 billion euros in 2011 to nearly 24 billion euros in 2019. Its growth rate, on the other hand, has fluctuated wildly over the same period, with its peaks of more than 6.5% in 2011, 2012, 2015, and 2019, and its troughs of nearly 0% in 2014 and 1.4% in 2016. However, as shown later in the following chapters, these growths do not necessarily represent the strong or poor performance of the company on an organic basis.

Graph 4: Heineken's net revenue and its growth rate over the period 2011 – 2019 (in a million euros & %)



(Source: Heineken's annual reports)

❖ **Business strategy**

As stated in its annual reports, Heineken's business strategy revolves around five business priorities. Firstly, the company aims to be the market leader in the global premium segment in beer and cider. Its goal is to be the number one or a strong number two in the markets where it competes with a full brand portfolio. Secondly, it aims to capitalize on the economy of scale to improve its efficiency and save costs. The company also strives for future growth through strategic investments and initiatives. Thirdly, sustainability is at the heart of what Heineken

does. It seeks to make meaningful contributions to the improvement of the environment, local communities, and societies where it operates. Fourthly, one of the most integral parts of its strategy is to constantly engage and develop its people. Finally, given the growing importance of technology and how fast the external environment is changing, Heineken aims to leverage and integrate information technology into its organizations and business models in order to adapt well, stay relevant, and exploit new opportunities.

2.3. Other significant players

As outlined above, the global beer market is an oligopolistic market where there are just a few players that collectively control a significantly large part of the market. Among them is Heineken. This section aims to cast some lights on the other players in the league. They will be revisited in the following chapters when thorough analyses of the beer market and Heineken are carried out.

2.3.1. Anheuser-Busch InBev

Anheuser-Busch InBev (AB InBev) is a Belgian brewing company headquartered in Leuven, Belgium. The company was founded in 1852. Its stock is now listed on NYSE Euronext with the ticker symbol ABI. At the end of 2019, its workforce was about 170,000 full-time equivalent employees. It is the world's largest beer company by volume, followed by the Dutch brewer Heineken. In 2019, it accounted for nearly 30% of the beer volume sold globally.

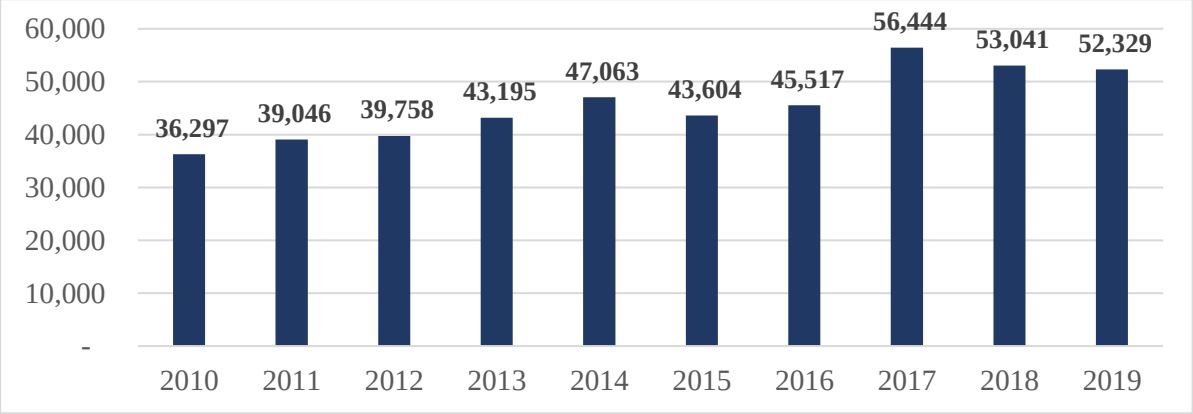
The company's product portfolio comprises beer and non-beer products, including cider, soft drink, and water. AB InBev competes in the markets where it has operations with its wide range of both local and international brands such as Bud Light, Carling Black Label, Cass, Chernigivske, Modelo, Victoria, Aguila, Club Colombia, Beck's, Castle, Leffe, Michelob Ultra, Stella Artois, Hertog Jan, Camden Hells, Cristal, Hoegaarden, and Skol among others.

Like Heineken, AB InBev operates worldwide and divides its global presence into six regions: North America, Middle Americas, South America, Asia-Pacific, Europe, the Middle East, and Africa. It is worth noting that the company has a strong position in Americas where its sales volume accounted for a whopping share of about 64.5% of the whole regional sales volume in 2019 (Statista, 2020a; Anheuser-Busch InBev, 2010 – 2019). This signals tough challenges for other companies that want to expand or enter the region and outcompete AB InBev.

Moreover, the company is also one of the dominant companies in other regions, albeit the fact that the company's power is not as absolute as it is in the Americas.

Over the last ten years, AB InBev has managed to increased its net revenue from about 36.3 billion US dollars in 2010 to around 52.2 billion US dollars in 2019, an increase of more than 44%. It is worth noting that the largest jump took place in 2017 when the revenue increased by about 24%. However, this jump was mainly driven by the company's acquisition of SAB Millers in 2017. Before the acquisition, SAB Millers was also considered as one of the largest beer companies in the world. Thus, the acquisition has further cemented AB InBev's position as the global market leader and made it virtually invincible in the Americas region.

Graph 5: AB InBev's net revenue over the period 2010 – 2019 (in million US dollars)



(Source: AB InBev's annual reports)

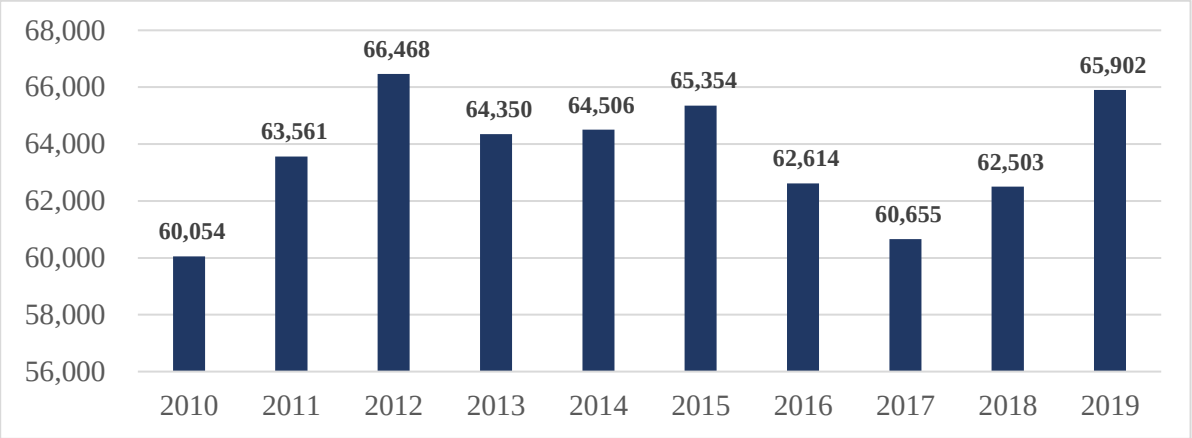
2.3.2. Carlsberg

Carlsberg is a Danish brewing company headquartered in Copenhagen, Denmark. The company was founded in 1847. Its stock is now listed on Copenhagen Stock Exchange with the ticker symbol CARL B. At the end of 2019, its workforce was about 41,248 full-time equivalent employees, and the company accounted for about 6% of the beer volume sold globally (Statista, 2020a; Carlsberg, 2010 – 2019). The company produces and sells both beer and non-beer products. Its most recognized brands include Carlsberg, Kronenbourg, Ringnes, 1664, Grimbergen, Baltika, Alavaria, Aldaris, Okacim, Somersby, Tuborg, and Lvivske.

Carlsberg is an international company that has an operating presence mainly in Europe and Asia. Over the last ten years, its revenue has fluctuated to a considerable extent. Its peeks took place in 2012 and 2019, while its troughs occurred in 2010 and 2017. Over the whole period,

the company's revenue has increased by only 1% annually (CAGR), rising from about 60 billion DKK in 2010 to nearly 66 billion DKK in 2019.

Graph 6: Carlsberg's net revenue over the period 2010 – 2019 (in million DKK)

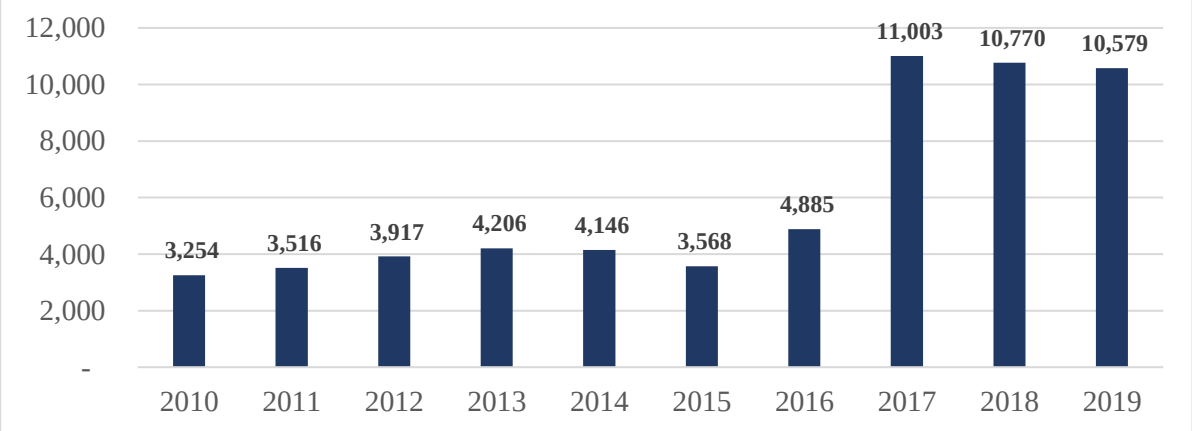


(Source: Carlsberg's annual reports)

2.3.3. Molson Coors

Molson Coors is an American brewing company, headquartered in Denver, Colorado, the United States. The company was formed in 2005 by the merger of Molson of Canada, and Coors of the United States. Its stock is now listed on the New York Stock Exchange with the ticker symbol TAP. At the end of 2019, its workforce was about 17,750 full-time equivalent employees, and the company accounted for about 5% of the beer volume sold globally (Statista, 2020a; Molson Coors, 2010 – 2019). The company produces and sells both beer and non-beer products. Its most recognized brands include Carling, Coors Light, Miller Lite, Molson Canadian, Staropramen, Blue Moon, Creemore Springs, Cobra and Doom Bar.

Graph 7: Molson Coors' net revenue over the period 2010 – 2019 (in million US dollar)



(Source: Molson Coors' annual reports)

The company operates globally and is present in the Americas, Africa, Europe, and the Asia Pacific regions. Among them, its most important markets are the United States and Canada. Over the past ten years, Molson Coors' revenue increased considerably, climbing from about 3.2 billion $ in 2010 to around 10.5 billion $ in 2019 (graph 7). However, this improvement was mainly driven by its acquisition of MillerCoors on October 11, 2016.

3. Valuation Frameworks

In essence, most companies can be well valued by two main approaches (Hitchner, 2017). The first one is the income approach, which ties the value of an asset to the stream of future economic benefits it will be able to generate. The second one is the market approach, which appraises the value of an asset by looking at the price that the market is willing to pay for a fundamentally comparable asset. Each approach has its own merits and contains a number of different methods. They will be discussed in more detail in the following sections.

3.1. The income approach

An investor is willing to commit a certain amount of money to invest because of the expectation that he or she will receive a reasonably greater amount at some point in the future. The greater and more certain the future amount is, the more valuable that investment is to the investor. This forward-looking mindset is the foundation of the main premise of the income approach: "Value of an asset is equal to the sum of the present values of the expected future benefits of owning that asset" (Hitchner, 2017).

Under this approach, the value of an asset is generally calculated by using the following discounted-cash-flow valuation formula:

$$\text{Value} = \sum_{i=1}^{i=n} \frac{CF_i}{\prod_{j=1}^{j=i}(1+r_j)} \tag{1}$$

Where:

CF_i is the expected future cash flow or other economic income generated by the asset at point i in the future, with $1 \leq i \leq n$.

r_j is the risk-adjusted return the investor requires for period j, with $1 \leq j \leq i$.

n is the number of future periods over which the investor expects to receive benefits from owning the asset and n can be infinite.

The discounted-cash-flow valuation formula can be well applied to determine the fair price per share of a company. Practically, there are four widely-used different methods for such purpose, each of which will be discussed in the following sections. The choice of which

method to use depends on the type and characteristics of the company being valued (Koller et al., 2015).

3.1.1. Discounted cash flows to enterprise

A company's fair value is the sum of the fair value of all of its assets, and the owners of it consist of different financial claimers, one of which is equity holders. Thus, one way to determine the fair value of shareholders' equity, and hence share price, is to first calculate the fair value of the whole company and then subtract all other financial claims from it. This method is called "discounted cash flows to the enterprise" (DCF approach) and well-illustrated by (Koller et al., 2015). There are four steps involved in this method: i. Valuing the company's underlying operation; ii. Valuing non-operating assets; iii. Valuing other financial claims; iv. Valuing shareholders' equity. Each step will be discussed further below.

3.1.1.1. Step 1: Valuing the company's underlying operation

The method starts with reclassifying the company's assets on its balance sheet as operating and non-operating categories. There are at least two reasons for such classification. Firstly, it is easier and more reliable to forecast the underlying performance of the company since it is not distorted by non-operating and non-recurring incomes/expenses. Secondly, investors can get more insight into the real performance of the company and reliably compare it to other companies. It is the operation value stemming from the operating assets that need to be appraised in this step.

Conveniently, when the target capital structure of the company is expected to remain constant, the income-approach formula (1) can be simplified as follows (Miles & Ezzell, 1980):

$$\textbf{Operation value} = \sum_{i=1}^{i=n} \frac{FCF_i}{(1+WACC)^i} \qquad (2)$$

Where:

FCF_i is free cash flow generated by the operating assets of the company at the end of year i, with $1 \leq i \leq n$.

WACC stands for weighted average cost of capital, required by both debt and equity investors.

$n = \infty$, with the assumption that the company operates on an ongoing basis.

Free cash flows represent the cash flows generated by the company's underlying operation, less any reinvestment back into the business in order to maintain and/or expand it. It is the cash flows available to all investors, both debt and equity holders, and, thus, independent of the company's capital structure. The formula for calculating free cash flow is given as follows:

$$\textbf{FCF = NOPLAT + Noncash operating expenses} - \textbf{Investments in invested capital}$$

Where:

FCF stands for free cash flows

NOPLAT stands for net operating profit less adjusted tax. It is the after-tax profit generated by operating assets. Together with the after-tax profit generated by non-operating assets, they form the total after-tax profit for the company.

Noncash operating expenses are usually depreciation of fixed assets and amortization of operating intangible assets.

Invested capital is the amount of capital used to fund purchases of operating assets.

Another important input for the determination of operation value is the company's weighted average cost of capital (WACC). It is the weighted average rate of return demanded by all investors, both debt and equity holders, for them to be willing to invest in the company instead of elsewhere.

$$\textbf{WACC} = \frac{\textbf{D}}{\textbf{D + E}} \textbf{R}_\textbf{D}\textbf{(1 – t)} + \frac{\textbf{E}}{\textbf{D + E}} \textbf{R}_\textbf{E}$$

Where:

D is the market value of the company's debt.

E is the market value of the company's equity.

t is the marginal tax rate faced by the company.

R_D is the cost of capital required by debt holders.

R_E is the cost of capital required by equity holders.

The way WACC is calculated needs to correspond to how FCF is calculated. To be consistent with the definition that FCF is available to all investors, WACC represents the weighted average rate of return required by all investors. Moreover, since the value of tax shield is also one of the benefits to all investors but is excluded when calculating FCF, it is incorporated in the WACC to reflect this benefit by reducing the cost of debt by the marginal tax rate.

Another important aspect with respect to the operation-value formula (2) is that it assumes the cash flows will be received on the last day of each forecast year, which is hardly the case in reality. To tackle this issue, a mid-year convention can be used. This mid-year convention treats the cash flows as if they were to be received in the middle of the year. If the cash flows are received quite evenly during the year, the mid-year convention is a reasonable approximation (Hitchner, 2017).

3.1.1.2. Step 2: Valuing non-operating assets

Companies oftentimes hold assets that are not core to the underlying operation. These assets are referred to as non-operating. Since the cash flows related to those assets can distort the real picture of the underlying performance, therefore making it challenging to forecast and incomparable among companies, they should be separated from those generated by operating assets. Instead, they should be valued separately and added to the operation value in order to determine the total value of all of the assets that belong to the company.

Classifying an asset as operating or non-operating may sometimes require judgment. As general criteria, an asset should be categorized as operating if i. it is core to the underlying operation and ii. it tends to fluctuate with revenue. The most common non-operating assets include excess cash and marketable securities, nonconsolidated subsidiaries, noncontrolling interests, finance subsidiaries, loans to customers and other companies, discontinued operations, excess real estate, tax loss carried forward and excess pension assets (Koller et al., 2015).

3.1.1.3. Step 3: Valuing other financial claims

The company is not only owned by equity holders, but also by a number of other financial claimers. Moreover, equity holders are by law residual claimants, meaning that they are only allowed to receive the “leftover” after the company has fulfilled all of its other contractual claims. Thus, being able to identify and precisely value nonequity claims is important to derive the true value of shareholders’ equity and price per share. The most common nonequity claims include short-term debts, long-term debts, operating leases, employee benefit liabilities, preferred stocks, employee options, noncontrolling interests, provisions, and contingent liabilities.

3.1.1.4. Step 4: Valuing shareholders' equity

Once the values of other nonequity financial claims have been determined, they can be subtracted from the total value of the company to derive the value of shareholders' equity. This value is then divided by the most recent number of undiluted shares outstanding to calculate the price per share. In that regard, shares outstanding are defined as the gross number of shares issued, less the number of shares held in the treasury. The reason undiluted shares are used instead of diluted is because the value of convertible debts and employee options have already been subtracted from the company's value, thus avoiding double counting.

3.1.2. Discounted economic profits

In essence, this approach is, to a large extent, similar to the DCF method mentioned above. It also involves four different steps to derive the share value of a company, with the last three steps being identical. The only variation is its approach to valuing the company's core operation. Instead of free cash flows, under this method, future economic profits are discounted and subsequently added to the invested capital in order to derive the operation value. The general formula is given as follows:

$$\textbf{Value}_0 = \textbf{Invested capital}_0 + \sum_{i=1}^{i=n} \frac{\textbf{Economic profit}_i}{(1+\textbf{WACC})^i}$$

Where:

Economic profit$_i$ is the economic profit generated by the core operation of the company in period i, with $1 \leq i \leq n$.

$n = \infty$, with the assumption that the company operates on an ongoing basis.

Economic profit is the after-tax profit over and above the level of profit required by the weighted average cost of capital (WACC). It measures the value created by the core operation of the company over a single period, and is defined as follows:

Economic profit = Invested capital x (ROIC – WACC)

Where ROIC stands for return on invested capital, which is the ratio of NOPLAT to invested capital, thus, the above formula can be rewritten as follows:

Economic profit = NOPLAT – Invested capital x WACC

Although the DCF method is a comprehensive way of analyzing and valuing a company's core operation, it fails to provide valuable insight into the company's competitive position and economic performance. For instance, low free cash flow in a given period (or periods) is not necessarily a bad thing since it might be due to poor performance or an investment for the future, which the DCF approach fails to explain. This issue can be tackled by the economic-profits method due to the fact that it indicates when and how the core operation creates value for the company.

Similar to the DCF method, the most important assumption that needs to hold for the economic-profits model to be reliable is that the target capital structure of the company will be held constant. If this assumption is satisfied, the two methods should yield the same result despite different approaches (Koller et al., 2015). Therefore, it is recommended to use both methods with the aim of gaining more insight into the company being valued.

3.1.3. Adjusted present value

The main assumption in the two previously mentioned models is that the company will manage its capital structure at a constant target level. If the company decides to change its capital structure in the future, these models are no longer reliable. For instance, a company may use its future cash flows to pay down its debts, and, consequently, its debt-to-value ratio, leading the models to overstate the value of tax shields generated by debts. Under such circumstances, the "adjusted present value" model (APV) is preferred. The APV model breaks the operation value down into two main components: operation value as if the company was financed entirely by equity and the value of the tax shield that arises from debt financing.

Adjusted present value of operation	**=**	**Operation value as if all-equity financed**	**+**	**Present value of tax shield**

The operation value as if the company was financed entirely by equity (V_u) is calculated by discounting the expected free cash flows, as defined in the first model, at an interest rate reflecting risks faced by the operating assets (operational risks). This interest rate is called unlevered cost of equity (k_u). By comparison, the value is tax shield (V_t) is determined by discounting all expected tax benefits from debt financing at an interest rate reflecting the uncertainty of those benefits (k_t). The key to this approach is to be able to determine both k_u and k_t, which generally involves the work of Modigliani and Miller, along with certain

assumptions about the debt of the company. Under Modigliani-Miller propositions, there are two important relationships (Berk & DeMarzo, 2017):

$$V_u + V_t = E + D$$
$$V_u * k_u + V_t * k_t = E * k_e + D * k_d$$

Where:
E is the market value of equity
D is the market value of debt
k_e is the cost of levered equity
k_d is the cost of debt

If the company's policy is to maintain its debt-to-value ratio or a target ratio of interest to free cash flows, it is reasonable to assume that the risk of interest tax shield is equal to that of the company's operating assets ($k_t = k_u$). Consequently, the unlevered cost of equity can be calculated as given in formula (3) below (Berk and DeMarzo, 2017). By comparison, if the cost of the tax shield and cost of debt is risk-free, coupled with the constant absolute value of debt, the unlevered cost of equity is given by formula (4) (Koller et al., 2015).

$$k_u = \frac{E}{E + D} k_e + \frac{D}{E + D} k_d \quad (3)$$

$$k_u = \frac{E}{E + D*(1 - \text{marginal tax rate})} k_e + \frac{D*(1 - \text{marginal tax rate})}{E + D*(1 - \text{marginal tax rate})} k_d \quad (4)$$

The APV method is quite similar to the other approaches in the way that it evaluates shareholder's equity by first valuing the whole company. It only departs from the other two when it comes to how the company's operation should be appraised, meaning that the other three steps remain identical.

3.1.4. Discounted cash flows to equity

Unlike the previous methods, the "discounted cash flows to equity" approach (FCFE) directly appraises the value of shareholders' equity by discounting the expected cash flows to which they are entitled in every period after all other obligations have been settled. Under FCFE method, the operation of the company does not need to be valued separately. The general formula is given as follows:

$$\textbf{Shareholders' equity value} = \sum_{i=1}^{i=n} \frac{FCFE_i}{(1+k_e)^i}$$

Where:

$FCFE_i$ is the free cash flow to equity holders in period i, with $1 \leq i \leq n$.

k_e is the cost of equity

$n = \infty$, with the assumption that the company operates on an ongoing basis.

The calculation of FCFE starts with net income reported in the income statement prepared by the company. From this figure, non-cash expenses like depreciation and amortization are added back, and investments in working capital, fixed assets, intangible assets as well as other non-operating assets are subtracted. The resulting number is then added by the net increases in debt and other nonequity claims (Koller et al., 2015).

With respect to the appropriate discount rate, the cost of equity is used instead of WACC. However, in order for the FCFE model to yield reliable results, the assumption that the company will maintain a constant target capital structure needs to hold. This is in line with the first two models previously mentioned. The reason for this assumption involves the relationship between equity risk and capital structure. The more leveraged the company is, the riskier for equity holders since they are by law, residual claimants. And the riskier the equity is, the higher the cost of equity required to compensate investors for bearing higher risk. Therefore, when the capital structure fluctuates, the cost of equity will correspondingly fluctuate, and it is no longer appropriate to discount the expected FCFEs at a single cost of equity.

The major drawback of the FCFE approach is that capital structure is embedded in the cash flows, making it extremely hard to forecast and compare among companies. However, the method is quite effective for the valuation of companies whose operation is closely related to its capital structure, such as financial institutions (Koller et al., 2015).

3.2. The market approach

Under this approach, an asset can be valued by referring to the market prices of other assets that are closely comparable to it. The approach is built upon the economic principle of

substitute, which states that a rational buyer will not pay more for an asset than a current market price for a comparable asset (Hitchner, 2017). There are generally three steps involved when applying this approach, which is discussed in the following.

3.2.1. Step 1: Understanding the subject company

Before trying to identify comparable companies for the valuation purpose, it is of utmost importance to fully understand as many vital aspects of the subject company that needs to be valued as possible. Such characteristics as the company's products and services, size, customers, suppliers, competitors, financial and operational risks, growth expectations, margins, etc. should be taken into consideration. If the subject company contains different lines of business that vary considerably in terms of core characteristics, each and every line might be analyzed and evaluated separately (Koller et al., 2015). In case there is one major line business that contributes most revenue and profit to and represents a considerable portion of the total assets of the company, it might be reasonable to assume that the value of the company is mainly driven by this line of business and, consequently, comparable companies to this line of business might be used to reasonably approximate the total value of the subject company. Conversely, when different lines of business are fairly equally important to the company, different comparable companies to different lines of business need to be identified in order for the valuation of the subject company to be reliable (Hitchner, 2017).

3.2.2. Step 2: Identifying comparable companies

Being able to identify comparable companies is at the heart of the market approach. Several important traits of the subject companies should be considered and compared in the selection of potentially comparable companies. The closer to those traits, the more reliable is the comparable companies. Given the complexity of businesses today, the first and foremost important trait is the unambiguous definition of the industry in which the subject company is operating. And companies with the same industry definition will be singled out as possible comparable counterparts for the subject company. In that regard, geographic diversification of the subject company also needs to be taken into consideration. Subsequently, a set of different measures that indicate the subject company's operational and financial characteristics, along with its growth prospects, should be examined. An unexhausted list of such measures is detailed as follows (Hitchner, 2017):

- **Size measures:** These include the magnitude of sales, profits, total assets, market capitalization, total invested capital. Size is an important consideration because it impacts both the operational and financial risks of a company and, hence, its value.

- **Historical growth rates:** These include growth in revenues, profits, assets, net operating profit less adjusted tax (NOPLAT), return on invested capital. Historical growth rates are good indicators for future prospects and, therefore, the value of a company.

- **Measures of profitability and cash flow:** These include earnings before interest, tax, depreciation and amortization (EBITDA); earnings before interest, tax, and amortization (EBITA); net operating profit less adjusted tax (NOPLAT); earnings before interest and tax (EBIT), net income, cash flow. These measures are good indicators for the company's performance in the future and directly affect value.

- **Profit margin:** The ratio of profit to some base items (sales, assets, equity, etc.) is more important and comparable than the absolute number to understand the underlying performance of a company.

- **Capital structure:** Since capital structure represents the financial risk of the company and greatly affects the value of shareholders' equity, it should be examined when trying to identify comparable companies for valuation purposes.

- **Other measures:** These measures represent other distinctively important aspects of the industry in which the subject company is operating. They are usually industry-specific.

After possible comparable companies have been identified, different measures that show important characteristics of the subject company, like those mentioned above, are compared among companies in search of the best candidates that are fundamentally similar to the subject company. This process may involve necessary adjustments to the measures in order to better compare companies on a similar basis. Adjustments usually occur in the income statement and balance sheet with regard to certain accounting changes, non-recurring items, operating versus non-operating items, excess versus sufficient working capital, or use of different accounting methods (Hitchner, 2017).

Another important aspect when identifying and choosing comparable companies is the sample size. A large collection can help reduce the dependence of the result on any single company and, thus, avoid anomaly or outliner scenarios. Moreover, a good sample of comparable

companies should contain those that not only operate in the same industry as the subject company but share similar prospects for growth and return on invested capital (Koller et al., 2015).

3.2.3. Step 3: Choosing and calculating pricing multiples

The basic formula of pricing multiple is given as follows (Hitchner, 2017):

$$\mathbf{Value_{subject}} = \frac{\mathbf{Price_{comps}}}{\mathbf{Parameter_{comp}}} \times \mathbf{Parameter_{subje}}$$

Where:
$Value_{subject}$ is the value of the subject company that needs to be evaluated
$Price_{comps}$ is the observed market "price" of the comparable company
Parameter might be sales, net income, EBITDA, book value or any relevant measure

There are a couple of points to the above formula that need to be made. Firstly, the value being evaluated has to correspond to the market price being observed. For instance, if the value of the invested capital of the subject company is of concern, then price refers to the market value of the invested capital of the comparable company. Likewise, if the value of shareholders' equity needs to be valued, then the price which is implied in the formula should be the market value of the shareholders' equity in the comparable company. Secondly, the parameter used could be based on measures from next year, the current year, last year or some time period. Thirdly, pricing multiple is forward-looking, with the observed market price reflecting expectations of the market about the comparable company.

When it comes to the value of the subject company that needs to be appraised, there are usually two types. The first one is the market value of shareholders' equity. It is rather straightforward to value the share price of the subject company when the value is defined this way. The most popular multiple used for this type of value is price-to-earning (P/E). However, the ratio mixes capital structure and non-recurring incomes/expenses with expectations of underlying performance, making it hard to reliably compare multiples across companies (Koller et al., 2015). The second type is the market value of invested capital. With this type, the subject company's invested capital is first valued, to which the values of non-operating assets are added to derive the value of the enterprise as a whole. Then, the values of other financial claims other than equity are subsequently subtracted to derive the market value of shareholder's equity and, ultimately, share price.

With regard to the parameter, there are many choices, such as revenue, gross profit, EBITDA, EBITA, EBIT, pre-tax income, net after-tax income, tangible assets, the book value of equity, the book value of invested capital, etc. The main criteria for selecting the right parameter are i. it has to be consistent with the value type being evaluated; ii. it has to be an important value driver for the value type being evaluated; iii. it has to reflect the expectation of the market about the businesses (Hitchner, 2017). Moreover, the parameter should be based on measures from forecasting performance in the future because it is consistent with the principle of valuation (forward-looking). A forecast year that best represents the long-term prospect of the company should be chosen for the parameter to be based on (Koller et al., 2015).

3.3. Choice of valuation approach for Heineken

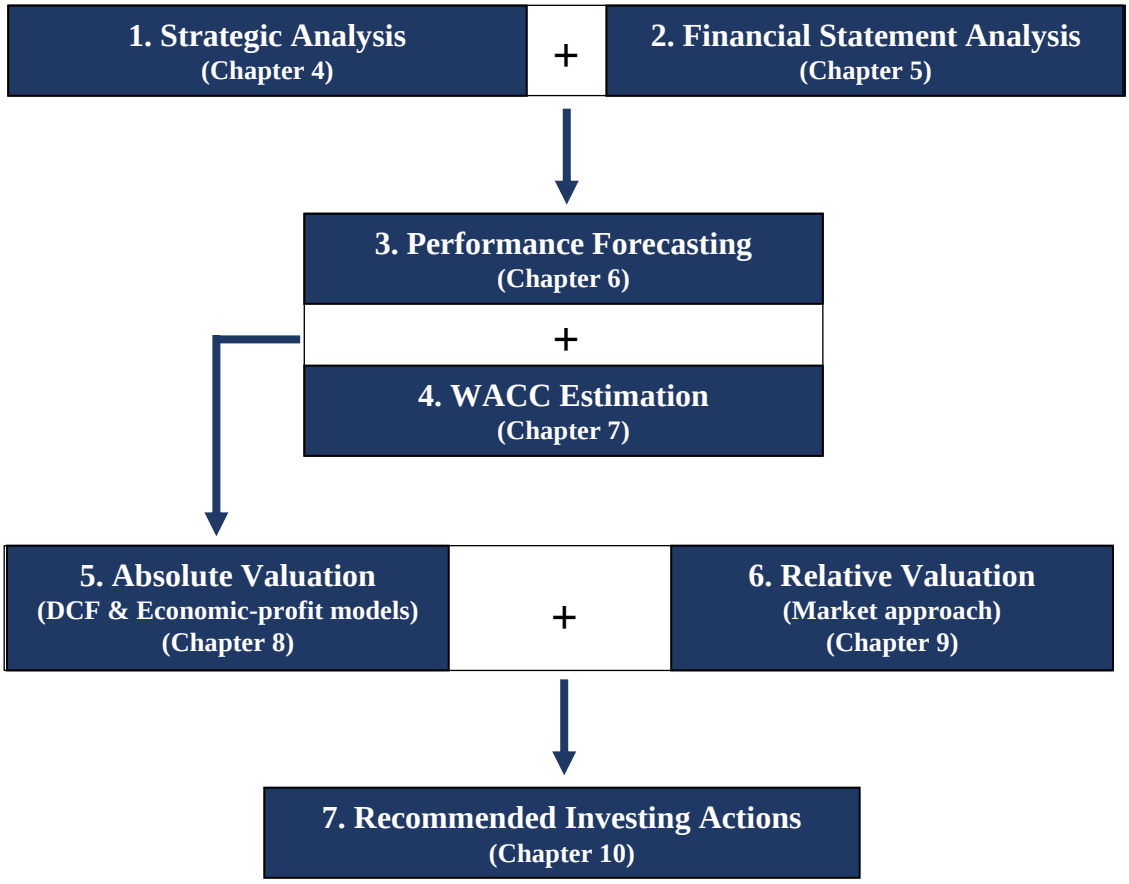
When it comes to the income approach, the aforementioned valuation methods, theoretically, can be well applied to Heineken and should yield the same result. However, due to the characteristics of the company, certain methods are perceived to be superior in terms of the ease and reliability of implementation as well as gaining valuable insights. As outlined in chapter 7, Heineken's capital structure has not fluctuated much over the last ten years, and the paper, thus, expects it to be kept constant in the future. As a result, the DCF and economic-profits models are preferred to the APV since not only they can be implemented more easily, thus avoiding unnecessary mistakes, but they can provide more economic insights into the company's performance. Furthermore, as mentioned before, the FCFE model is not perceived to be a smart choice for valuing operating companies like Heineken due to the fact that the capital structure is embedded in the cash flows to equity, making forecasting challenging and comparison among companies unreliable. Therefore, in this paper, the value of Heineken's shareholders' equity will be valued by applying and implementing the DCF and economic-profits models. They are believed to complement one another and together will provide valuable economic insights and reliable valuation.

In addition to the income approach, the market approach will also be applied as a sanity check of the result derived from the DCF and economic-profits models (Koller et al., 2015). The paper believes that the comparison between what price the market is implying for Heineken's equity and its calculated intrinsic value is quite useful. Specifically, if abnormal differences exist, careful examinations and reasonable explanations are required. Subsequently, this knowledge could be used to spot and avoid implementation errors, if any.

3.4. Framework for the valuation of Heineken

As outlined in the previous section, discounted cash flow to enterprise technique, economic-profit model, and market approach are the most appropriate methods for valuing Heineken. Exhibit 1 illustrates how these valuation approaches will be implemented throughout the rest of the paper.

Exhibit 1: Framework for the valuation of Heineken

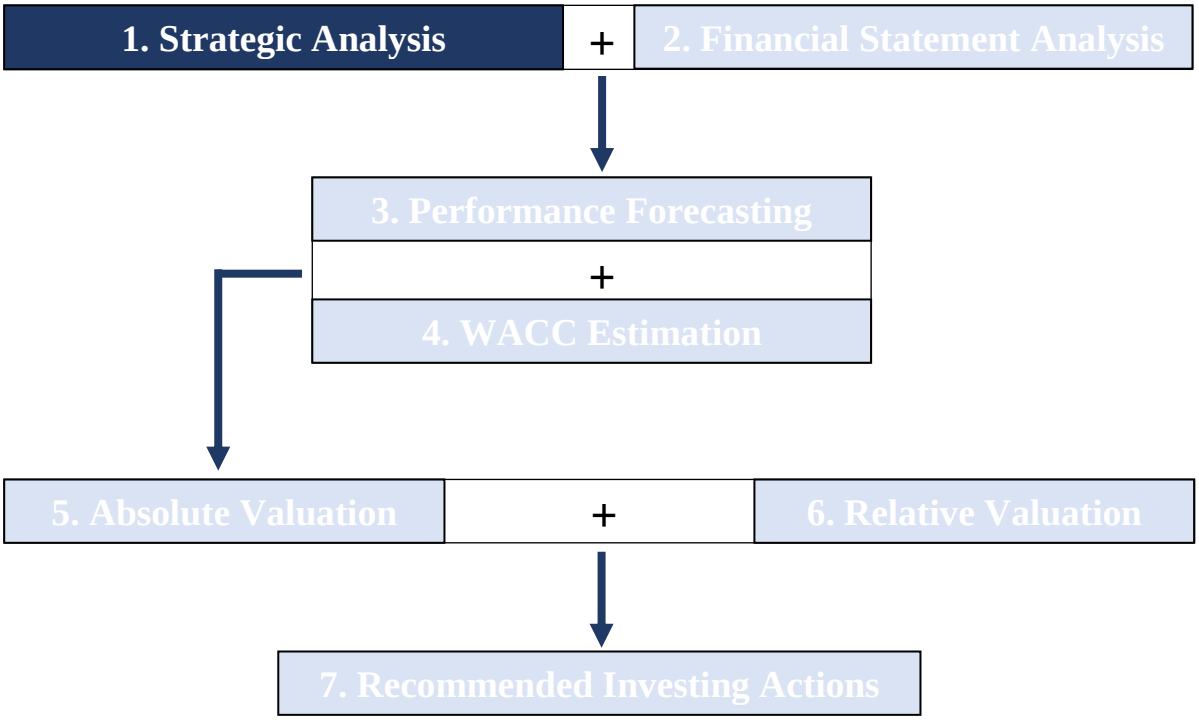


With regard to the DCF and economic-profit models, the first and foremost input is a comprehensive understanding of the beer industry and Heineken. This can be achieved in the first two steps in the exhibit. In the strategic analysis, several analysis techniques will be applied in order to carefully shed light on the most important aspects of the beer industry and Heineken. Through these analyses, opportunities, and threats facing the industry as well as how Heineken is positioned to respond to them, will be identified and examined. Strategic analysis will be detailed in chapter 4. By contrast, in the financial statement analysis, which will be outlined in chapter 5, Heineken's financial statements will be restructured and analyzed in a way that can generate insights into how the company has performed financially. Together,

the results from the two steps serve as an important foundation for producing reliable forecasts of the company's performance in the future, which will be outlined in chapter 6.

The ultimate goal of the performance-forecasting step is to reliably forecast the company's free cash flows and economic profits, which, together with the estimation of Heineken's weighted average cost of capital (WACC) carried out in chapter 7, are the building blocks for the final valuation of Heineken's shareholders' equity and share price in chapter 8. Furthermore, in order to complement the result found in chapter 8, shareholder's equity and the company's share price will also be valued using a different approach, namely multiple valuation, in chapter 9. Finally, the results from chapter 8 and 9 will be used to make recommendations about investing actions in chapter 10.

4. Strategic Analysis

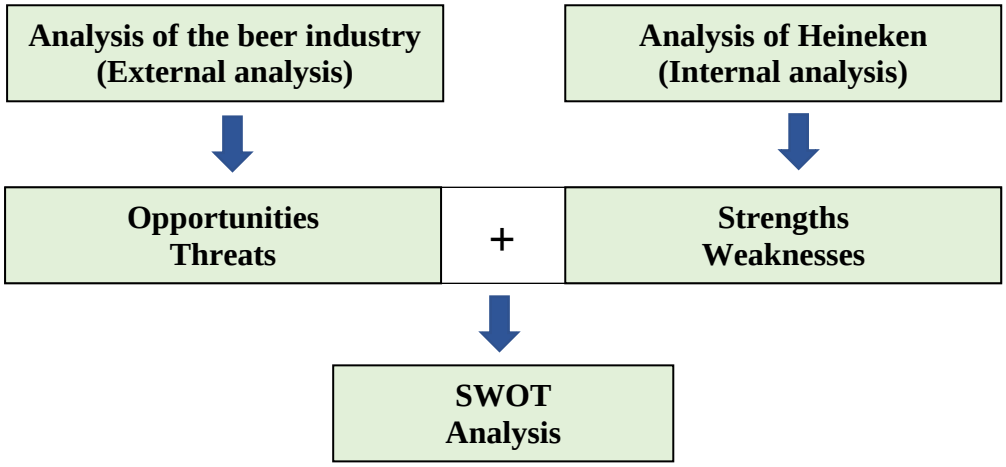


The value of a company depends on its power to generate cash flows in the future, and the sole mission of valuation practice is to determine these cash flows. Therefore, the work involves a lot of expectations and forecasts about the prospects of the company in question and the industry in which it operates. The better the forecasts, the more reliable and useful the valuation work is going to be. This, in turn, requires a thorough comprehension of the industry and the company being valued.

This chapter aims to perform a careful examination of the beer industry and the role Heineken plays in it. It starts with the analysis of the beer industry, where the PESTEL and Porter's five forces frameworks are applied in order to pinpoint the most significant aspects of the industry. These aspects are regarded as external factors that may have considerable impacts on Heineken's business in the form of both opportunities and threats. Next, the chapter will shed light on internal factors that can affect the company's performance. Specifically, Heineken's competitive advantages will be analyzed in detail. Finally, built upon the external and internal analyses, the chapter ends with the SWOT analysis of the company, which aims to point out the opportunities and threats that the company faces, along with the strengths and weaknesses it has for dealing with those opportunities and threats. This structure of the analysis is illustrated in Exhibit 2. It is worth noting that the SWOT analysis is one of the important inputs

for making reliable forecasts of the company's performance. Forecasting will be outlined in chapter 6.

Exhibit 2: Structure of the strategic analysis



4.1. Analysis of the beer industry

The beer industry will be analyzed at two levels. The first level involves the examination of the relationship between the industry and the environment in which it operates. This relationship will be shed light on using the PESTEL analysis tool, which analyses political, economic, social, technological, environmental, and legal aspects that impact the beer industry. At the second level, the competitive structure of the industry will be analyzed using Porter's five forces analysis framework. The goal at this level is to capture the intensity of competitiveness of the beer industry as a whole.

4.1.1. PESTEL analysis

4.1.1.1. Political factors

The most noticeable political concerns are the trade war between the US and China, Brexit, and Middle East conflict. Each of them will be examined below.

- **Trade wars**

Over the past two years, the global economy has witnessed a trade war between two of the biggest economies of the world: The United States of America and the People's Republic of China. The conflict started in June 2018 when Donald Trump, the president of the USA, imposed tariffs on China (US-China trade war, 2020). China also retaliated with tariffs of their

own on imports from the USA that included airplanes, cars, agricultural products, etc. The US also pushed its traditional allies like the European Union (EU), Canada, Japan, etc. to renegotiate trade relations citing mounting trade deficits (Pramuk, 2019).

Nevertheless, the US and China signed the first phase of the trade deal on January 15, 2020, and agreed to the rollback of tariffs, expansion of trade purchases, and renewed commitments on intellectual property, technology transfer, and currency practices (Swanson & Rappeport, 2020). This agreement is a hopeful sign that the long-standing trade war between the world's largest economies may come to an end soon.

Since the trade war reduces global trade and, hence, global output, global demand for the beer industry can be adversely affected. Thus, any escalation of a trade war is likely to hurt the beer industry.

- **Brexit**

On January 31, 2020, the UK officially left the EU, and now both EU and UK have until December 31, 2020, to decide on how their relationship would be in the future (Brexit: UK leaving the EU, 2020). Until then, the UK will continue to follow existing EU rules, and both the EU and UK will continue their existing trading relations. There are, however, uncertainties around how the trade agreement, if any at all, between the UK and EU, will be negotiated. A no-deal Brexit could mean increased trade barriers between these economies. If the reduction of trade is significant, it could negatively impact the beer markets in these economies.

The EU and UK are important trading partners of one another, and both have an interest in having a deal that would promote growth in their respective economies. So, both parties are interested in drafting a mutually beneficial agreement. However, considering the deal has been dragging for a long period of time, it is also possible that there will be no agreement by December 31, 2020. If there is no trade deal, the trade between the EU and UK will be governed by the World Trade Organization (WTO) framework, of which both of them are members. Both UK and EU have the most-favored-nation (MFN) status in the WTO, and they must apply the same tariffs to each other as they would apply to any other MFN countries (unless they have a separate bilateral agreement with other trading partners) (What a no-deal Brexit means, 2020).

If this happens, it will increase the tariff on trade between these two economies. Moreover, the trade between the two will also be affected by non-tariff barriers and added bureaucracies. Financial Times reported that Office for Budget Responsibility of the UK modeled for a 5.2

percent loss of potential GDP over 15 years if a "typical" free trade agreement was struck. The report further stated that Britain had already lost 2% of the potential output, while another 3.2% would come in the future (Parker, Hughes, & Brunsden, 2020). The IMF expects the no-deal Brexit to reduce the potential long-term output of the UK by almost 3%, the potential output of EU by 0.3%, and the global GDP by 0.1% over the long run (World Economic Outlook, 2020). As the impact of the no-deal Brexit on the global economy is going to be a loss of global GDP by only 0.1%, the paper doesn't consider the no-deal Brexit as a major threat to the global economy. Instead, the no-deal Brexit can particularly affect the economy of the UK and, to some extent, of the EU. And this can inflict negative impacts on the beer markets in these economies.

- **Middle East Conflict**

The tension between Iran and the US have been around for decades, but it escalated again recently. The tension started increasing when the US withdrew from the nuclear deal signed between Iran and other world powers, including the US, UK, Germany, France, Russia, China, and the EU. The US has accused Iran of attacks on oil tankers in the Persian Gulf and oil facilities in Saudi Arabia, among other things. The tension rose to a tipping point when the US killed Iran's top general, Qasam Solemani, and Iran responded by firing missiles at American troops in their Iraqi base. A Ukrainian passenger jet was also mistakenly shot down by the Irani military (Kaur, Kim, & Sherman, 2020). However, the situation has deescalated since then, and the threat of immediate war has subsided for now. However, if the tension escalates and Iran and the US enter into a full-blown war, we can expect major disruptions in the global oil supply chain, which would increase the oil price globally and potentially increase the general price level across the globe. Thus, any escalation of the conflict would negatively affect the beer industry.

4.1.1.2. Economic factors

COVID-19 pandemic is posing a significant challenge to the global economy. As of May 15, 2019, COVID-19 pandemic has infected more than 4.5 million people worldwide and killed at least 306,000 of them (Yeung & Renton, 2020). Governments around the world are implementing lockdowns and social distancing measures to curb the spread of disease, and these measures have stalled economic activities around the globe. While the economy, in general, will be affected, sectors like tourism, retail, restaurants, sports, entertainment, airlines, energy will be affected more than others.

The International Monetary Fund (IMF) expects that the global economy will contract by 3% in 2020, which is a significant revision over its original forecast that the global economy would grow by 3.3% in 2020 (World Economic Outlook, 2020) . Furthermore, contraction by 3% is much severe than the contraction of 1% during the great recession of 2008-2009. These contractions are primarily because of the decline of economic activities due to the lockdowns. However, the same report from IMF expects the economy to rebound in 2021 with a 5.8 % growth in 2021 when economic activities normalize. These forecasts are based on the assumption that the pandemic will slowly fade away in the second quarter of 2020, and the containment measure will be lifted, bringing the everyday life to be normal. Furthermore, fiscal measures are taken by both advance and developing economies that provide significant fiscal supports to impacted sectors and workers.

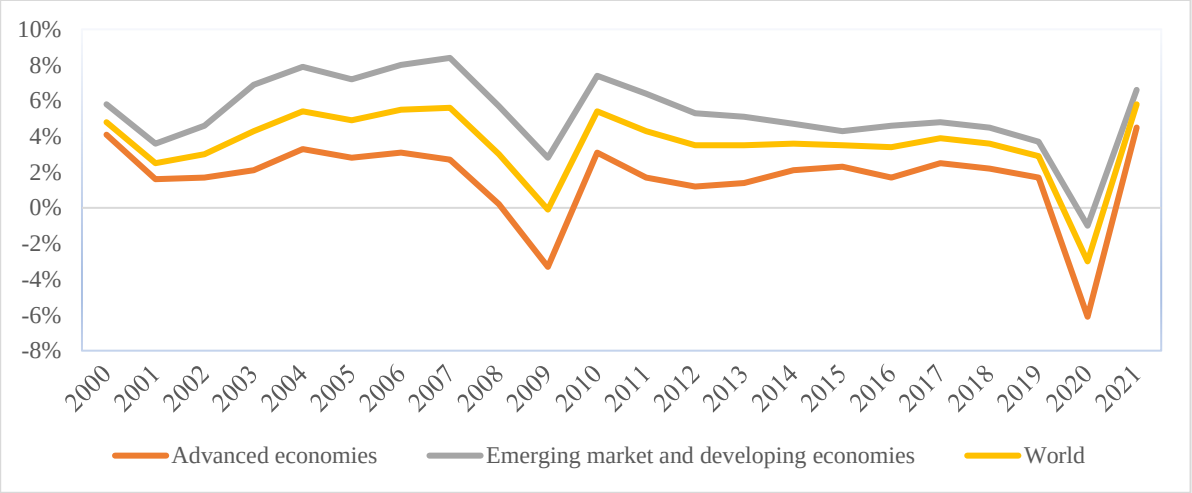
The coronavirus crisis has resulted in the closure or reduced sales for restaurants and bars, and this has resulted in reduced sales of alcoholic beverages, including beer, through these channels (Milcallef, 2020). According to a market-research firm Nielsen, average sales per outlet in the USA was lower than the rates of a year- ago by 67% to 75% in the month of April 2020 (‘Covid-19’ effect on Alcohol sales, 2020). However, the same report states that there has been a shift towards take-out restaurant services and off-premise channels from the on-premise channels. Brick-and-mortar dollar sales of alcoholic beverages in the USA for the seven-week period ended April 18 compared to a year ago was up by 21% while the dollar sales of online channels were up by 234%. The report also states that a growing number of customers are ordering alcohol with their takeout from restaurants (14% in the week ended April 25 compared to 9% in the previous two weeks). Overall, the sales volume of spirits has increased by 31.7%, followed by 27.1% for wine and 15.4% for beer/cider/flavored malt beverage during the COVID-19 period. Nielsen estimates that 22% growth in the volume of sales is required to offset losses from on-premise channels, and the wine and spirits category has already achieved this growth of 22%. We believe that the report produced by Nielsen for the US market provides an indication for western economies, and this shift in the consumption channel will be seen across these economies. We expect that the sales of the beer industry will be lower for some time because of the COVID-19 pandemic. However, a shift in consumption channels will help the sales normalize over time.

- **Real GDP Growth Rate**

Graph 8 illustrates the real GDP growth rate across three categories – advanced economies, emerging market and developing economies and world. While the real GDP growth rate has

been stable over the last decade, real GDP growth rate across all categories rate is expected to decline in 2020. The decline in 2020 is more severe than the decline in 2009 as the GDP growth rate in all categories- advanced economies, emerging market and developing economies are expected to be in the negative territory in 2020 while in the recession of 2009, although the GDP growth rates declined for emerging market and developing economies, they were still in the positive territory. Furthermore, the contraction in GDP across all categories is more severe in 2020. However, the GDP growth is expected to bounce back in 2021, with GDP expected to increase for the World by 5.8% compared to the 2020 level.

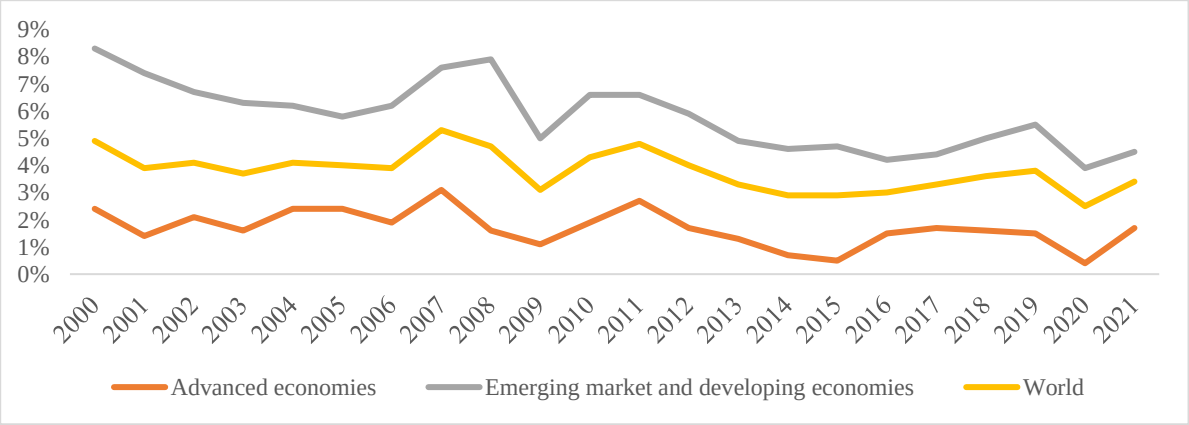
Graph 8: Real GDP growth rate over the period 2000 – 2021



(Source: World Economic Outlook, 2020)

❖ **Inflation**

Graph 9: Inflation rate over the period 2000 – 2021



(Source: World Economic Outlook, 2020)

Graph 9 illustrates inflation rates across three categories – advanced economies, emerging market and developing economies and world. The inflation rate in all categories increased

quite constantly over the period 2015-2019. However, because of the COVID-19 pandemic and the shrink in economic activities, their inflation rates are expected to decline in 2020. Specifically, the inflation rate for advanced economies is expected to be 0.4%, while the figure for emerging market and developing economies is expected to be at 3.9%. Overall, inflation for the world is expected to decline to 2.5% in 2020. Nevertheless, the inflation rates are expected to bounce back in 2021, with the inflation for the world forecasted to be 3.4%.

- **Currency**

According to World Economic Outlook (2020) published by the IMF, investors are shifting from emerging market portfolios to cash and safe assets, and this movement has created pressure on emerging market currencies. Furthermore, the currency of commodity exporters both in emerging and advanced economies has also depreciated because of the lower commodity prices. The reports observe that the US dollar, Japanese Yen, and Euro has appreciated as of April 3 compared to that of December 2019 level. On the other hand, advanced economies with commodity exports like Norway, Canada, Australia, New Zealand, experienced currency depreciation. The majority of the emerging market economies experienced currency depreciation, with countries like South Africa, Brazil, Mexico, Columbia, Russia, Indonesia, etc. experiencing high currency depreciation. We believe that this sharp decline in the real effective exchange rate is primarily because of the uncertainty caused by the COVID-19 pandemic. This depreciation has reversed fairly since the report was published as the new cases are decreasing in the countries that were hit hard at the beginning of the pandemic.

- **Forecast of uncertainty**

The above forecasts from IMF assumed the COVID-19 pandemic to subside in the second quarter of 2020, and there will be no second wave of a pandemic, or the pandemic will not last longer than assumed. However, it is also possible that the pandemic will be more severe than originally assumed. As of May 15, 2019, 8 candidate vaccines are under clinical evaluation, and 110 candidate vaccines are in preclinical evaluation (COVID 19 candidate vaccines, 2020). We can expect more progress towards both the development of vaccines and control of the pandemic (without hurting the economy) in the coming days. While there are world leaders who are optimistic and expect the vaccines to be ready by the end of 2020, (Mulier, 2020) reports that consensus view in the pharmaceutical industry is for the vaccine to be available by the second half of next year. Thus, if the pandemic doesn't subside as assumed or if there is a second wave of the virus, we expect the economy to have a negative outlook in 2021.

However, since the vaccines are expected to be ready by 2021, we expect the economy to rebound in 2022.

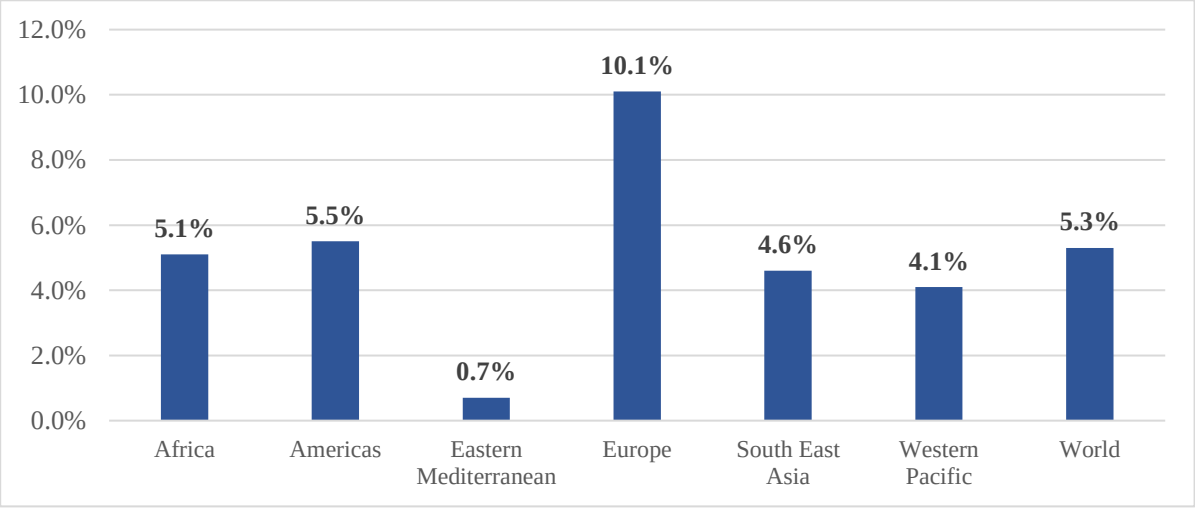
4.1.1.3. Social factors

The most noticeable social factors are the negative effects of alcohol on the public and consumer trends towards health and wellness and consumers' perception of sustainability. Each of them will be examined below.

- **Negative effects of alcohol on the public**

Alcohol has been notorious for harmfully affecting public health. In 2016, it was the main reason behind an estimated 3 million deaths globally. Put it another way; alcohol was responsible for about 5.3% of the global number of deaths in 2016. This figure was higher than that of tuberculosis (2.3%), HIV/AIDS (1.8%), diabetes (2.8%), hypertension (1.6%), digestive diseases (4.5%), road injuries (2.5%) and violence (0.8%) (WHO, 2018). Below is the breakdown of deaths attributable to alcohol assumption by regions as defined by WHO.

Graph 10: Share of deaths (in %) attributable to alcohol consumptions in 2016, by WHO's definition of regions

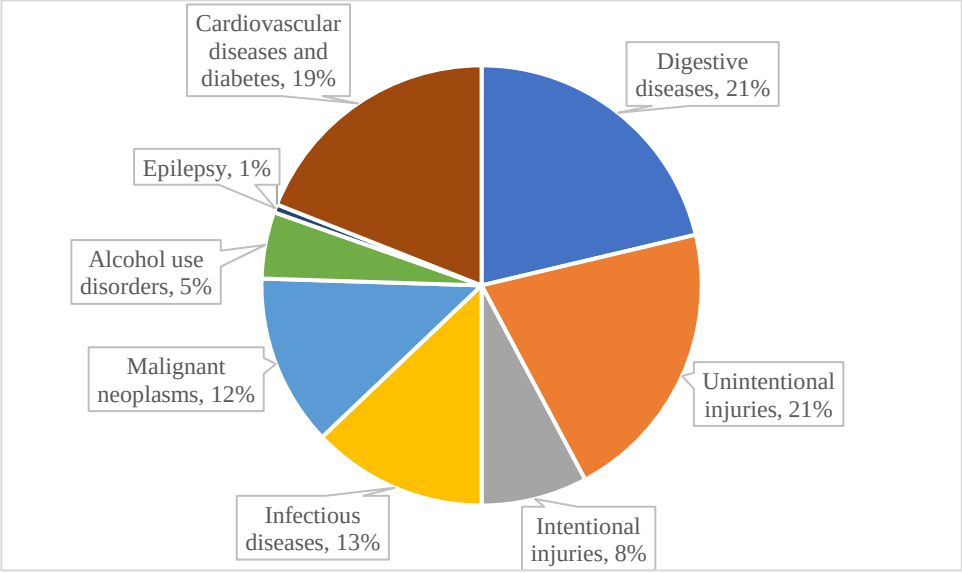


(Source: World Health Organization (WHO), 2018)

Europe was affected the most by alcohol in 2016. Out of every ten deaths, there was one caused by alcohol. Conversely, alcohol was not the main concern in the Eastern Mediterranean region, with only about seven deaths out of 1000 attributed to alcohol consumption. The reason for this is that the region mostly consists of countries where Islam is the main religion. And for Muslims, drinking alcohol is not perceived to be holy. In fact, the region accounted for only

0.7% of global beer consumption by volume in 2016 (Statista, 2020a). Furthermore, when 3 million alcohol-attributable deaths are broken down into different main causes, the dominant categories are unintentional injuries such as accidents, digestive diseases, cardiovascular problems, and diabetes. Together, they were responsible for more than 60% of the total deaths caused by alcohol consumption.

Pie chart 2: Break-down of total alcohol-attributable deaths by main causes, 2016



(Source: World Health Organization (WHO), 2018)

Apart from negative effects on public health, alcohol consumption may also lead to adverse economic and social consequences for both the person drinking and third parties. Such consequences include loss of earnings, unemployment, family problems, violence, crime, and social stigma (European Commission, 2019a).

- **Consumer trends towards health and wellness**

Consumers have become health-conscious and leaned towards wellness at a rapid pace. Over the period 2015-2017, the market value of the global wellness industry grew 12.8% from about 3.7 trillion $ in 2015 to 4.2 trillion $ in 2017 (Global Wellness Institute, 2018). This trend has also affected the beer industry. In search of health and wellness, consumers are increasingly turning to low- and non-alcoholic beers and abandoning traditional premium beers (Settembre, 2019). In fact, there are signs that low- and non-alcoholic beers are a growing trend worldwide (Pellechia, 2019). The market grew more than 18% in 2018 (Drinks Industry Sustainability Index, 2020). Moreover, it is expected that low- and non-alcohol wine, spirits, and beer will see the most growth within the alcohol category over the period 2018-2023 (Colbert, 2019).

And by 2024, sales of low- and non-alcoholic beer are expected to surpass $25 billion (Warner, 2019).

In fact, beer companies have been responding to this trend. From a survey conducted by Brewers Association in 2018, 40% of its members have been brewing products that are different from traditional beer, and low- and non-alcoholic beers are among them. Also, more than half of its members signaled that they would consider making similar products (Settembre, 2019).

The big players in the beer industry have also made their moves. Heineken now owns a strong portfolio of low- and non-alcoholic beer brands, including its flagship Heineken 0.0, which was first introduced in 2017. And this portfolio of the company has performed quite well. Its sales volume has increased by 14.6% over the period 2016 – 2019, from 12.3 million hectoliters in 2016 to 14.1 million in 2019. By contrast, low- and non- alcoholic portfolio represents a significant part of Carlsberg's operation. Out of 687 products that the company offers, 69 products (about 10%) belong to low- and non-alcoholic categories (Carlsberg, 2020). Over the last three years, this portfolio has increased its share of contribution to the total sales volume by 1.4%, from 15.2% in 2017 to 16.6% in 2019 (Carlsberg, 2010 – 2019). On the other hand, AB InBev has predicted that by 2025, its low- and non-alcoholic portfolio will account for at least 20% of its massive sales volume (Warner, 2019), which was 561.4 million hectoliters in 2019 or about nearly 30% of the global beer market.

- **Consumers' perception of sustainability**

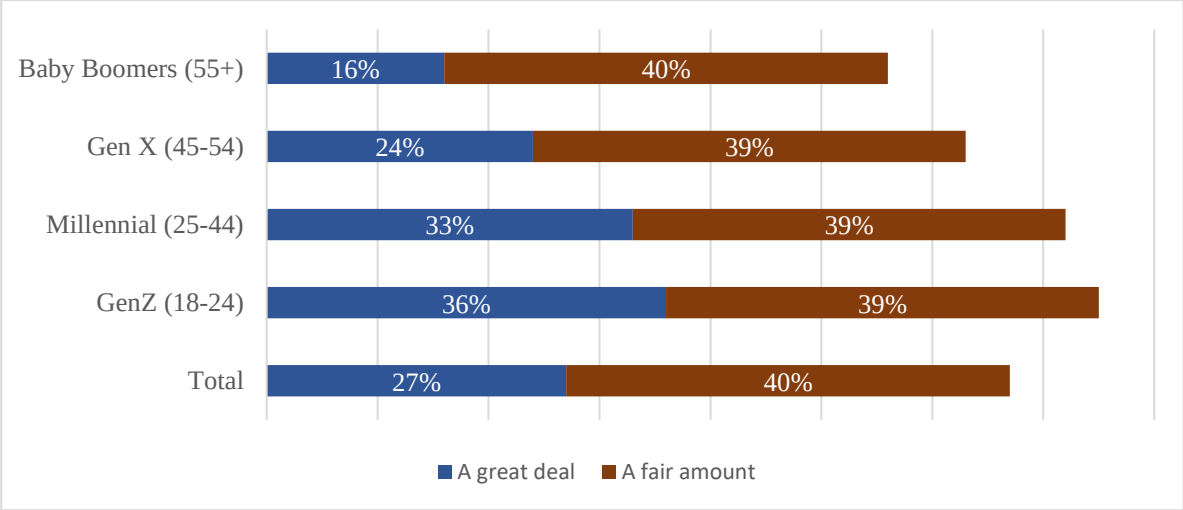
According to a survey conducted by Globe Scan (Globe Scan, 2019), consumers have been increasingly concerned about the state of the environment they live in over the last five years. The main issues that have captured their attention are environmental and air pollution, depletion of natural resources, climate change, and shortages of freshwater. The percentage of people surveyed who believed that those issues were at their serious states increased dramatically over the period 2015 – 2019. For instance, in 2015, there were only about 45% of the respondents perceived climate change to be a real threat. That number went up to about 61% in 2019.

There are also other signs that indicate consumers' increasing concern about sustainability. An analysis by Pinterest in 2019, a social – media platform, reveals that the number of searches for the term "sustainable living" was up 69%, while searches for "sustainable living for

beginners" increased by 265% (Sustainable brands, 2019). Consumers have also expressed that they are willing to pay an extra for products that they believe to be produced in sustainable ways. And their increasing purchases of sustainable products have proved what they believe (Reints, 2019).

Consumers may also be loyal to a brand because of their sustainable products and/or actions. The survey by Globe Scan reveals that about 67% of the people interviewed indicated that they would be loyal to a brand if they believed the brand offered them sustainable solutions. And 27% of them showed that they would strongly support and be loyal to the brand. Furthermore, sustainability-related motivation to be loyal to a brand was strongest among millennials and people from generation Z, age ranging from 18 to 44. There were 75% and 72% of generation Z and millennials, respectively, who would be loyal because of sustainability, while 39% in both groups expressed strong support and loyalty.

Graph 11: Percentage of people who are loyal to a brand because of its sustainable products and/or actions



(Source: Globe Scan, 2019)

The trend towards sustainability has also affected the beer industry, with consumers increasingly looking for good companies, not good products (Drinks Industry Sustainability Index, 2020). In response to this trend, the biggest players in the beer industry have portrayed themselves as sustainability-driven companies. They all aim to ensure that sustainability is at the heart of what they do at every step of their operation, from barley to customer. As a result, a wide range of sustainability-related initiatives has been introduced, including sustainable outsourcing, packaging, production, recycling, water usage, and energy efficiency.

4.1.1.4. Technological factors

Although the brewing technique that beer companies are using today still has its foundation built on centuries-old principles, rapid development in technology has led to much greater cost efficiency, increased employee safety, a higher level of consistency, and higher quality. This development has also increased consumers' satisfaction with the beer market by ensuring the increased quality of beer products, consistency and stability of product provisions, and adaptation to consumers' changing of tastes (Didora, 2018).

Technologies like artificial intelligence (AI) and the internet of things (IoT) have put into place automation that not only helps reduce human involvement but also helps improve operational efficiency to a large extent. Nowadays, automation is employed almost at every step in the brewing process at a typical brewery. For instance, the intensity of the crush of grain, which has to correspond to the type of grain being crushed can be adjusted electronically instead of manually as in the past. Automation can also lead to the enhancement of the quality of beer products by ensuring the right conditions are met during the production process (Bandoim, 2019).

Technology can also help brewers curb on their emission, use energy and water resources more efficiently, and put into place better recycling process and treatment of waste. However, the technologies involved in these practices are usually capital-intensive and, thus, not affordable for small brewers (Hubbell, 2019). Big players like AB InBev and Heineken, on the other hand, have long utilized such technologies. For instance, in order to produce one liter of beer, micro-brewers usually use ten liters of water, while macro-brewers, with the expensive technologies, only need three liters of water (Marry Kate, 2020).

Information technology is another type of technology that has transformed the beer industry. Heineken, for instance, has been increasingly focused on this field as a tool that can help it improve its distribution and marketing capacity. In 2017, the company introduced Beerwulf, which is a business-to-consumer online beer platform where consumers can order over 1,000 different beers in bottles, cans, packs, kegs. And there were millions of consumers visiting the platform in 2019. With regard to marketing, the company has adopted an Individual Data-Driven Marketing (IDDM) approach with engagement in big data (Marr, 2017). They believe that big data can help them learn fast, gain insights into their customers, and improve the efficiency of sales and marketing programs by providing each individual with the most relevant information.

4.1.1.5. Environmental factors

The most noticeable environmental factors are climate change and water scarcity. Each of them will be examined below.

- **Climate change and its possible impact on the beer industry**

Climate change has been one of the biggest concerns among the vast majority of governments and businesses lately because of its devastating effects on the environment, human health, and economies (OECD, 2020). Its far-reaching effects may also touch upon the beer industry. A recent study carried out by Nature Plants (Nature Plants, 2018) outlines possible negative impacts of climate change on global beer supply and prices. One of the irreplaceable ingredients for beer is barley, whose quality is vital for the taste and quality of final beer products. Barley crops perform best when temperatures are around 70 Fahrenheit degrees. If temperatures hit the mid-80 degrees, the crops can suffer. Additionally, hotter temperatures also provide great conditions for pests and diseases (Forgrieve, 2020).

The study finds that global barley yields may be reduced substantially under some extreme events. Specifically, losses may range from 3% to 17%, depending on the severity of the conditions. And these losses will lead to large decreases in beer production and significant increases in prices. For instance, beer consumption in Argentina may decrease by 32%, while beer prices in Ireland may increase by 193%.

The study, however, has drawn critics. The biggest and loudest one is Brewers Association, which describes the study as "largely an academic exercise and not one that brewers or beer lovers should lose any sleep over." (Watson, 2018). It argues that the findings of the study are fundamentally based on unfounded and unrealistic assumptions about the barley agriculture industry, and farmers and brewers alike have long been adaptable to and prepared for climate change. Multidisciplinary Digital Publishing Institute (MDPI) agrees with this point: “Barley shows a good level of adaptability to unfavorable environments like cold, drought, or poor soils, and is considered more tolerant than wheat to adverse growing conditions” (MDPI, 2019a).

This paper sides with the argument presented by the Brewers Association to not view climate change as an imminent threat that may disrupt the beer industry to a large extent, but as a possible threat that needs to be monitored closely. There are four main reasons for such a standpoint:

Firstly, barley is quite adaptable to the unfavorable environment as outlined by MDPI. Secondly, barley production can be shifted globally. Specifically, while the barely production could reduce in certain regions because of increasing temperature, other regions can benefit from the increasing temperature. For instance, MDPI (2016) predicts that climate change could be beneficial for UK barley production. Their simulated average future yield (the 2030s-2050s) for three different emission scenarios is predicted to be higher than the observed yield in the baseline period (1961-1990) by 1.4 tons to 4 tons per hectare.

Thirdly, governments around the world have been well aware of the climate-change threat and continuously striving to co-operate with one another to address the issue. Adopted at the Paris conference about the climate in 2015, Paris Agreement is the first universal, legally binding global climate change agreement among nearly 190 parties. Its mission is to restrict global warming to well below 2 degrees Celsius above pre-industrial levels while pursuing efforts for a tougher ceiling of 1.5 degrees (European Commission, 2019c). Although there are disagreements among parties about how to go about achieving this goal, the accord has laid out fundamental foundations for future developments and is a sign of unity among countries to combat climate change. The next climate summit (COP 26), which will take place in the United Kingdom in November 2020, is expected to produce positive outcomes (Nicolle, 2019).

Finally, the largest beer companies like Heineken, AB InBev, and Carlsberg have also been very mindful of the threats of climate change and taking serious initiatives to deal with and prepare for its possible negative impacts. For instance, Heineken has long pursued its “Drop the C” and “Sourcing sustainably” programs, with which the company aims to not only reduce its carbon footprint by switching to renewable energy and sustainable operation but improve barley growers’ yields through research and development of new breeds of seeds that can shorten plantation cycle (Heineken, 2010a – 2019a). On the other hand, Carlsberg’s ambition is to have “Zero carbon footprint” at all of its breweries by 2030. Moreover, its dedicated laboratory called “Carlsberg Research Laboratory” is focused on identifying new climate-tolerant traits in barley in order to develop new robust varieties that are adaptable to climate change (Carlsberg, 2019). By contrast, AB InBev has pledged that, by 2025, 100% of its purchased electricity will be from renewable sources, and its carbon footprint will be reduced by 25%. When it comes to barley cultivation, its “Research and Agronomy” teams mainly focus on improving breeding and crop management practices in order to empower farmers and reduce production volatility. Furthermore, the company has also introduced analytics

technology to the cultivation process. Its SmartBarley, which is currently live in 12 countries across five continents, combines data and technology to help farmers enhance their operation. For instance, SmartBarley combines field-level data with weather analytics to help farmers predict and organize their crops accordingly (Anheuser-Busch InBev, 2010 – 2019).

- **Water scarcity**

Rapid growth in population, urbanization, and threats from climate change have increasingly negatively affected the availability and quality of water around the world. It is expected that, by 2050, the demand for water will experience an increase of 55% in comparison to the year 2000. Moreover, about four billion people will have to live in areas that suffer from water problems, while 240 million people will not get access to improved water sources, and almost 1.4 billion people will not have basic sanitation (MDPI, 2019b). Given the backdrop of future water scarcity, stricter water regulations will be inevitable. In fact, there has been a trend towards the establishment of dedicated water regulatory bodies dealing exclusively with water usage in different countries. Moreover, the OECD Water Governance Initiative has developed a framework that can help countries measure the effectiveness of their water governance policies and how to improve them (MDPI, 2019b).

The water scarcity prospect and tougher regulations, as a result, may hurt the beer industry because water is an integral part of beer production. For an average brewery, 7 liters of water are needed to produce 1 liter of beer, while that number is 3 for macro-brewers and 10 for micro-companies. When water needed to grow barley and hops comes into the calculation, 11 to 40 liters of water are needed for an average brewery.

Given the gravity of the water in the industry, brewers alike, especially big players, have been striving to revolutionize the ways they use water in their production processes. For instance, Heineken has been pursuing its “Every Drop” initiative to reduce water consumption in its breweries. At the same time, the company has been researching and developing agricultural practices that allow farmers to grow more barley with less water. On the other hand, Carlsberg aims to reduce its water consumption at all of its breweries by 50% by 2030 with its “Zero Waste Water” initiative. Over the period 2015 – 2019, the company has managed to achieve a 12% improvement in water efficiency. By contrast, AB InBev, with its “Water Stewardship” program, aims to improve both its operational water efficiency and water availability and quality in areas where the company has operations. In 2019, the company managed to reduce its water usage to 2.80 liters for every liter beer produced.

On the other hand, there is a growing possibility of making seawater drinkable in the future. Oceans contain 97% of the water of the earth, and the progress in desalination – the process of converting seawater into freshwater – can help mitigate the water crisis of the future. This technology is being used all around the globe, including countries like Saudi Arabia, Israel, Australia, the USA, China, India, etc. Currently, there are about 20,000 desalination plants around the globe, and more than 300 million people now get their water from desalination plants (Jim Robbins, 2019). One of the major challenges with this technology is that it is expensive and requires lots of energy. There are also some environmental concerns surrounding this technology. However, the challenge of water scarcity will likely increase the research on desalination technology, and the use of seawater can be expected to help mitigate the impact of the water crisis.

Given the possible innovations in technology to use seawater and awareness and preparation from the brewers, we do not expect the beer industry to suffer dramatic disruption caused by water shortage. Nevertheless, a close watch at the development of the situation is needed to warrant timely adjustment.

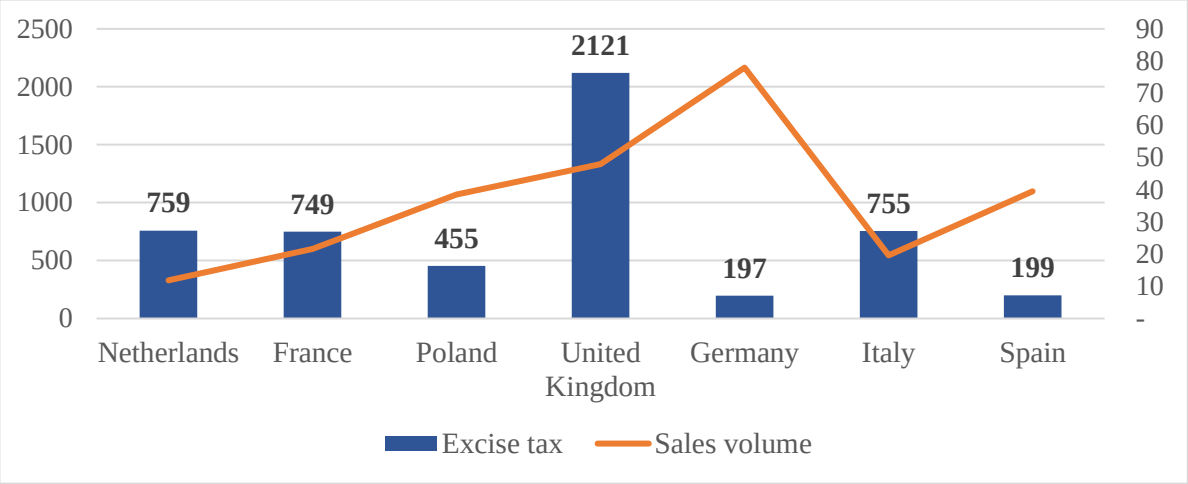
4.1.1.6. Legal factors

The most noticeable legal aspects are excise tax, limiting regulations, antitrust laws, and tax incentives. Each of them will be examined below.

- **Excise tax**

In addition to value-added tax (VAT), alcoholic beverages in general and beer products, in particular, are also subject to an excise tax. Excise tax is a special tax that governments levy on the purchase or production of beer products because they are deemed to be harmful to societies. With the excise tax, governments hope to encourage consumers to curb consumption by raising the final prices of beer products. The higher the tax, the higher the final prices, and the lower the demand. There are three main approaches to apply excise tax. The first one is to levy tax as a percentage of retail price (ad valorem tax). The second way is that authorities state a specific absolute amount of tax for a specific volume of pure alcohol purchased or produced. The third way is to levy a specific absolute amount of tax on a specific volume of the whole beer product purchased or produced. Normally, the amount of tax in the last two approaches are adjusted for inflation after some period of time. Countries usually differ on which approach to adopt. For instance, while the EU-zone advocates the second approach, Canada and the US choose the third way, and emerging countries usually pick the first method.

Graph 12: Excise tax on beer (euro per hectoliter of pure alcohol) and sales volume (million hectoliter) in the biggest beer markets in Europe by volume in 2019



(Source: Foley, 2019 and Statista, 2020a)

There are big differences in the level of excise tax among the EU members. For instance, while the United Kingdom levies 2,121 euros for every hectoliter of pure alcohol purchased, Germany charges only 197 euro (more than ten times difference). However, the sales volume in Germany is much higher than that in the United Kingdom (more than 1.5 times).

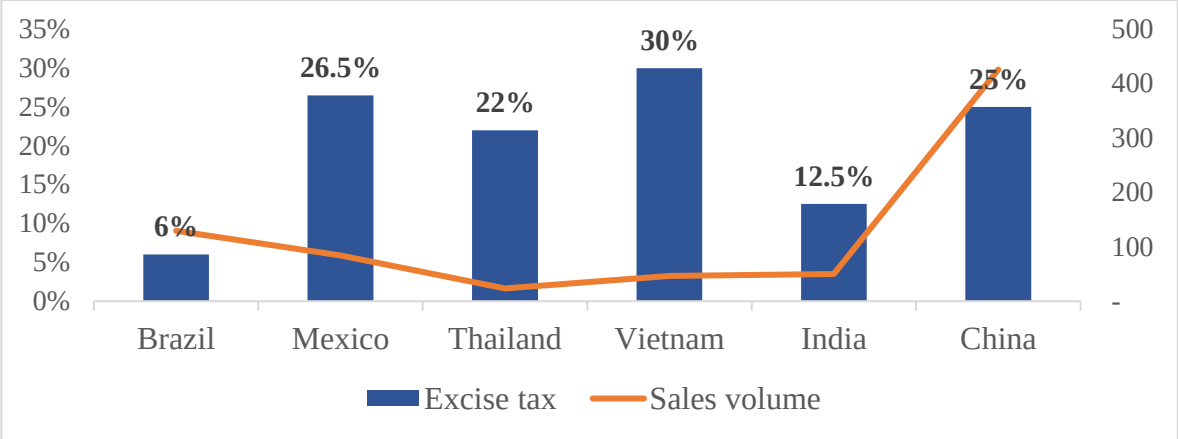
Excise taxes are also different among emerging markets (graph 13). While China, which is the largest beer market by volume in the world, levies a tax rate of 25% on the retail price (China's ministry of finance, 2001), Brazil exercises a tax rate of only 6% despite its relatively big market (Receita Federal do Brasil, 2020). India is also quite lenient on the excise tax, charging only 12.5% (Board of indirect taxes & customs, India 2019).

Governments in other large beer markets calculate their taxes based on the volume of the total beer purchased or produced. For instance, while the US charges 18$ for every barrel of beer (TTB, 2020), Canada levies 33.66 CA$ for every hectoliter of beer containing more than 2.5% alcohol by volume (Canada Revenue Agency, 2020). By comparison, Russia charges 21 rubles per liter (Statista, 2020b), and South Africa levies 2.08 rand per 340ml (Larkin, 2020).

An increase in the excise tax may hurt the bottom lines of beer companies if they are unable to pass it to consumers. It may be challenging for the companies to be able to raise prices and, at the same time, maintain the level of sales. Furthermore, any increases in the prices as a result of increased excise taxes are not likely to be enjoyed by the companies but instead paid

to the governments. Thus, an increase in excise tax is likely to adversely affect the profitability of the industry.

Graph 13: Excise tax on beer (% of retail price) and sales volume (million hectoliter) in the biggest beer markets among emerging countries by volume in 2019



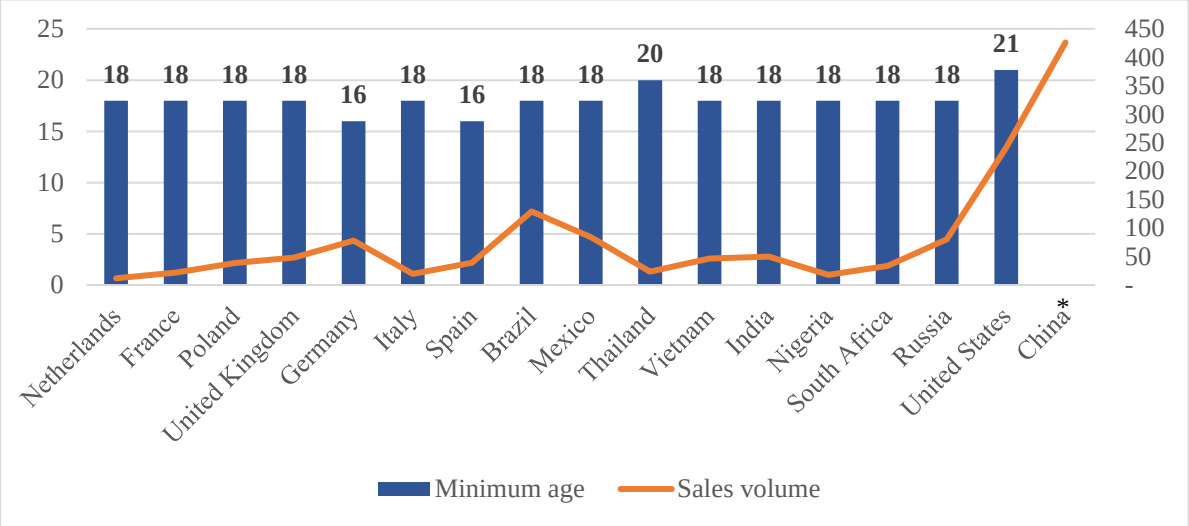
(Source: Governments' data and Statista, 2020a)

❖ **Limiting regulations**

Due to the harms caused by alcoholic beverages in general and beer products in particular, governments generally set up various regulations with the purpose of restricting sales and curbing on consumption (European Commission, 2019a).

Firstly, they can reduce the availability of beer products to consumers by putting in place restrictions on sales and minimum age allowed to purchase beer. For instance, most EU members limit not only the location of sales but also opening hours and days allowed to purchase beer products. They also introduce licensing systems where governments can partially control the production and/or the sale of beer products. By contrast, the Australian government has implemented the "lockout period" policy. Under this regulation, consumers are not allowed to enter bars after the lockout. Furthermore, governments also limit the age that is allowed to legally purchase beer products. While most of the authorities in the biggest beer markets set the minimum age at 18, Germany and Spain allow 16-year-old people to purchase beer products. By contrast, the United States is the strictest, with the minimum age of 21. Interestingly, despite the fact that China is the biggest beer market by volume, it does not have any regulation about the minimum drinking age in place yet.

Graph 14: Minimum age legally allowed and sales volume (million hectoliters) in the biggest beer markets by volume in 2019



There is no minimum drinking age

(Source: World population review, 2020 and Statista, 2020a)

Secondly, the marketing abilities of beer companies are usually restricted by governments. For instance, in most EU member countries, the contents of advertisements are not allowed to aim specifically at minors, encourage overconsumption, create an impression about enhanced physical performance or social success. Some countries like France, Sweden, Estonia, Lithuania, and Iceland go as far as banning all marketing of beer products.

Thirdly, governments can curb the consumption of beer products by putting into place drink-related driving regulations. They usually use a specific blood alcohol content (BAC) as a benchmark for such punishments as license suspension and fines. For instance, most EU members have gradually reduced the legally permitted BAC levels to 0.5 gam/liter or less, while in Vietnam, Czech Republic, Hungary, Slovakia, and Romania, the level allowed is 0 (zero-tolerance policy) (Statista, 2020c).

Fourthly, the government also regulates the minimum prices that beer companies are allowed to set. The purpose is to avoid beer products to be easily at the consumer's fingertips. For instance, Sweden, Germany, Uzbekistan ban sales at prices that are below costs of sales, while Finland, Sweden, ban or regulate volume discounts.

❖ **Antitrust laws**

Antitrust laws aim to create a healthy and fair competitive environment for companies in order to benefit ultimate consumers. Normally, big dominant players in a specific industry are mostly at the crosshair compared to their small counterparts because of their sizes and influences in the market. Since the global beer market is quite consolidated, with the four biggest companies representing almost 54% of the global sales volume, any merger and acquisition of the big players are likely to be under the close scrutiny of local authorities, and so do their business practices.

In 2015, AB InBev announced a successful all-cash bid to acquire SABMiller, making it the largest unbeatable company in the beer industry. However, prior to the announcement, the acquisition was under a lot of scrutiny from authorities of different countries where the two companies had overlapping operations. In order to win over the authorities, AB InBev agreed to sell certain assets to make sure that it would not hold a monopolistic position in some markets. Specifically, the company had to sell i. its stake in MillerCoors to its competitor Molson Coors in the US market; ii. its European beer brands including Peroni, Grolsch, Meantime, Pilsner Urquell, Tyskle, Lech, Dreher, and Ursus to Japanese competitor Asahi; iii. SABMiller's stake in China Resources Beer in the Chinese market (Massoudi and Abboud, 2019).

In 2019, AB InBev was fined 200 million euros by the European Commission for breaching EU antitrust rules (European Commission, 2019b). In the Belgian beer market, its brand Jupiler accounts for approximately 40% of the total sales volume in 2019, giving it disproportionate power. The company abused this power by restricting the import of Jupiler beers, which were produced and sold at lower prices due to tougher competition in the Netherlands into the Belgian market. The purpose of this practice was to raise and maintain high retail prices in Belgium. After a years-long investigation, the European Commission found AB InBev guilty. After the verdict, the company pledged to strongly facilitate the import of Jupiler beers into the Belgium market and proportionately compensate for Belgian consumers.

❖ **Tax incentives**

In order to encourage brewers to innovate in both production process and beer products, governments usually offer a wide range of tax incentives for research and development activities (R&D) carried out by beer companies (Tax incentives for the brewing industry,

2019). Innovations that qualify for tax incentives normally involve water recycling or waste management processes, brewing or bottling equipment, preservative chemicals, filtration methodologies, hopping techniques, fermentation processes, bottling or canning processes, keg filling or treatment techniques, ingredient processing techniques.

These tax incentives can be fantastic assets for brewers by allowing them to reduce their tax burden to a large extent. In 2019, AB InBev and Heineken enjoyed a tax reduction of 186 million US dollars and 119 million euros, respectively, from such incentives in different countries, while their income tax expenses reported in the same year were 2,786 million US dollars and 910 million euros, respectively. Both companies expect those tax benefits to continue in the future (Anheuser-Busch InBev, 2010 – 2019; Heineken N.V., 2010a – 2019a).

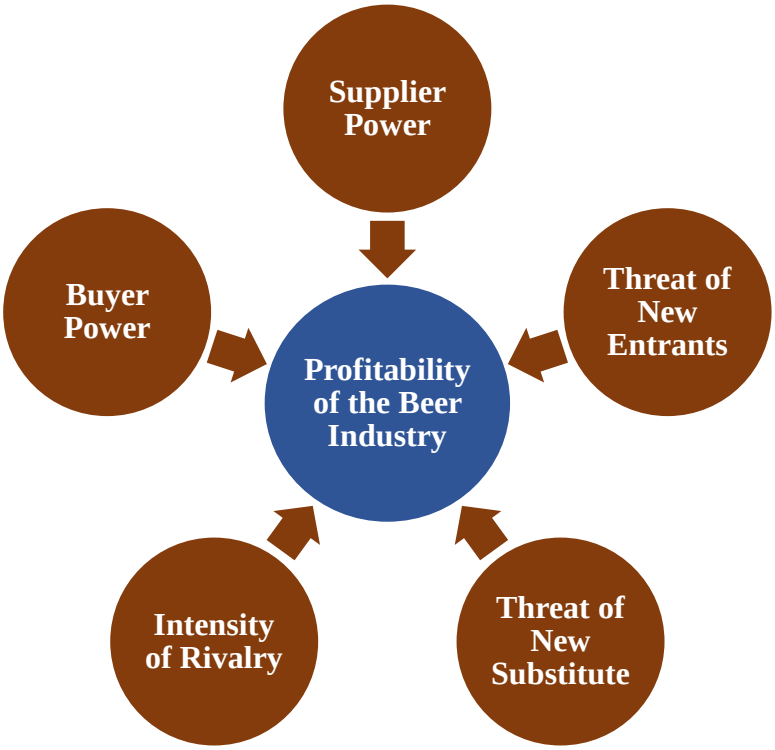
4.1.2. Porter's five forces analysis

Porter's five forces is a framework that examines the competitive structure inherent in a given industry to determine how profitable the industry can be (Porter, 1980). It analyses the power of five different forces that can pressure down the profitability of companies operating in the industry. They are buyer power, supplier power, the threat of new entrants, the threat of substitutes, and the intensity of rivalry. Specifically, when buyers have so much power, they can use it to negotiate down the prices they have to pay and thus, hurt the profitability of the industry. Similarly, a supplier with power can force companies to pay higher prices for the inputs they need for their operations and leave them with little margins. New entrants and substitute products, on the other hand, threaten to increase the supply available or offer customers different choices, leading to tougher competition for existing companies and thus lowering prices. By contrast, when competition among existing companies is fierce, customers stand to benefit at the expense of the players.

The Porter's five forces framework is perceived to be useful because it provides an overview of what factors influence the profitability of an industry and, thus, helps locate those that put the most pressures on the margins that companies are able to generate. Therefore, it is not only a potent tool for management, but also for forecasting. Full comprehension of the competitive structure, along with reasonable expectations about how it may change in the future, can help create a solid foundation for making reliable forecasts.

In this paper, the framework will be used to analyze the competitive structure of the beer industry. Specifically, the power of each force will be assessed based on the sets of criteria

recommended by Porter. And these criteria and powers will be quantified using a 0-5 scale, with five indicating very strong and 0 signaling no power whatsoever. The important benchmark on the scale, which indicates moderate power, is three below, which signals weak power and above, which shows strong power.



4.1.2.1. Buyer power

The extent of power that buyers have will increase if each criterion set out below is satisfied.

- **High concentration in the buyers' industry**

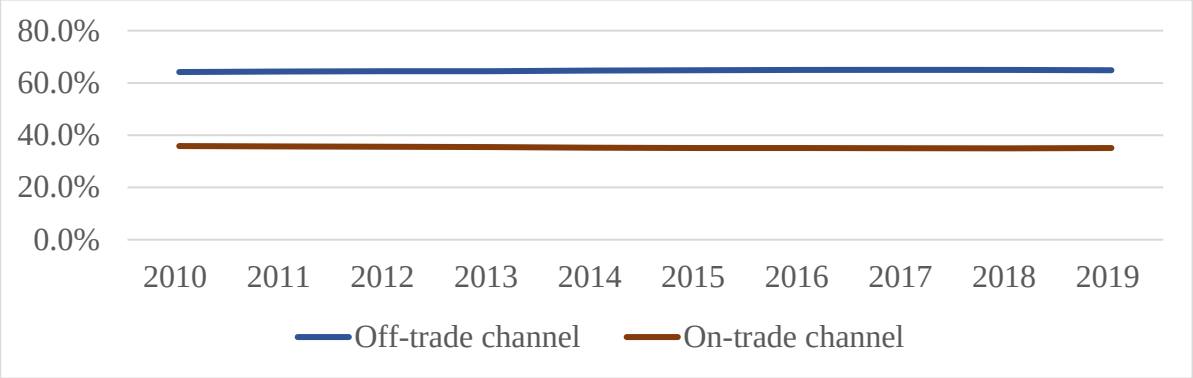
When the buyers' industry is heavily concentrated, market power belongs to just a few companies. And this gives them fantastic leverage to negotiate when making purchases with beer companies. Thus, all else being equal, the more concentrated the buyers' industry is, the greater power they can wield.

Beer products are mainly distributed via on- and off-trade channels. Off-trade channels typically consist of all types of retailers such as super- and hypermarkets, convenience stores, or similar sales channels, while on-trade channels refer to sales made through hotels, bars, restaurants, catering, cafés, and similar hospitality service establishments.

Off-trade channels have been the most important approach for beer companies to get their products sold to final consumers, steadily accounting for about 65% of all sales volume over

the last ten years (graph 15). And among different types of retailers, hyper- and supermarkets are the most dominant channels. In fact, they were responsible for more than 46% of global sales volume in 2014 (Market Line, 2015). Therefore, it is obvious that retailers, especially those that are in possession of hyper- and supermarkets are the most significant buyers for beer companies.

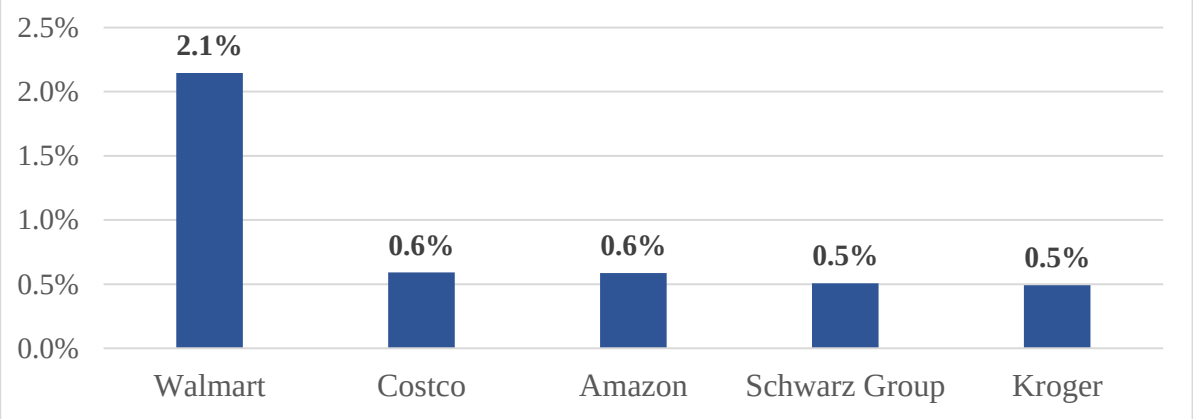
Graph 15: Share of global beer sales volume by distribution channels over the period 2010 – 2019 (%)



(Source: Statista, 2020a)

The global retail industry is quite concentrated, with the top 50 retailers accounting for nearly 13% of the total global sales in 2018 (Statista, 2019a; Deloitte, 2020). Graph 16 illustrates the performance of the world's five largest retailers by revenue in 2018. Walmart was leading the pack with its share of 2.1%, with Costco, Amazon, Schwarz Group, and Kroger following right behind with approximately the same market share of 0.5%. This consolidation means that much of the power is in the biggest retailers' hands, which gives them good leverage in the negotiation table with beer companies.

Graph 16: Global market share of the five largest retailers in the world in 2018 (%)



(Source: Statista, 2019a; Deloitte, 2020)

Although the retail market is quite concentrated, it is far from completely dominated by the biggest players, leaving plenty of room for smaller local retailers to gain a foothold and profit from the market. Moreover, the beer industry is even much more concentrated than the retail, with the four largest companies accounting for more than half of the global sales volume. These factors may lead to a significant reduction in the negotiation power of retailers in general. Overall, this criterion is given a score of 1, meaning very weak buyer power coming from this source.

- **The unimportance of beer products to the quality of buyers' products**

When the quality of the buyer's products depends little on the seller's products, the buyer gains an advantage in negotiation. When the opposite holds, the one with the advantage is the seller. In general, the less dependent the quality of the buyer's products on the seller's products, the greater power the seller has.

Hyper- and supermarkets offer thousands of different lines of products in their operations and, thus, the quality of their services is not heavily dependent on beer products. However, in order to stay competitive, they have to offer their customers a wide range of selections, making beer products relatively important in their daily operations. Overall, this criterion is given a score of 3, meaning moderate buyer power coming from this source.

- **High price sensitivity of the buyers**

When the buyers are price-sensitive, they tend to negotiate fiercely in order to secure favorable terms and prices, which help them stay in their businesses. Moreover, the buyers are in an even stronger position if they account for the majority of all the purchases of the products sold by the companies. In general, the more price-sensitive the buyers are, the more power they have.

The retail industry has been notorious for its low margins compared to other sectors. An average margin for a typical retailer ranges from only 0.5% to 4.5% (Ross, 2020). This low-margin characteristic is attributable to the fact that competition is fierce not only among brick-and-mortar retailers but also against online retailing. Thus, retailers are highly price-sensitive customers. Nevertheless, beer products represent just a few items out of a typical number of 33,055 items that an average supermarket offers its customers (FMI, 2020). This means that they are much less price-sensitive towards one single type of product. Overall, this criterion is given a score of 2, meaning weak buyer power coming from this source.

- **Undifferentiated beer products**

When the products offered by companies in the industry are very similar, buyers can easily find alternative sellers and, therefore, turn players against one another. As a result, they are only willing to buy the products at low prices. Thus, in general, the more undifferentiated the products are, the greater the power buyers can wield.

Beer products are quite differentiated. Brewers can easily differentiate their products to a large extent in a variety of ways. They can first differentiate their products by segment, such as lager or bitter. Then flavor, color, and aroma, style, ingredients, strength, and brand can be used to further differentiate their products in a given segment (Market Line, 2015). This means that the buyers' ability to turn beer companies against one another to benefit from such competition is quite limited. Overall, this criterion is given a score of 1, meaning very weak buyer power coming from this source.

- **Low switching costs**

Switching costs involve any cost attributable to switching doing business with one party to another. They may include employee retraining costs, cost of new ancillary equipment, cost and time in testing or qualifying a new source, need for technical help as a result of reliance on seller engineering aid, product redesign, or even psychic costs of severing a relationship. Switching costs represent how locked-in buyers are to sellers. If switching from one seller to another is relatively costly, the buyer tends to stick to the seller. Conversely, the buyer is relatively more likely to change its supplier when the switching cost is low. In general, the lower the switching cost if, the greater the power buyers have.

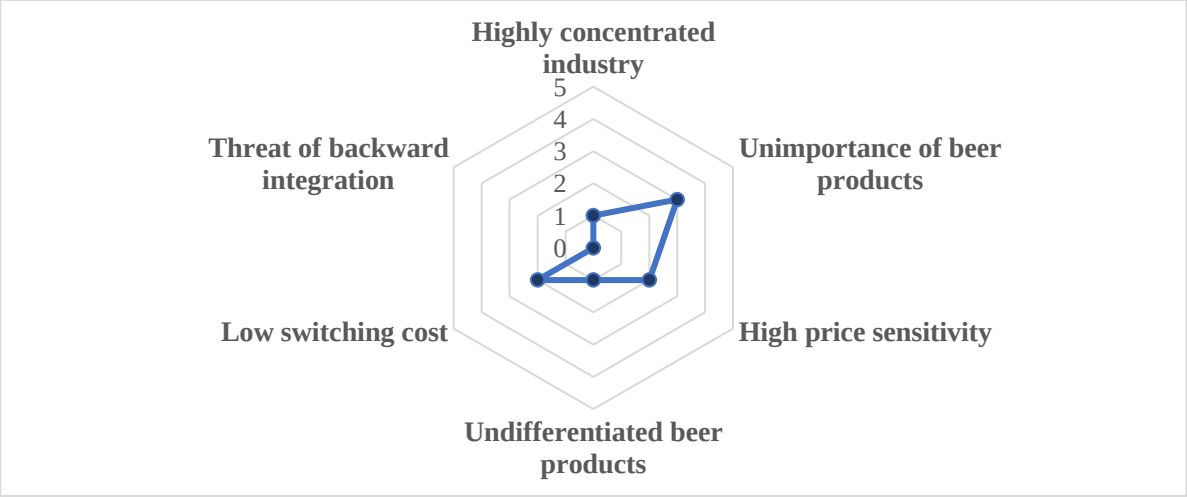
Because beer products are quite differentiated, different consumers tend to be loyal to different brands and constantly search for them. Since consumers tend to prefer one-stop shopping, retailers could turn away their customers and see drops in their overall sales if they fail to offer certain beer brands that are in high demand. Thus, the opportunity costs for switching from one beer brand to another could be high. On the other hand, it is rather easy for hyper- and supermarkets to physically change and offer their customers different beer products. However, the paper believes that this benefit is likely to be overwhelmed by the opportunity costs they face. Overall, this criterion is given a score of 2, meaning weak buyer power coming from this source.

❖ **The threat of backward integration**

When a buyer is large enough, it may pursue vertical integration and produce the products itself. This puts a lot of pressure on the sellers and gives the buyer great leverage in negotiation. In general, the more credible the threat is, the greater power the buyer can wield.

Since the retail and beer industries are fundamentally different, it is very unlikely that a backward integration may occur. Therefore, this criterion is given a score of 0, meaning no buyer power coming from this source whatsoever.

Summary of the buyer power analysis



4.1.2.2. Supplier power

The extent of power that suppliers have will increase if each criterion set out below is satisfied.

❖ **Importance of suppliers' products to the quality of beer products**

Similar to buyer power, when suppliers' products are an integral part of what determines the quality of the sellers' products, they have great power in negotiation and can raise the prices they are willing to sell. All else being equal, the more important the suppliers' products to the quality of the buyers' products, the greater power they can wield.

The main ingredients for the production of beer are barley and hops. And their quality is the most vital element to the quality of beer products. Given this trait, barley, and hops growers, all else being equal, can get great leverages in negotiation. However, barley and hops, in essence, are considered as commodities. Thus, the growers' products are perceived to be fundamentally similar to one another, which can weaken their negotiation power to a considerable extent.

This paper believes that the latter effect is likely to overwhelm the former and, overall, this criterion is given a score of 2, meaning weak supplier power coming from this source.

- **High concentration in the suppliers' industry**

When the suppliers' industry is highly concentrated, just a few players dominate and possess market power. This gives them tremendous advantages when negotiating with parties who want to buy the products in their industry. Generally, the more concentrated the suppliers' market is, the greater power they have.

On the macro level, Europe accounts for more than 40% of global barley production in 2018 (Statista, 2020d), while the United States and Germany dominate the global market of hops (accounting for 78% of global production in 2019) (Statista, 2020e). Nevertheless, on the micro-level, barley and hops growers are numerous (Market Line, 2015). This means that there are numerous barley growers in Europe and numerous hops growers in the United States and Germany. Therefore, the barley and hops cultivation industries are quite unconcentrated, leaving farmers with little power to negotiate. Thus, this criterion is given a score of 0, meaning no supplier power coming from this source whatsoever.

- **Independence of the beer industry**

When the profitability of suppliers is heavily dependent on buyers' industry, they are at the buyers' mercy and, thus, do not have much power to say in the negotiation table. Generally, the less dependent suppliers' profitability is on the buyers, the more independent and, therefore, powerful they are.

While hops are mostly only used for making alcoholic beverages, barley grains are mainly used for both animal feed and alcoholic beverages production. However, barley grains cultivated for making alcoholic beverages are far more profitable than those grown for feeding because brewers are willing to pay significant premiums (MDPI, 2019a). In fact, most of the barley farmers enter into contracts with brewers where the beer companies decide what barley varieties should be cultivated based on their brewing techniques, cost, and the desired flavor of the finished beer products. And when adverse weather conditions force growers to sell the barleys to the feed market, they may get no more than half of the original prices that would have been paid by the brewers (Cyndi, 2019). Thus, the profitability of hops and barley growers are quite dependent on the beer industry, but not to an absolute extent since they can

also be sold to other alcoholic beverages and feed markets if things go sour. Overall, this criterion is given a score of 2, meaning weak supplier power coming from this source.

❖ **The threat of forward integration**

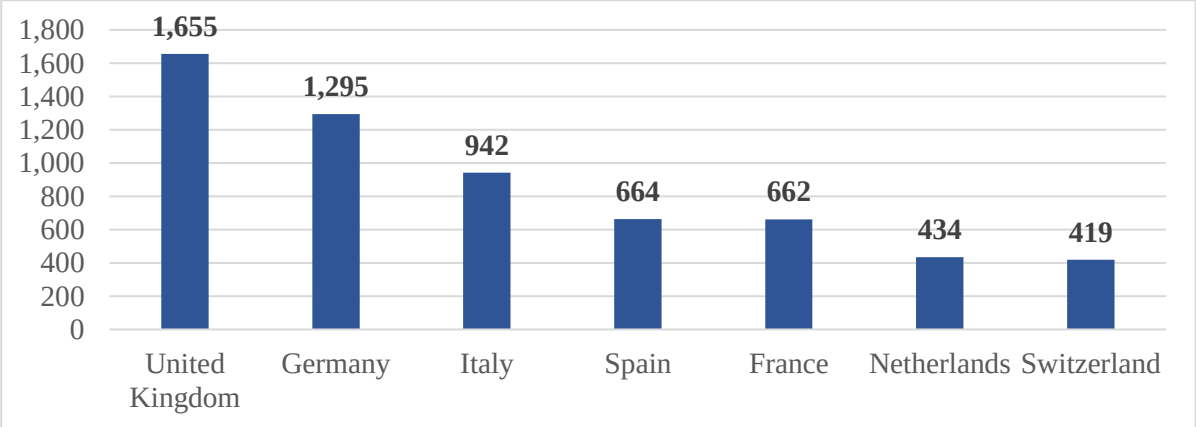
The rationale behind this criterion is similar to that in the buyer power scenario. When a threat of forward integration is credible, suppliers have tremendous power. And the more credible the threat is, the greater power the supplier can wield.

Given the large size and high level of concentration of the beer market, backward integration is more realistic and likely than forward integration. Beer companies have specific demands for the varieties and quality of barley and hops. Additionally, they are in possession of deep knowledge of seeds breeding and best cultivation practices, which are passed on to farmers to help them produce yields with quantity and quality required by the brewers. Thus, the threat of backward integration by beer companies is quite credible. In fact, big players like AB InBev get their barleys and hops through both their own cultivation and outsourcing to farmers (Roseboro, 2019). Therefore, this criterion is given a score of 0, meaning no supplier power coming from this source whatsoever.

❖ **Low switching cost**

When suppliers can find alternative buyers easily, they are less dependent on any particular buyers and, hence, wield power in negotiations and demand high prices for their products. Generally, the lower the switching cost for suppliers, the greater power they can obtain.

Graph 17: Number of craft brewers in selected countries in Europe, 2017



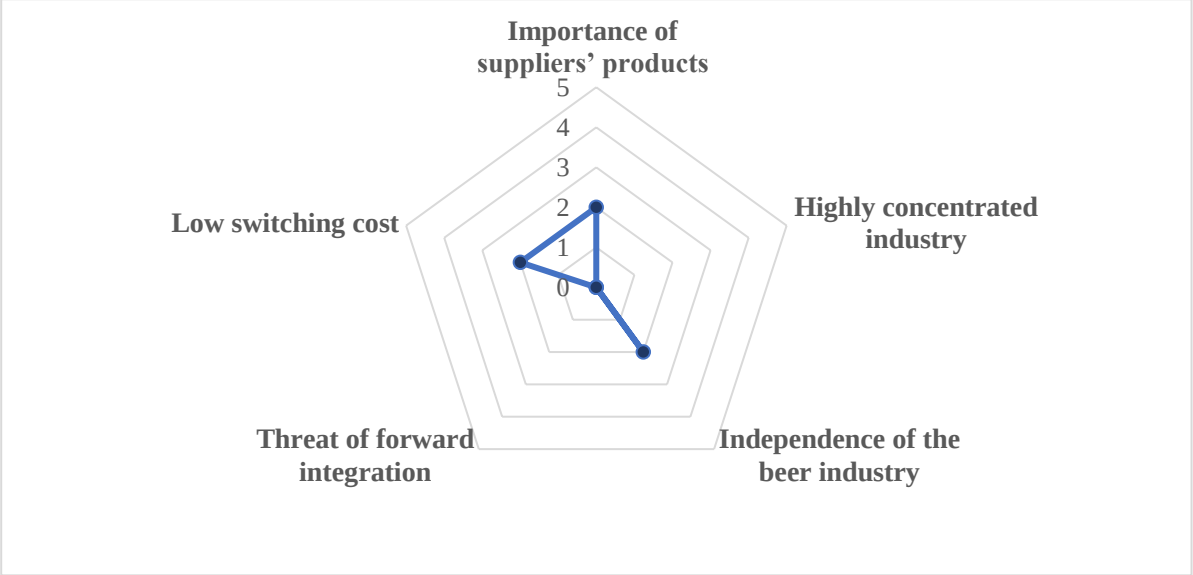
(Source: Statista, 2019b)

Although the beer market is dominated by only a few big multinational companies, there are thousands of small local brewers all over the world. In the craft beer market, there are 8,256

brewers in the United States alone in 2019 (Statista, 2020f). There are also numerous craft brewers in Europe, with the United Kingdom and Germany being home to most of them (graph 17).

The presence of a large number of brewers helps make it easier for barley and hops growers to switch from one brewer to another. However, the opportunity cost of ending reliable, more profitable, and long-lasting relationships with certain brewers, especially big ones, could be quite costly for farmers. This paper believes that the latter effect is likely to overwhelm the former. Overall, this criterion is given a score of 2, meaning weak supplier power coming from this source.

Summary of the supplier power analysis



4.1.2.3. The threat of new entry

When the barriers to enter a given market are low, new entrants will join the competition if they believe it is profitable enough to do so. This may lead to an overwhelming supply of the industry's products and, thus, pressure down prices and hurt the profitability of the incumbent players: the lower the entry barriers, the more damaging for the incumbents. The most significant types of entry barrier and their implications to the beer industry will be discussed in the following. The extent of the credibility of the threat will increase if each criterion set out below is satisfied.

❖ **The unimportance of economies of scale**

Economies of scale is one of the most important barriers that can strongly deter potential entries. This characteristic of the industry forces new entrants to come in at either large scale or small scale and accept cost disadvantages. In general, the less important economies of scale are, the lower the entry barriers, and, thus, more pressure on the incumbents.

The economies of scale are quite important for the beer industry. Firstly, they give companies great bargaining power when making purchases of barley, hops, packaging materials, and brewery equipment. This leads to lower costs for almost everything, from raw materials to cans, bottles, and cardboard (Shumway, 2019). Secondly, economies of scale help companies improve their production efficiency. They can optimize their use of facilities and reduce their capital expenditures strongly. Thirdly, economies of scale can generate certain incomes for brewers. Specifically, some of the solid wastes from the production process can be sold as fertilizer or animal feeds to farmers. However, in order to get farmers interested, the quantity of those wastes has to be big enough. And that is when economies of scale come in handy (Kate, 2020). Fourthly, economies of scale play a vital role in brewers' fight against climate change. They give big companies the ability to invest in emissions-efficient and environmentally-friendly investments that are usually cost-prohibitive for small brewers (Hubbell, 2019). For instance, large brewers can use only 3 liters of water in order to produce 1 liter of beer in the operations, while that figure can be as high as 10 for small brewers. Moreover, large brewers can possess cutting-edge wastewater treatment systems that are too expensive for their small counterparts.

Therefore, this criterion is given a score of 2, meaning the weak threat of new entrants coming from this source.

❖ **Undifferentiated products**

When product differentiation in an industry is strong, customers are typically loyal to certain brands, which makes it challenging for new entrants to penetrate and gain a foothold in the industry. They have to invest heavily in order to overcome this loyalty. However, investments in building a brand name are quite risky since the salvage value in case of failure may be nothing. In general, the less differentiated the products in the industry are, the lower the entry barriers.

As analyzed previously, beer products are quite differentiated. Brewers can easily differentiate their products by segments such as lager or bitter, and by quality such as flavor, color, and

aroma, style, ingredients, strength, and brand. Therefore, this criterion is given a score of 1, meaning a very weak threat of new entrants coming from this source.

- **Low capital requirements**

When capital needed to enter an industry is high, new entrants have to bear a high risk of failure and are less willing to take any chances. Although capital may be available in the financial market, lenders usually reflect this risk in their lending terms by raising the cost of capital. This may strongly deter new entrants. In general, the lower the capital requirements are, the lower the entry barriers.

The beer industry is quite capital-intensive (Gaiziunas, 2019). For instance, microbrewers have to bear a large number of start-up costs in comparison to other industries. They have to invest heavily in large buildings, sophisticated equipment along with special ingredients like hops and barley. The overall investment to start a microbrewery could range from $250,000 to $2.5 million (Incfile, 2019). Although big dominant players enjoy great benefits from economies of scale, they still have to incur large capital investment. At the end of 2019, the invested capital excluding intangible assets and goodwill of Heineken was 12.7 billion euros, while the figure for AB InBev and Carlsberg was 17.7 billion $ and 13.5 billion DKK respectively.

Therefore, this criterion is given a score of 2, meaning the weak threat of new entrants coming from this source.

- **Low switching costs for buyers**

When switching costs that the buyers face are low, they are less locked-in with certain sellers. This works in favor of new entrants since they stand a good chance to win over buyers from the incumbents, which in turn encourages them to join the industry—generally, the lower the switching costs for buyers, the lower the entry barriers.

As shown before, because beer products are quite differentiated, supermarkets face relatively high opportunity costs of switching away from certain brands that are in high demand. Overall, this criterion is given a score of 2, meaning the weak threat of new entrants coming from this source.

- **Easy accessibility to distribution channels and suppliers**

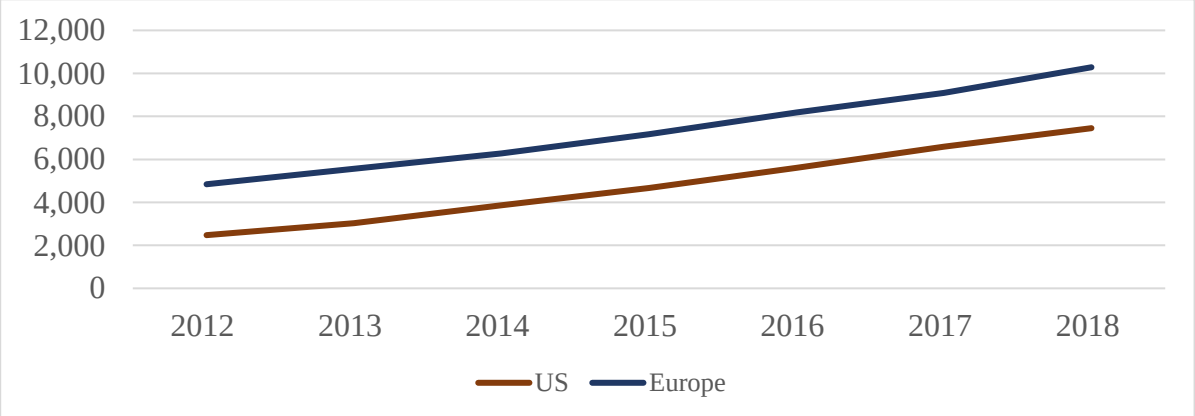
When distribution channels and suppliers are easily accessible, new entrants can join the competition without being worried too much about their supply chains. In general, the easier

for new entrants to get access to distribution channels and suppliers, the lower the entry barriers.

Since barley and hops growers are numerous, access to suppliers should not be a concern for brewers who want to get a share in the beer market. However, there is a considerable number of farmers who cultivate their crops under exclusive contracts with the incumbents, especially big players. This may reduce new entrants' accessibility to the ingredients needed for brewing beers.

With regard to distribution channels, the beer market is generally operated under the three-tier system, especially in the United States (The Brew Enthusiast, 2019). Under this system, beer products are first manufactured by brewers at tier 1, which are then sold to independent distributors and wholesalers at tier 2 who subsequently sell the beer products to independent retailers at tier 3 where final consumers can make purchases. The three-tier system ensures fair competition among brewers at the benefits of final consumers by preventing brewers, especially big dominant ones, from owning distribution channels and/or retail stores. Such prevention does not leave room for brewers to maneuver and abuse their power. Consequently, small brewers can thrive with big dominant players in the beer industry, and final consumers can benefit from a larger number of products offered and lower prices. In fact, the number of active brewers in the United States and Europe has constantly increased over time, implying the effectiveness of the system.

Graph 18: Number of active brewers in the US and Europe over the period 2012 – 2018



(Source: National Beer Sales & Production Data, 2020 and Statista, 2019c)

The existence of the three-tier system guarantees new entrants with easy accessibility to distribution channels. Overall, this criterion is given a score of 4, meaning a serious threat of new entrants coming from this source.

❖ **Favorable government policies**

When an industry is subject to heavy government regulations, new entrants may be deterred from entering the competition due to the costs and risks associated with compliance. In general, the more relaxed and favorable government policies, the lower the entry barriers.

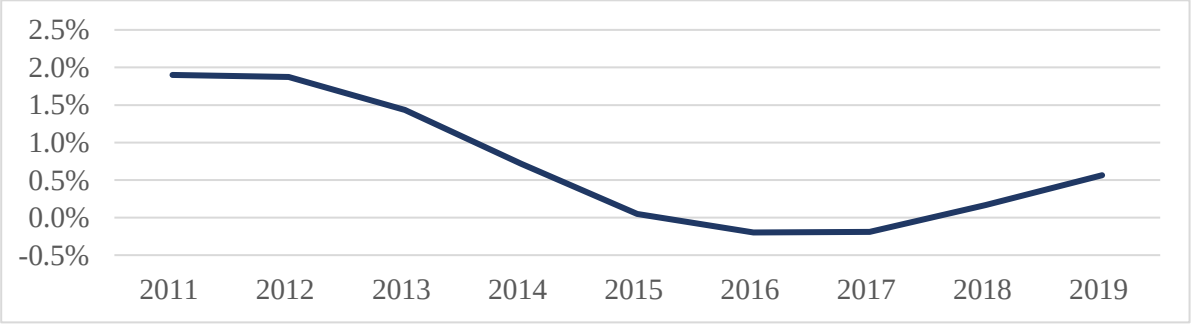
As outlined in the PESTEL analysis, the beer market is subject to a wide range of government regulations. Such regulations as those relating to labeling, marketing, pricing, tax, recycling, waste treatment, and water usage may hurt the profitability of new entrants considerably and, thus, deter them from joining the market. Therefore, this criterion is given a score of 2, meaning the weak threat of new entrants coming from this source.

❖ **Low retaliation from the incumbents**

When the threat of retaliation from the incumbents is low, it may be perceived as a good signal, and new entrants, therefore, may feel encouraged to join the market. Generally, the less credible the threat of retaliation from the incumbents is, the lower the entry barriers are.

New entrants to the beer industry may expect strong reactions from the incumbents, especially the dominant players. Firstly, the global beer market is already mature and has slowed down recently. Although the global sales volume growth was negative in 2016 and 2017, it has hovered at 0% ever since 2014. This signals possible strong reactions from beer companies to any extra competition from new entrants.

Graph 19: Growth rate of the global beer market by sales volume over the period 2011 – 2019



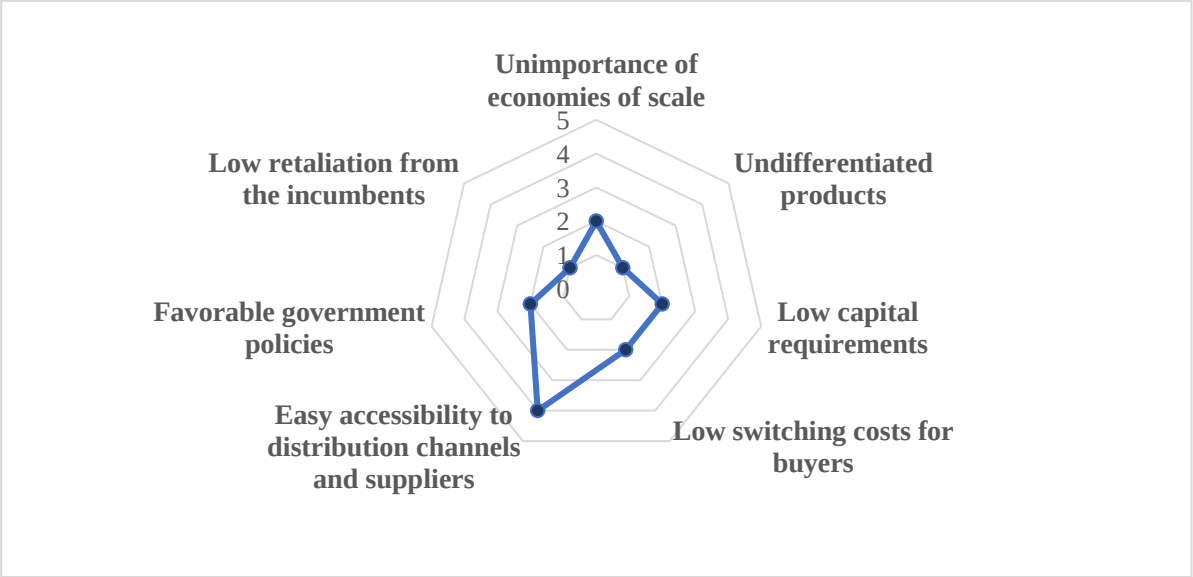
(Source: Statista, 2020a)

Secondly, brewers are quite attached to the beer industry, and this holds for even the largest companies. Although big players like Heineken, AB InBev and Carlsberg are in possession of great portfolios consisting of various valuable brands, most of them operate in the beer industry. This strong attachment means possible vigorous reactions whenever they feel

threatened. Thirdly, the largest players have abundant resources to fight back if necessary. At the end of 2019, Heineken's total assets amounted to 46.5 billion euros, 1.8 billion out of which was cash and cash equivalent. AB InBev, on the other hand, possessed 236.6 billion US dollars in total assets and 7.2 billion US dollars in cash. By contrast, the figures for Carlsberg are 123 and 5.2 billion DKK, respectively.

Overall, this criterion is given a score of 1, meaning a very weak threat of new entrants coming from this source.

Summary of the threat of new entrant analysis



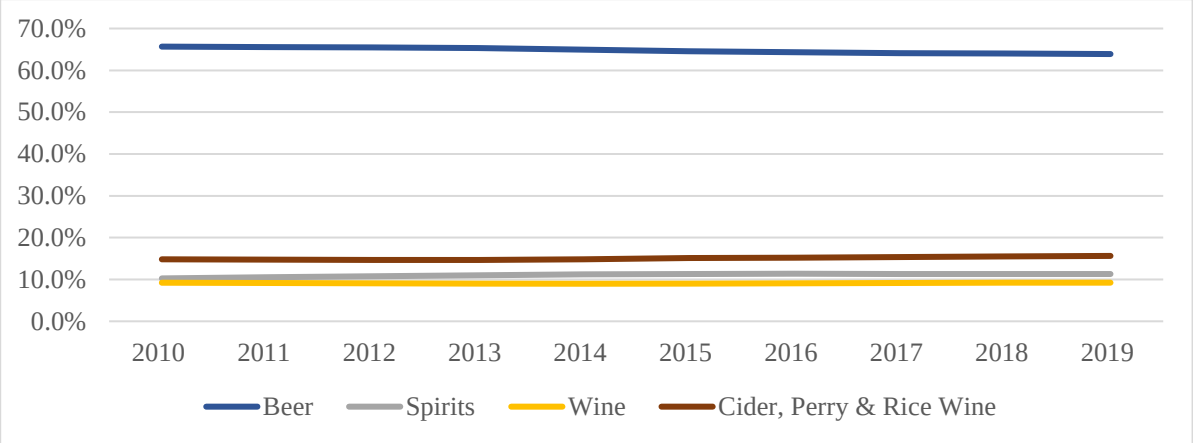
4.1.2.4. Threat of substitute

Companies in a given industry compete not only against one another but also against products that are perceived by customers as substitutes to the industry's products. When this type of competition is fierce, the profitability of the companies is squeezed by low prices. Thus, a credible threat of substitutes can place an upper ceiling on how profitable companies can become.

The main substitutes for beer products are other alcoholic beverages such as spirits, cider, and wine (Market Line, 2015). A close examination of the trend in the composition of the alcoholic beverage industry can reveal this fact (graph 20). Although beer products have accounted for more than 60% of the total global sales volume of the alcoholic beverage industry, the importance of the segment in the industry has decreased over time, with its share of total global sales volume steadily falling from 65.7% in 2010 to 63.9% in 2019. By contrast, the Cider,

Perry & Rice Wine segment has steadily increased its share over the same period, climbing from 14.9% in 2010 to 15.6% in 2019. Similarly, the Spirits segment increased its share from 10.3% in 2010 to 11.3% in 2019 on a steady basis.

Graph 20: Share of different types of alcoholic beverage of global sales volume of alcoholic industry over the period 2010 – 2019



(Source: Statista, 2020g)

The extent of the credibility of the threat of substitutes will increase if each criterion set out below is satisfied.

- **Low switching costs**

When buyers face low switching costs, it signals that they are dependent on the industry's products to a very limited extent. And the threat of the buyers switching to similar products of different industries is credible. This forces the companies to lower their price offers in order to encourage buyers to stay with the industry. Generally, the lower the switching costs, the more is the threat of substitutes and more pressure on the industry's profitability.

In order to stay competitive, hyper- and supermarkets have to offer their consumers a wide range of products within and across different industries, indicating the relative importance of beer products, especially famous brands. Moreover, as outlined previously in the buyer power analysis, retailers could face relatively high opportunity costs of switching away from beer products. Overall, this criterion is given a score of 1, meaning a very weak threat of substitute coming from this source.

❖ **Independence of beer products**

If the quality of buyers' products depends heavily on the industry's products, they are, in essence, locked in with the industry and less likely to switch to substitute products. In general, the less dependent buyers are on the industry's products, the more credible the threat of substitute is.

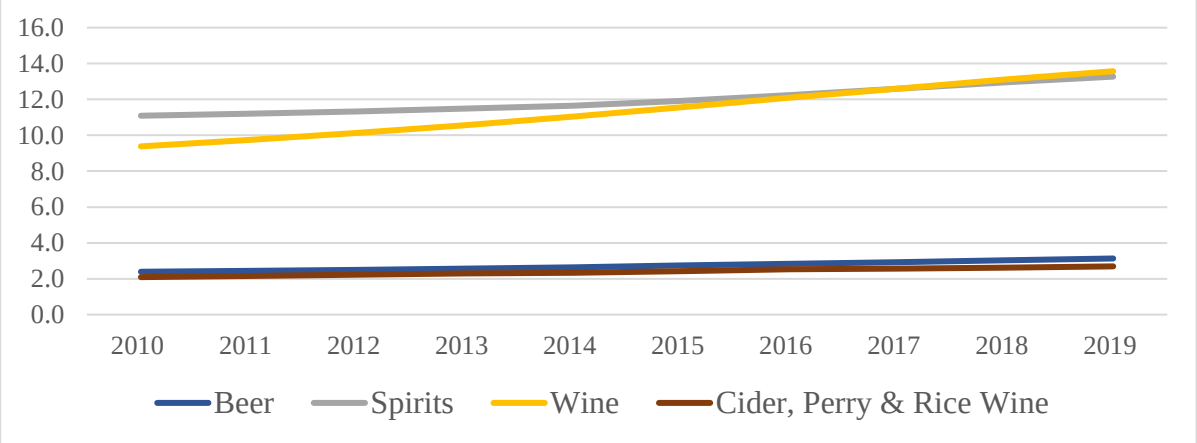
As outlined before, hyper- and supermarkets want to save certain shelves for beer products in order to satisfy their wide range of customers. Moreover, while beer products are perceived as indispensable for bars, they are seen as inferior to wines for restaurants. Overall, this criterion is given a score of 2, meaning a weak threat of substitute coming from this source.

❖ **Cheap alternatives**

When substitute products are much cheaper than the industry's products, buyers may be enticed to abandon the industry if they believe it is profitable for them to do so. In general, the lower the prices of alternatives, the more credible the threat of substitutes.

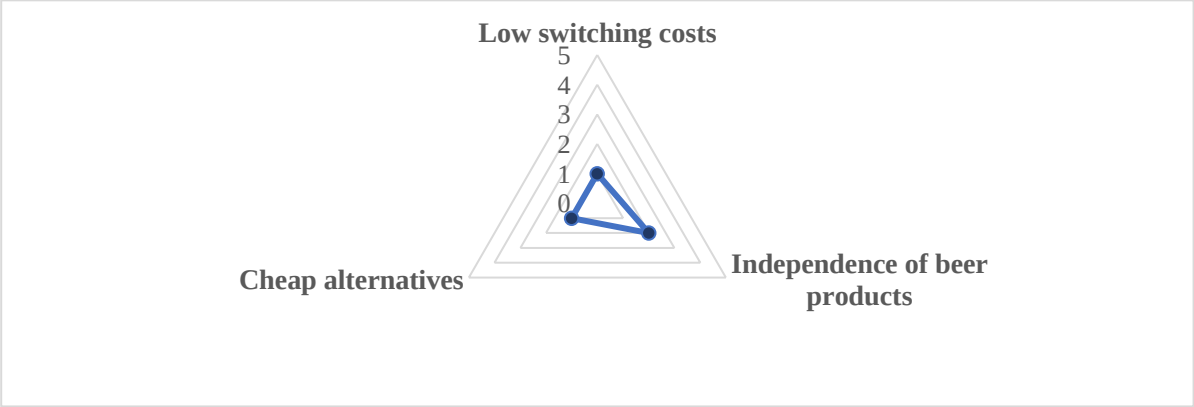
Price per liter of beer products is substantially lower than that of wine and spirits while being roughly the same as cider and perry (graph 21). This means that other alcoholic beverages have to find other grounds than price where they can outperform if they want to compete against beer products. Therefore, this criterion is given a score of 1, meaning a very weak threat of substitute coming from this source.

Graph 21: Price per liter for a different type of alcoholic beverages over the period 2010 – 2019



(Source: Statista, 2020g)

Summary of the threat of substitute analysis



4.1.2.5. Intensity of rivalry

When the competition among the players in an industry is fierce, companies usually convince customers to use their products by offering them favorable terms such as low prices and good services. Thus, customers stand to benefit at the expense of the companies in the industry. The most significant factors that lead to increased competition and their implications for the beer industry will be discussed in the following. The intensity of rivalry will increase if each criterion set out below is satisfied.

- **Unconcentrated industry**

When there are numerous companies competing in an industry, the intensity of competition is quite strong. They tend to behave independently and may believe that their moves will not be noticed by others. The extreme case is perfect competition where the competition is so fierce that any abnormal profit will go away because of competition. On the other hand, when an industry is dominated by just a few players, the division of power is unmistaken. The market leader (or leaders) can impose discipline, and players in the industry tend to coordinate their moves. Generally, the less concentrated the industry is, the stronger the intensity of rivalry is.

The beer industry is highly concentrated, with the four largest companies (AB InBev, Heineken, Molson Coors, and Carlsberg) accounting for 54% of the global sales volume in 2019. AB InBev is the market leader, which accounted for nearly 30% of global sales volume in 2019, more than twice as much as the sales of the second largest player (Heineken). The division of power is unmistaken, which helps reduce the intensity of rivalry in the market. Therefore, this criterion is given a score of 2, meaning the weak intensity of rivalry coming from this source.

- **Low industry growth**

In a saturated industry, an increase in the market share of one player is a decrease in the market share of another. It is a zero-sum game. And the player that loses their market share to the other is likely to fight back vigorously. In general, the lower the industry growth, the stronger the intensity of rivalry in the industry.

As outlined before, the beer industry has already been saturated, making competition fierce among the players. Therefore, this criterion is given a score of 5, meaning a very strong intensity of rivalry coming from this source.

- **Undifferentiated products**

When products offered by companies in an industry are similar, competition is expected to be fierce since customers base their purchase decision on prices and services and such thing as brand loyalty and preferences do not exist. Generally, the less differentiated the products offered, the stronger the intensity of rivalry in the industry.

As outlined previously, beer products are quite differentiated. Brewers can easily differentiate their products by segments such as lager or bitter, and by quality such as flavor, color, and aroma, style, ingredients, strength, and brand. Therefore, this criterion is given a score of 1, meaning a very weak intensity of rivalry coming from this source.

- **Low switching costs for buyers**

When buyers are not locked in with certain sellers, they can turn sellers against one another to benefit from their competition in the form of low prices. Generally, the lower the switching costs for buyers, the stronger the intensity of rivalry in the industry.

As outlined before, hyper- and supermarkets typically face high switching costs, which makes the degree of competition low among beer companies. Therefore, this criterion is given a score of 2, meaning a weak intensity of rivalry coming from this source.

- **Undiverse goals and strategies among players**

Companies that are similar in terms of goals and strategies may fiercely compete against one another to achieve their own goals. For instance, if all the companies in the industry pursue large market shares as their goals, they have to fight against each other for a given share in the limited market size. In general, the more similar the goals and strategies of companies, the stronger the intensity of rivalry in the industry.

Beer companies, especially the dominant ones, are quite similar with respect to their goals and strategies. Heineken's goal is to lead the global premium segment in beer and cider and become the number one, or a strong number two, in the markets where they compete with a full brand portfolio. On the other hand, Carlsberg aims to deliver sustainable organic growth in both revenue and profitability. By contrast, AB InBev's vision is to follow growth with its premium alcohol beverages and non-alcohol beverages.

Given the similar goal of growth among beer companies, this criterion is given a score of 5, meaning a very strong intensity of rivalry coming from this source.

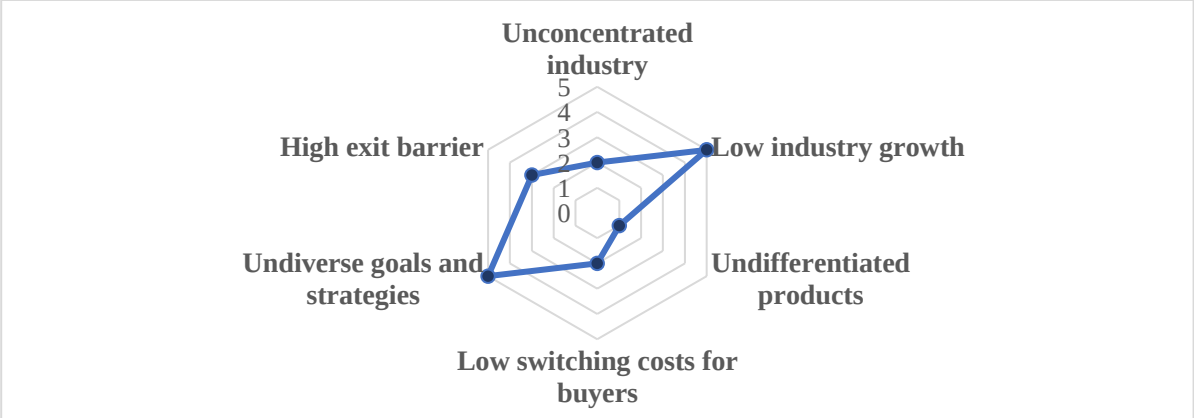
- **High exit barriers**

Low exit barriers provide a way out for companies that have failed the competition. When the opposite is true, failed companies may find it more profitable to stay in the industry and fight back vigorously. Exit barriers may be attributable to low liquidation values, high fixed costs of exit such as labor agreements, resettlement costs; strategic interrelationships between the business unit and others in the company; government, and social restrictions. In general, the higher the exit barrier, the stronger the intensity of rivalry in the industry.

The fact that the beer industry is quite capital-intensive and most of the equipment and machinery are industry-specific presses down the liquidation value of brewers that want to exit. However, the existence of a large number of brewers in the industry may help relax the pressure since the brewers that want to exit can sell their assets to other brewers that still stay in the industry at much higher prices than if selling to outsiders.

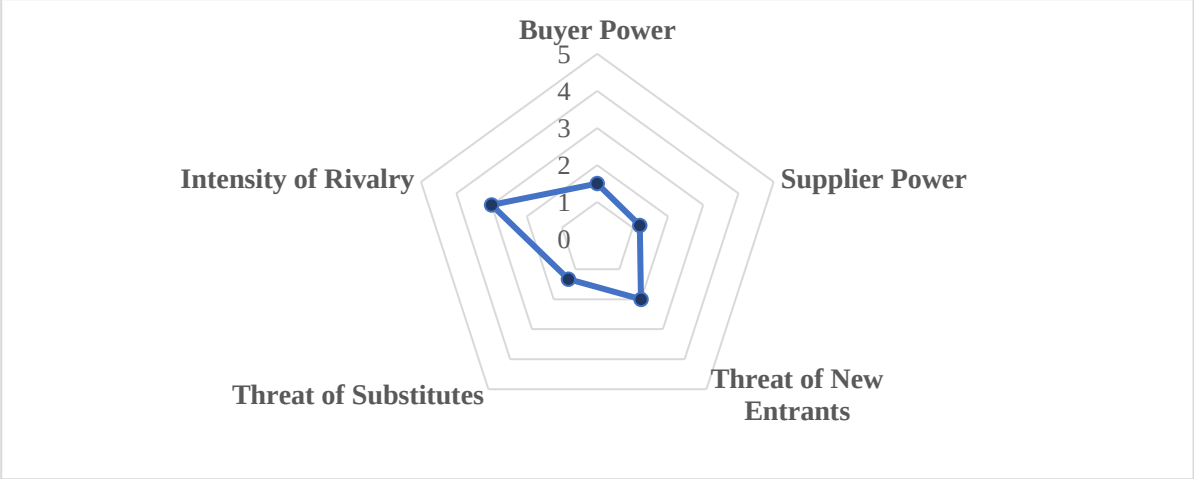
Overall, this criterion is given a score of 3, meaning a moderate intensity of rivalry coming from this source.

Summary of the intensity of rivalry analysis



4.1.2.6. Summary of Porter's five forces analysis

Built upon the analyses outlined above, the power of each force is then assessed by taking the average score of its criteria. Specifically, the buyer power, supplier power, and threat of substitutes are assessed at a score of 1.5, 1.2, and 1.33, respectively, while the threat of new entrant and intensity of rivalry score at 2 and 3 respectively.



The low scores signal weak buyer and supplier power. The weakness of buyer power primarily comes from the fact that a) beer products differ from one other quite strongly; b) the beer industry is heavily concentrated, while the concentration level in the retail industry is quite limited; and c) retailers face high switching costs. By contrast, the weak supplier power is mainly attributable to a) the low degree of concentration in the barley and hops cultivation industry; b) barley and hops are commodities, and c) barley and hops growers' heavy dependence on the brewing industry.

Similarly, the low scores mean that the threat from new entrants and substitute products are not very credible. New entrants to the beer industry are strongly deterred by the fact that a) beer products are differentiated quite strongly; b) economies of scale are quite important in the beer industry; c) brewing is a capital-intensive business; and d) they may risk strong reactions from the incumbents. By contrast, substitute products are not a very credible threat to the beer industry due to a) the dependence of retailers and bars on beer products; b) high switching costs for retailers; and c) much lower prices than beer products can offer compared to other substitutes like wine and spirit.

By contrast, the intensity of rivalry in the industry is mild (score of 3), mainly driven the fact that companies all pursue growth in the industry whose growth has been stagnant, However,

since a) the industry is quite concentrated; b) beer products differ from one another to a large extent; and c) retailers face high switching costs, the competitive effects are considerably lessened.

Overall, the competitive structure of the beer industry can be perceived as favorable for the players. This favorability has actually manifested itself in high-profit margins enjoyed by beer companies. For instance, Heineken's profit margin has hovered at 15% over the period 2010 – 2019. On the other hand, Carlsberg has maintained its margin at around 14% over the same period. By contrast, AB InBev has been extremely good at taking advantage of the structure. It has consistently achieved a margin of around 30% over the same period, a marvelous achievement.

The variation in performance among the beer companies outlined above indicates that the industry's competitive structure alone cannot dictate how profitable the companies can become. In fact, the same pattern can be observed for different industries where there are wide differences in performance among companies operating within the same industry (Koller, 2015). Instead, it is the combination of the industry's competitive structure and a company's resources and strategies that determines how profitable the company can become (Barney, 1991). Therefore, with this observation in mind, the following sections will focus on analyzing Heineken's resources and the competitive advantages, if any, that come from them. At the end of the chapter, an analysis of strengths, weaknesses, threats, and opportunities that Heineken faces, built upon the previous analyses, will also be examined in order to provide comprehension of the dynamics of the beer industry and how Heineken is positioned to respond.

4.2. Analysis of Heineken

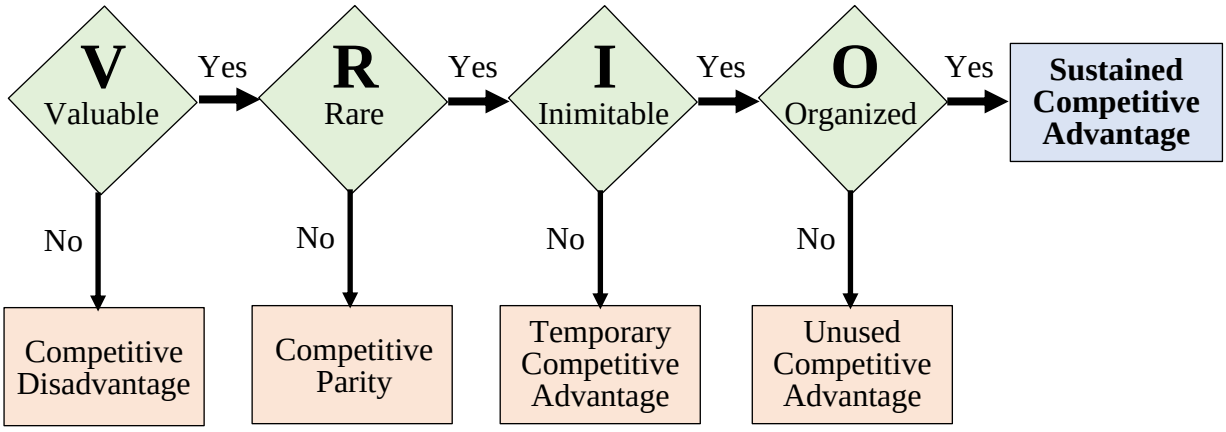
4.2.1. Competitive advantages analysis

Competitive advantages give a company privileges to make abnormal profits that not many of its competitors can enjoy in the form of charging premium prices or being able to produce much more efficiently (Koller et al., 2015). However, they may be short-lived if competitors can easily copy them. Sustained competitive advantages, on the other hand, are the competitive advantages that are hard or impossible for competitors to imitate and may stay with the company for a long time (Barney, 1991). Warren Buffett refers to such competitive advantages

as economic moats, which help shield the company's ability to generate abnormal profits from its current and potential competitors (Kim, 2018). It is these sustained competitive advantages that create the most value for the company (Koller et al., 2015).

One of the methods to identify sustained competitive advantages is to test the company's resources through the VRIO framework (Barney, 1991). The VRIO framework stands for Valuable, Rare, Inimitable, and Organized. The first stage of the test is to examine whether the resource is "valuable," meaning whether it helps generate revenue, charge premium prices, or reduce production costs. If the resource is not valuable, it is certainly not a competitive advantage of the company. However, if it is valuable, it needs to pass the second stage of the test in order for it to be considered a competitive advantage. That means it has to be "rare," signaling that not many of its competitors are in possession of such valuable resources. If the resource also passes the second stage, it is further examined to determine whether it is easily copied by current or potential competitors in the third stage. If the resource is "inimitable," it should be considered as a sustained competitive advantage for the company. Nevertheless, it does not automatically indicate that the company can benefit from this advantage. If the company is not already "organized" to readily capitalize on the advantage, the resource is considered as an unused competitive advantage. Only when the resource passes all four stages of the VRIO test, it is considered as a sustained competitive advantage from which the company can readily benefit.

Exhibit 3: VRIO framework for the identification of sustained competitive advantages



(Source: Barney, 1991)

4.2.1.1. Ownership of a fair number of internationally leading brands

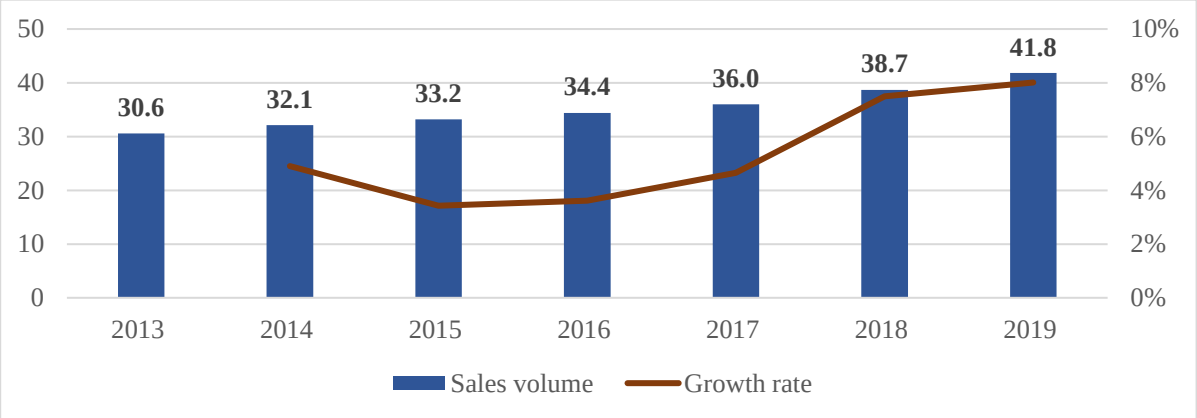
Thanks to a considerable number of acquisitions it has undertaken in the past, Heineken is now in possession of various internationally leading brands in different business segments,

including premium beer, craft beer, cider, and low- and non-alcoholic beer. And this ownership may give Heineken sustained competitive advantages over its competitors. Such induction will be examined below by using the VRIO framework outlined above.

❖ **"Valuable" criterion**

In the premium beer segment, the most significant brand of the company is Heineken, which has been the flagship brand for not only the premium segment but also for the whole company. As of 2019, the brand and its products are present and served in 190 different countries. For this reason, the company proudly calls Heineken its global brand. This global brand is considered to be the sales-generating engine for the whole company, steadily accounting for around 17% of the total sales volume of the consolidated group. Its sales volume has been growing steadily year by year, with the growth rate in 2019 is the best in over a decade (around 8%). Furthermore, in 2019, the sales volume of the brand increased double-digit in more than 40 countries. And currently, there are 12 markets where the brand's products are sold more than one million hectoliters annually. Thus, the Heineken brand is undoubtedly valuable to the company.

Graph 22: Sales volume (in million hectoliters) generated by Heineken brand's products and its growth rate over the period 2013 - 2019



(Source: Heineken's annual reports)

Beside Heineken, the company also owns a large number of internationally leading brands in the premium segment, which it refers to as the international premium portfolio. The portfolio is believed to complement the Heineken brand's products by offering consumers diversity, new tastes, new brand experiences, and different unique stories. It is made up by internationally well-recognized brands, including Amstel which is available in more than 110 countries and accounts for sales volume of more than 12.5 million hectoliters annually;

Desperados which is served in more than 80 countries; Sol served in 85 countries; Tiger in 50 countries and Birra Moretti in 40 countries. Together, these brands are a strong driver of growth in the premium segment for the company. In 2019, the sales volume attributable to this international premium portfolio grew high-single-digit, led by strong double-digit growths of Tiger and Amstel. Therefore, this portfolio should also be considered as highly valuable to the company.

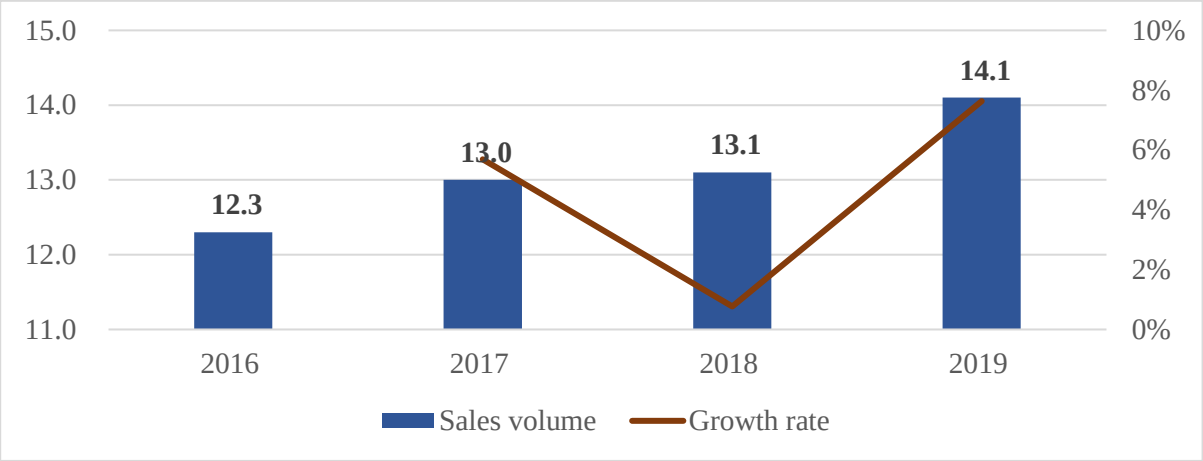
When it comes to the craft beer segment, Heineken also owns different leading brands, including Lagunitas, Affligem, Mort Subite, and Edelweiss. Craft beer is a kind of beer that is produced by small independent brewers and is usually characterized by unique tastes and high quality. In this craft portfolio, Lagunitas is the leading brand. It was originated from the United States, but are now available in more than 35 different countries, compared to just 25 countries in 2018, an impressive increase of 40%. Moreover, sales volume attributable to Lagunitas has doubled in international markets on an annual basis. The craft portfolio is thought to be greatly complementing the premium portfolio by Heineken. The sales volume generated by this portfolio increased mid-single-digit to reach 5.6 million hectoliters in 2019, with growth in Europe being double-digit. This portfolio is, thus, considered to be valuable to Heineken.

With regard to the cider segment, Strongbow, Orchard Thieves, Stassen, Bulmers, and Old Mount are the leading brands in the global market, all of which are owned by Heineken. Cider is an alcoholic beverage made from the fermented, crushed fruit, typically apples. It is famous for its fruity taste and extremely popular in the United Kingdom and Ireland. It is considered to be the fastest-growing alcoholic beverage in the world. Thanks to its ownership of the most sought-after brands, Heineken is currently the world's leading cider producer (Heineken, 2010a – 2019a). Its cider portfolio is offered in over 40 different countries, and the sales volume generated in 2019 reached 5.6 million hectoliters (an increase of more than 14% compared to 2017), with double-digit growth in international markets outside the United Kingdom. Moreover, its brand Orchard Thieves is currently offered in 21 markets, with sales volume growth of around 70% on an annual basis, a marvelous expansion. Therefore, this portfolio of the cider brands should be deemed as valuable to the company.

When it comes to the low- and non-alcoholic segment, Heineken 0.0 and Radler lead the company's portfolio of 123 different brands, offering up to 348 line extensions. The portfolio has been accounting for around 6% of the total consolidated group sales volume and growing steadily over time, with growth in 2019, reaching 7.6%. In the non-alcoholic portfolio,

Heineken 0.0 is the flagship brand, driving the sales volume attributable to this portfolio up double-digit. Since its first introduction in 2017, Heineken 0.0 has quickly expanded, being welcomed in 57 different countries in just under 3 years. Given the current consumer trend towards health and wellness, it is reasonable to expect the low- and non-alcoholic portfolio to replace its premium counterpart as the growth-generating engine for Heineken and, therefore, should be considered as valuable for the company.

Graph 23: Sales volume (in million hectoliters) generated by the low- and non-alcoholic portfolio and its growth rate over the period 2016 – 2019



(Source: Heineken's annual reports)

❖ **"Rare" and "Inimitable" criteria**

These internationally leading brands are quite unique in terms of at least three aspects. Firstly, the quality of their products is distinctive from those offered by Heineken's competitors. For instance, the Heineken brand is famous for giving consumers cold and crisp feelings, and the quality is amazingly consistent across markets. On the other hand, Amstel beers are liked for their mildly bitter taste and excellent quality, while Desperados is sought after for its tequila flavor. By contrast, Birra Moretti is well-known for its unique, balanced bitter taste and fragrance, while Tiger wins consumers with its intensely refreshing, full-bodied taste. Similarly, Lagunita is famous for using 43 different hops and 65 various malts for its brewing process to create high-quality craft beers that can satisfy consumers.

Secondly, these brands have created unique brand experiences with consumers that help separate them from other brands through the use of various marketing campaigns. The Heineken brand can reach millions of consumers via its global sponsorship portfolio, including UEFA Champions League, Formula One, Rugby World Cup, and James Bond. Its slogan

"When you drive, never drink" resonates with many consumers. By contrast, Desperados made strong impacts on consumers via the campaign "Epic Parties Imagined by You," which collected and brought consumers' party ideas into reality. Currently, it is trying to create special feelings for consumers by designing a unique and party-appeal look for its products' packaging. Similarly, Lagunitas draws consumers' attention with its "Beer Circus" campaign, which is a beer festival full of circus performances and fantastic live music. Clearly, the product features, slogans, and customer feelings created by these marketing campaigns have become part of the brands' identities, which help differentiate them from others.

Thirdly, each of these brands has a unique story that goes with it, explaining how the brand was first created and developed over time. In essence, this is just another marketing technique that aims to attach these stories to the identities of the brands and, as a result, differentiate them further. For instance, Tiger was first brewed for street markets in Singapore. It was shared among people from all walks of life at street food tables where they sat shoulder to shoulder. It was believed to be brewed to bring people together. By contrast, the first Affligem craft beer was brewed by the monks of Affligem, Belgium, in 1074. Since then, the recipes have been handed down through generations and have never been changed. Clearly, such captivating stories are likely to resonate with consumers who tend to link them to the identities of the brands.

Given these unique traits, it is reasonable to believe that it is only Heineken that owns these brands and that it is impossible for current or potential competitors to copy. They cannot just create Heineken or Amstel at some point in the future. The only way for them to compete is to create their own brands with unique identities. Therefore, the company's ownership of these internationally leading brands is considered as both rare and inimitable.

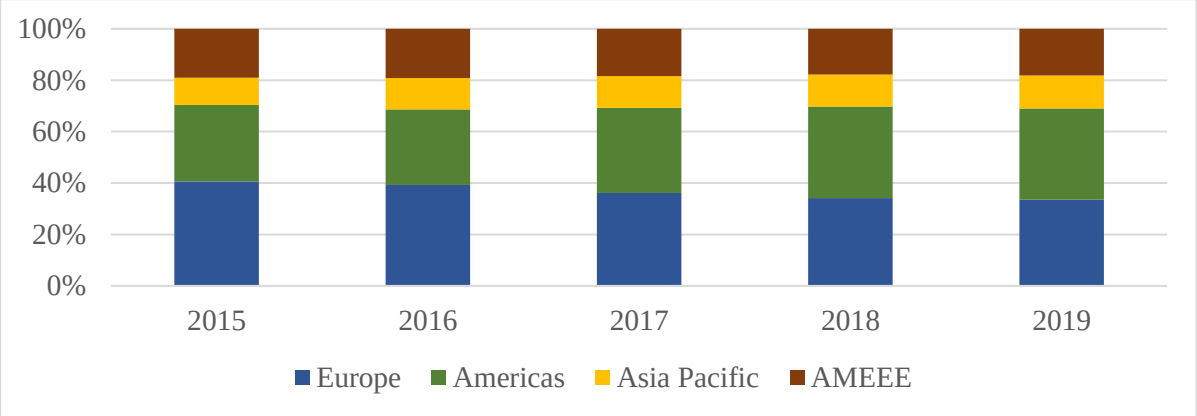
- **"Organized" criterion**

Heineken has been and will be capitalizing on the ownership of these brands. The company is operating all over the world and has manufacturing facilities, distribution networks, and strategic partnerships in a large number of countries. Therefore, it is considered to be well organized and positioned to take advantage of any favorable market development. For instance, at the end of 2018, Amstel was introduced to Vietnam for the first time. Its goal is to conquer the South-Eastern Asian markets, which have enjoyed significant economic developments.

4.2.1.2. Geographically diversified operation

Currently, Heineken is serving consumers in more than 190 different countries. The company's production is supported by 167 breweries strategically placed in more than 70 countries across the world. Its operation is broken down into four regions, as defined by Heineken: Europe, the Americas, Asia Pacific, and Africa, the Middle East, and Eastern Europe (AMEEE). The group's consolidated sales volume is made up by the sales contributed by each of these regions. Over time, the company has gradually shifted its composition of sales towards less dependence on the Europe market and more exposure to the Americas and Asia Pacific markets.

Graph 24: Heineken's composition of sales, by regions, over the period 2016 – 2019



(Source: Heineken's annual reports)

In 2015, out of the consolidated group's sales volume of 188.3 million hectoliters, Europe accounted for more than 40%, while the Americas and the Asia Pacific contributed around 30% and 10.5%, respectively. In 2019, out of the total sales of 241.4 million hectoliters, Europe's share of contribution had dropped to about 33.6%, while the figures for the Americas and the Asia Pacific rose to approximately 35.5% and 12.9% respectively. This shift of composition has owed to a number of acquisitions and operation expansion in the two regions. For instance, Heineken acquired Desnoes & Geddes (Jamaica) and GAPL Pte Ltd (Malaysia) from Diageo in 2015, followed by another acquisition of Brasil Kirin (Brazil) from Kirin in 2017. Over the same period, new breweries were added in Mexico, Haiti, China, Vietnam, Cambodia, Malaysia, East Timor, and New Zealand. Through a series of acquisitions and expansion, Heineken has successfully established a larger and more solid presence outside of its traditional European market.

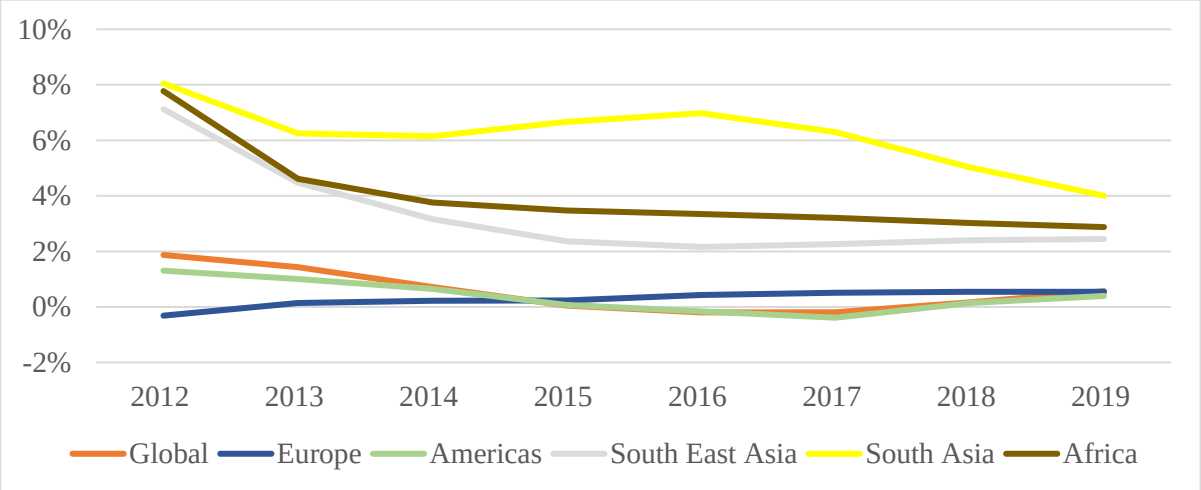
Another worth-noting aspect is how Heineken has established its presence in different markets. Since beer markets are considered to be quite local, the company's formula is to win consumers through its portfolios of both international, regional, and local brands. In AMEEE, besides Heineken, Amstel, and Strongbow, the company offer various regional brands, including Mutzig, Life, Walia, Soweto, and local brands like Harar (Ethiopia), Star (Nigeria), and Windhoek (Namibia). By contrast, in the Asia Pacific, vital brands are Heineken, Anchor, Larue, Bintang (Indonesia), South Pacific Export (Papua New Guinea), and Kingfisher (India). Similarly, Heineken, Tecate Light, Lagunitas, Schin and Red Stripe (Jamaica) and Dos Equis (Mexico) help the company gain a strong foothold in Americas, while Heineken, Amstel, Cruzcampo, Birra Moretti, Desperados and Strongbow, Lagunitas, Soproni, Żywiec, Beavertown, Sagres (Portugal), Gösser (Austria) are most sought after by European consumers.

Whether Heineken's geographically diversified operation can generate tremendous value and long-lasting competitive advantages for the company is examined below through the VRIO lens.

- **"Valuable" criterion**

Heineken can benefit from its geographically diversified operation in different ways. Firstly, the company can reduce its dependence on any particular market and, thus, lessen its operational risks considerably. In fact, the company believes that it has struck the optimal balance of exposure to stagnant mature markets like Europe and the Americas and fast-growing markets such as South East Asia, South Asia, and Africa.

Graph 25: Growth of sales volume, by regions, over the period 2012 – 2019



(Source: Statista, 2020a)

Despite stagnant growth of global sales volume, partly driven by low growths in Europe and Americas; South East Asia, South Asia, and Africa markets still look quite promising to beer companies in general and Heineken in particular. In fact, the company has made several acquisitions and expansion in these markets with the purpose of strengthening its positions as well as capitalizing on the growths enjoyed by these regions. Similar to the Asia Pacific region, over the period 2015 – 2019, Heineken also made different acquisitions in Africa, including DHN Drinks (Pty) and Sedibeng Brewery in South Africa, and added new production facilities in Ivory Coast, Mozambique, Ethiopia, and South Africa.

Secondly, geographically diversified operation equips Heineken with extensive networks of production, marketing, and distribution, which in turn help the company able to quickly expand its new product lines as well as easily introduce different brands across different markets. Thanks to its extensive networks, the company was able to bring Heineken 0.0 to various markets at an incredible speed. The product line has penetrated 57 markets in just under three years, a feat that would have never been achieved without the company's networks. Similarly, Heineken has an ambition for its Amstel brand to conquer South East Asia and picked Vietnam as its beachhead market. The brand was introduced to the market at the end of 2018 with strong logistics and marketing campaigns, thanks to Heineken's existing networks in the country. The pattern can also be observed for the Tiger brand, which has successfully expanded its reputation outside of Asia.

Thirdly, geographically diversified operation gives Heineken invaluable insights into local and regional markets, which in turn help the company stay competitive and hard to beat. With its extensive presence in numerous markets where it offers not only its flagship but also locally well-recognized brands to suit taste preferences of its consumers, it is reasonable to believe that Heineken can learn fast and respond timely and accurately to different changes in the local markets, such as consumer tastes, political and economic situations as well as the social aspect.

Therefore, the geographically diversified operation should be considered as valuable for Heineken.

- **"Rare," "Inimitable" and "Organized" criteria**

To be able to diversify operations across continents is not an easy task for beer companies, even for big ones. Although China Resource Snow Breweries is the third-largest beer company by volume (Statista, 2019d), its products are quite unknown outside of China. Its fortune can be thought to be tied to the fate of the Chinese beer market, the largest one in the world. By

contrast, even though Carlsberg, the fourth largest beer producers, has managed to successfully penetrate markets outside Denmark, its presence is still limited. The company has operations in Europe and Asia, but neither Americas nor Africa. Even in Asia, it has only gained footholds in a limited number of markets, including China, Laos, Vietnam, Cambodia, India, Malaysia, and Singapore. Its strengths lie in Europe where it holds number-two position in the market, behind Heineken (Market Line, 2020a).

The market leader AB InBev, on the other hand, does have a presence all over the world. Like Heineken, it serves consumers in all four continents: Africa, Asia, Europe, and the Americas. However, its strengths are different from those of Heineken. It's the strongest market where it is virtually unbeatable is the Americas, which accounted for nearly 68% of its total consolidated sales volume and 64.5% of the continent's total sales volume in 2019. But in Europe, it is beaten by Heineken (Market Line, 2020a). Even in Asia, where the two companies have operations, their strengths differ. While most of the sales volume attributable to Asia comes from China for AB InBev, Heineken's strengths lie in South East Asia.

Moreover, building a global presence similar to Heineken's may require a massive amount of time, capital, commitment, courage, and sometimes luck that not many, if any, beer companies can afford. Thus, it is reasonable to believe that Heineken's geographically diversified operation is quite unique and almost impossible to imitate. Also, the company has capitalized on this advantage, for instance, through continuous product innovations and introductions such as Heineken 0.0 and Amstel, and is expected to continue to do so in the future.

4.2.1.3. Summary of competitive advantages analysis

Table 1: Summary of Heineken's competitive advantages

Resources	Valuable	Rare	Inimitable	Organized	Competitive implication
Leading brands	Yes	Yes	Yes	Yes	Sustained competitive advantage
Geographic diversification	Yes	Yes	Yes	Yes	Sustained competitive advantage

4.2.2. SWOT Analysis

Built upon the industry and company analyses outlined previously, the aim of this section is to examine the prospect of the beer industry and how Heineken is positioned to stay competitive. The tool that will be used for such examination is the SWOT analysis framework, which stands for Strengths, Weaknesses, Opportunities, and Threats. Specifically, the company analysis provides important inputs for the examination of Heineken's strengths and weaknesses compared to its competitors, while opportunities and threats that the company may face will be analyzed with the help of the insights from the industry analysis. The section will start by analyzing Heineken's strengths and weaknesses, and move on to identify the opportunities and threats facing the company.

4.2.2.1. Strengths

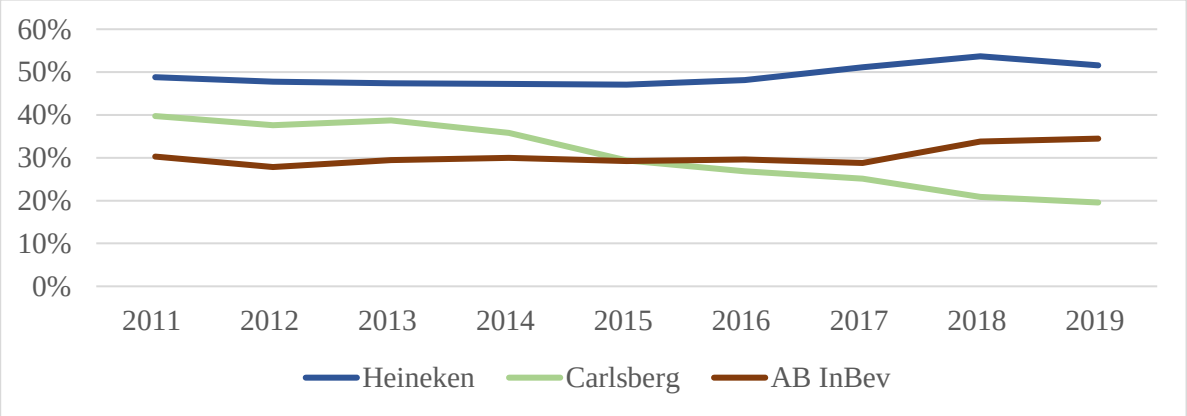
As pointed out previously, Heineken's most significant strengths lie at its ownership of various internationally leading brands and its geographically diversified operation. Together, they give the company long-lasting competitive advantages over its competitors, which in turn allow the company to charge premium prices without scaring consumers away, reduce operation costs thanks to economies of scale, and secure as well as improve sales with the help of diversification.

Another noticeable strength of Heineken is that it has portrayed itself as one of the leading beer companies that put environmental, social, and governance (ESG) aspects at the heart of everything it does. This may help the company create good images for societies, draw less scrutiny from authorities and activist groups, and retain and attract more people, suppliers, and consumers. Specifically, Heineken has long introduced various initiatives regarding ESG. Its "from barley to bar" program encompasses all important initiatives which aim to tackle different aspects of ESG. For instance, "drop the C" program aims to reduce the company's emission across its entire business, including agricultural supply chains, brewing, packaging, and distribution, while the goal of "every drop" initiative is to reduce its water consumption in production and improve its wastewater treatment. Additionally, the company also advocates responsible consumption with various marketing and sponsorships campaigns like "when you drive, never drink" and "no compromises", as well as promote health and safety for its employees. Heineken also makes supports and contributions to the societies where it operates, including job creation, paying taxes, investments in local education, and entrepreneurship.

4.2.2.2. Weaknesses

Heineken's biggest weakness lies in its operational efficiency. Compared to its peers, the company has to commit more capital in order to conduct its business. Over the period 2011 – 2019, the invested capital required to generate one unit of revenue for Heineken was constantly higher than that of Carlsberg and AB InBev. In fact, the efficiency gap between Heineken and Carlsberg have widened substantially over the period. Carlsberg managed to reduce their commitment of capital considerably from 40% of revenue generated in 2011 to only 20% in 2019, while Heineken slightly increased their invested capital from 49% in 2011 to 52% in 2019. By contrast, although AB InBev had modestly increased its capital (from 30% in 2011 to 34% in 2019), its capital requirement was till much lower than that of Heineken.

Graph 26: Ratio of invested capital * to revenue for different companies over the period 2011 – 2019



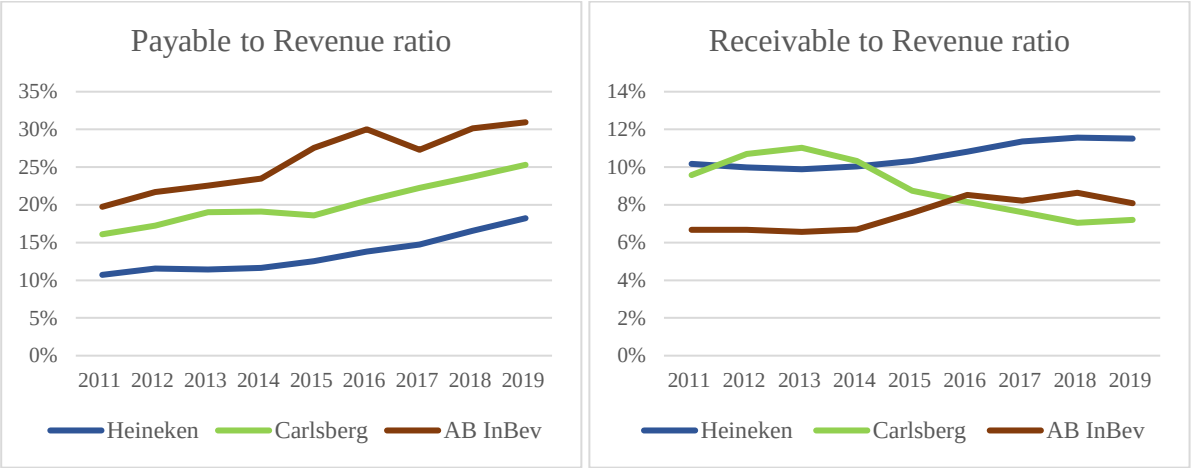
**Two-year average invested capital*

(Source: companies' annual reports)

A further investigation of the break-downs of the invested capital helps reveal the main areas where Heineken was outperformed by its peers. As a percentage of revenue, the company's account receivable was higher, while its account payable was much lower compared to its peers over the period 2011 – 2019 (graph 27). Additionally, the company also had to constantly invest more in fixed assets over the same period.

Furthermore, besides weak capital turnover, Heineken has also shown its weakness from operational efficiency in the form of profit margins. Although the company has performed slightly better than Carlsberg in this regard over the past ten years, its profit margins have been almost only half of those achieved by AB InBev. Clearly, this is a significant gap in performance.

Graph 27: Payable and Receivable to Revenue ratios for different companies over the period 2011 – 2019



(Source: companies' annual reports)

Nevertheless, Heineken's weakness in its operational efficiency does not indicate bad prospects for the company. Instead, it signals tremendous room for potential improvement that the company can realistically achieve in order to boost its profitability.

4.2.2.3. Opportunities

There are many different opportunities for Heineken. Firstly, the competitive structure of the beer industry has long been quite favorable, as outlined previously, and is not expected to experience any major disruptions in the future. This signifies that Heineken will be able to maintain its relatively high profit margins. And if the company manages to improve its operating efficiency to a meaningful extent, it can achieve even better margins as proved possible by AB InBev.

Secondly, rapid technological advancement can help Heineken conduct its business much more efficiently. The development of artificial intelligence (AI) and the internet of things (IoT) can help improve the company's production process to a large extent, resulting in lower production costs, increased efficiency, and better treatment of wastes and emissions. By contrast, information technology (IT) can provide novel tools that were unavailable just 20 years ago, to improve the company's management process, as well as its marketing and distribution approaches. Thanks to IT, information is transferred more quickly and correctly within an organization, while consumers' behavior can be observed and learned faster and more accurately, and many new distribution channels that are more efficient than traditional counterparts emerge.

Thirdly, changes in consumer tastes, driven by increased consumers' focus on health and wellness, has fueled the growth of low- and non-alcoholic beer segment. In the face of stagnant growth in the traditional premium beer market, the low- and non-alcoholic beer segment has experienced rapid expansion, with more consumers seeking products they deem as healthy. This segment of the industry is expected to grow exponentially in the future, with AB InBev predicting that its low- and non-alcoholic portfolio will account for at least 20% of its massive sales volume by 2025. In response to this development, Heineken has been building up its low- and non-alcoholic portfolio, which currently consists of 123 different brands, offering up to 348 line extensions. Among them, Heineken 0.0 and Radler, which are the leading brands in the portfolio, have enjoyed rapid expansion internationally. Clearly, there is tremendous potential for Heineken in this segment.

Fourthly, increasing concerns about sustainability may lead consumers to punish companies that are deemed to be unsustainable, while rewards those putting sustainability at the heart of what they do with their buying power. Being one of the leading beer companies regarding environmental, social, and governance (ESG), Heineken stands to benefit from this trend. The company may not only retain its consumer base but also expand it by gaining shares from other brewers, especially small independent ones which are usually lack of necessary facilities to stay sustainable due to their financial constraints.

4.2.2.4. Threats

There are several threats facing Heineken. Firstly, the COVID -19 pandemic, which has killed more than 306,000 people by May 15, 2020, is one of the biggest threats to the company. As outlined in the PESTEL analysis, the International Monetary Fund (IMF) predicts the global economy to shrink by 3% in 2020 and then increase by 5.8% in 2021. These figures are based on the assumption that the pandemic will be controlled by the second quarter of 2020 with no second wave of the virus and policy support. However, the number could be worse if the pandemic takes longer to control, and there are more waves of the virus in the future. IMF predicts that the global GDP to be lower than the baseline forecast by 3% in 2020 if the pandemic takes longer to control and the global GDP of 2021 to be lower than the baseline forecast for 2021 by 8% if there is a second wave of the pandemic.

If the COVID-19 pandemic persists, it can also undermine international cooperation and move countries towards protectionist policies. There were incidents like Italy not getting help from other EU members when it needed medical gears to fight the pandemic. (Herszenhorn et al.,

2020). Similarly, there were incidents of countries restricting the sale of essential items like sanitizers (The Local, 2020) and the US using the Defence Production Act to stop its manufacturers from selling essential medical gears including face masks to other countries (the US wants 3M to end mask export, 2020). If the pandemic persists, there is a risk of countries imposing barriers that would hurt global trade for years to come.

Secondly, regional and international political and economic crises have the potential of impacting Heineken's operations and business adversely. The trade war between America and China seemed to be coming to an end with the sign of the Phase 1 deal between these two countries. However, the US has blamed China for not being open about the coronavirus, and Trump is threatening China with a new tariff (Trump threatens new tariffs on China, 2020). So, there is a possibility of the second round of trade disruptions, which can hurt the economy already battered by the COVID-19 pandemic.

A no-deal Brexit is also a possibility, and if it happens, IMF predicts the global GDP to decline by 0.1%. However, given the COVID -19 pandemic, both the EU and UK have the motivation to not drag this further and resolve this with a deal that is beneficial to both sides. By contrast, the US- Iran crisis has subsided for now. However, if Trump gets re-elected, there is a possibility of him taking a harder stance on Iran, which could lead to a bigger crisis. If there is a full-blown conflict, this could impact the regional balance and significantly disrupt the global oil supply chain.

Thirdly, the traditional premium beer market has experience near-zero growth and even contractions in 2016 and 2017 over the past six years, signaling the market has reached its saturation. Clearly, this is a significant setback for Heineken since the company can no longer enjoy attractive growths as they used to do in the past. The company is also facing increasing competition from other beer companies, especially big players, whose goals seem to be unanimous, be it increasing market shares.

Finally, alcohol consumption and its adverse health effects are under increasing scrutiny in many countries. The topic has also been increasingly focused by influential organizations such as WHO, OECD, UN, and the EU. This scrutiny may lead authorities across all four continents where Heineken operates to impose even stricter regulations on the beer industry. Restrictive regulations such as restrictions or bans on advertising and marketing, sponsorship, availability of products, including health warnings on labels and increased taxes and duties or the

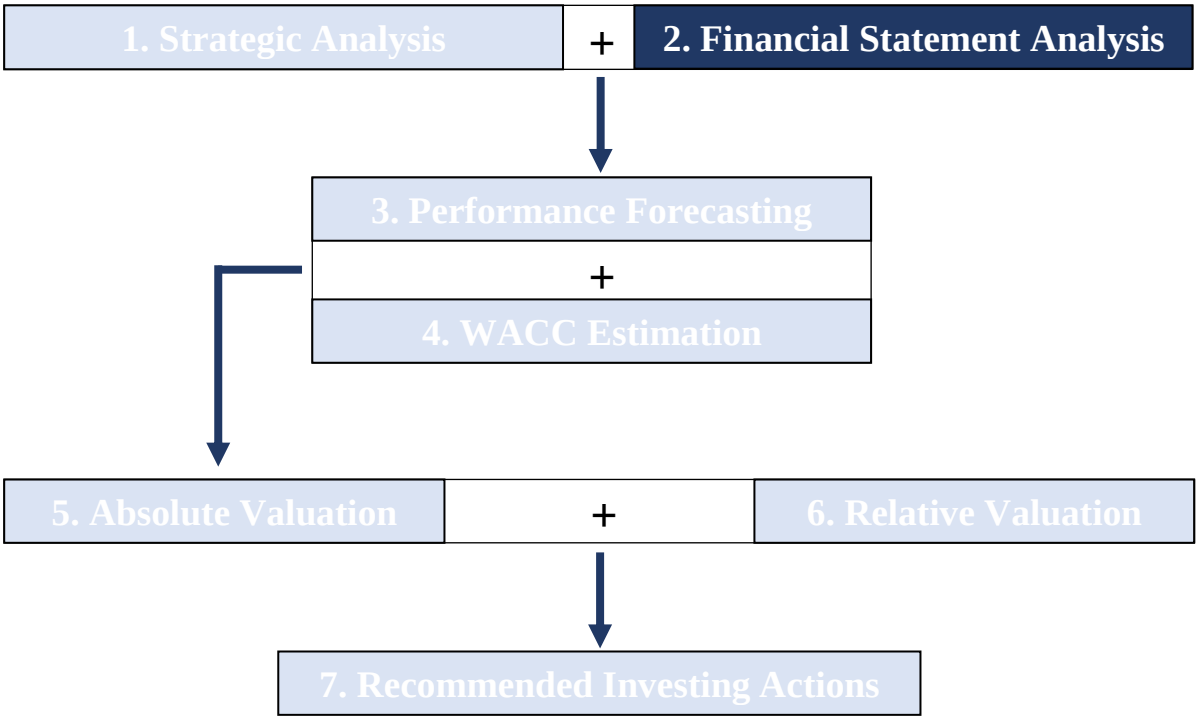
imposition of minimum unit pricing may adversely affect Heineken's ability to conduct business. As a result, consumers may lower their consumption or be scared away from the company's products, leading to disappointing sales and poorer performance.

4.2.2.5. Summary of the SWOT analysis

Table 2: Heineken's SWOT analysis

S **Strengths**	**W** **Weaknesses**	**O** **Opportunities**	**T** **Threats**
❖ Ownership of internationally leading brands ❖ Geographically diversified operation ❖ Leading in environmental, social and governance (ESG) field	❖ Weak capital turnover ❖ Potential for high-profit margins still unlocked	❖ Favorable competitive structure of the beer industry ❖ Rapid technological advancement ❖ Change in consumer tastes ❖ Increasing concerns about sustainability	❖ COVID-19 pandemic ❖ Adverse economic and political developments ❖ Increasing competition ❖ Stagnant growth of the global beer market ❖ More restrictive government regulations

5. Heineken's Financial Statement Analysis



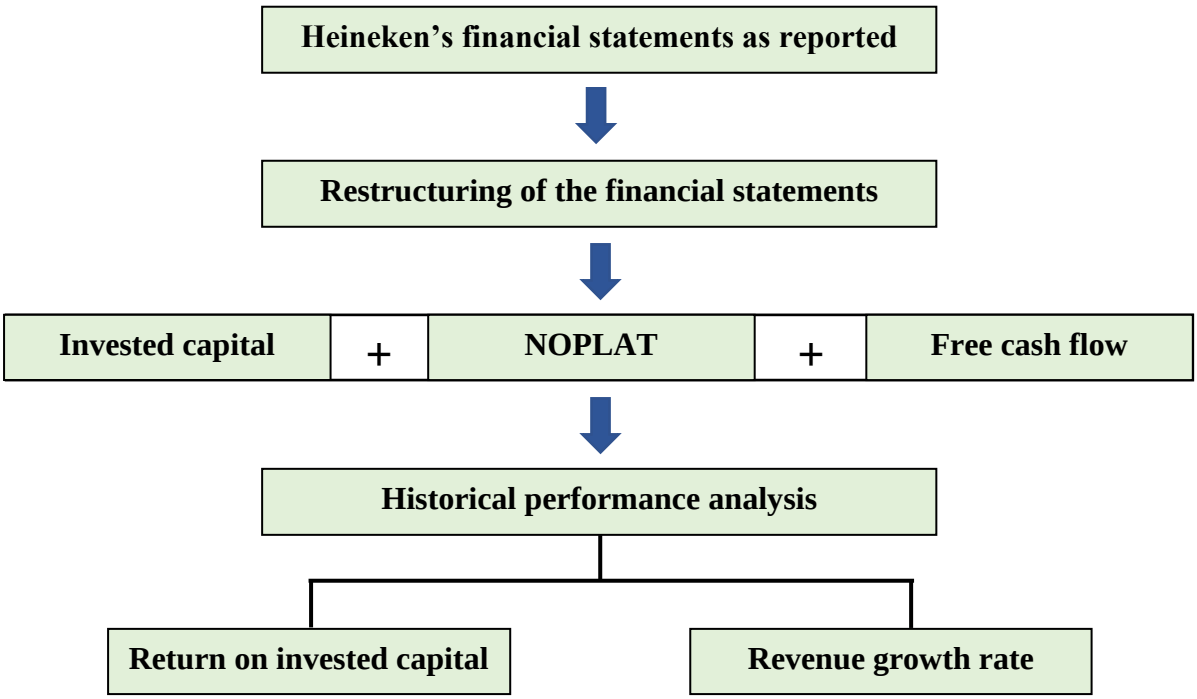
As outlined in chapter 3, the fair value of a company is decided by the stream of cash flows it can generate in the future. Clearly, the determination of this stream requires a thorough understanding of the company being appraised both qualitatively and quantitatively. The previous chapter analyses Heineken and the beer industry in a qualitative manner with the purpose of getting insights into the industry and the company's position within it. By contrast, the aim of this chapter is to provide further comprehension through quantitative analysis. Specifically, Heineken's historical financial performance will be analyzed based on its financial statements over time. And in order to produce meaningful insights, its performance will be examined in comparison with those from the company's competitors.

The goal of the financial statement analysis in this chapter is to generate insights into Heineken's core operation's historical financial performance, which, along with the strategic analysis, can be served as a solid foundation for producing reliable forecasts of its performance in the future. Unfortunately, the original financial statements prepared by the company, by nature, are not organized in a way that readily provides relevant information that ensures this goal. Specifically, assets and financial performance of the core operation are usually blended with those of non-core activities. Therefore, throughout this chapter, the financial statements

provided by Heineken will be restructured and analyzed in a way that every aspect of its core operation will be separated from that of the non-core.

Exhibit 4 illustrates how the financial statement analysis of Heineken will be carried out in this chapter. However, before delving into details, the framework for how to perform the analysis will be shed light on first.

Exhibit 4: Structure of the financial statement analysis of Heineken



5.1. Framework for financial statement analysis

In chapter 3, free cash flows generated by the company's core operation is defined as a function of net operating profit less adjusted tax (NOPLAT) and invested capital. Therefore, given the significant role of free cash flows in determining the company's fair value, a thorough comprehension of these two elements is crucial in understanding what drives value for the company. Both of them will be shed light on in the following sections. But first, the frameworks for how to examine them will be discussed as a foundation for the application to Heineken.

FCF = NOPLAT + Noncash operating expenses − Investments in invested capital

5.1.1. Framework for analysis of Invested Capital

Invested capital encompasses all assets and liabilities that are crucial, both retrospectively and prospectively, for conducting the company's core operation. These assets and liabilities are usually termed as "operating" as a way to distinguish them from those that make up the non-core operation. Usually, accounting standards mix the two types of operation and report combined figures. Thus, the analysis of invested capital begins with the separation of the company's operating assets and liabilities from its non-operating assets and financial structure. Because the free cash flows generated by the core operation are available to all types of investors of the company, the invested capital should not include any financial liabilities. It is only the liabilities related directly to the core operation such as trade payables and deferred income that are regarded as part of the invested capital. Instead, financial liabilities such as long- and short-term loans should be viewed as sources of funds that help finance the invested capital.

Invested capital usually includes operating working capital (working cash, inventories, prepayments, trade receivables, trade payables, accrued salaries, current tax payables, etc.) and operating long-term assets such as property, plant, and equipment, software, etc. Operating working capital is normally defined as current operating assets minus current operating liabilities. Any current assets or liabilities that are not operating should be excluded from invested capital. For instance, excess cash and cash equivalents should not be regarded as operating and, thus, should be excluded since they are the result of the company amassing its cash holding not for conducting its day-by-day core operation, but for future plans such as new investments or cushion for volatility.

Non-operating assets normally consist of excess cash and marketable securities, non-consolidated subsidiaries, equity investments, pension assets, derivatives, discontinued operations, and tax loss carried forward. As their names suggest, these assets can be considered to have little-to-non significance for the company's core operation. In other words, the company's core business could still be well conducted even without the existence of those non-operating assets. Together, invested capital and non-operating assets form the total amount of funds that investors have provided the company. This is illustrated by the following equations.

Assets = Liabilities + Equity

↓

Operating Assets + **Non-operating Assets** = **Operating Liabilities** + **Debt and Debt Equivalents** + **Equity and Equity Equivalents**

↓

Operating Assets − **Operating Liabilities** + **Non-operating Assets** = **Debt and Debt Equivalents** + **Equity and Equity Equivalents**

↓

Invested Capital + **Non-operating Assets** = **Total Fund Invested** = **Debt and Debt Equivalents** + **Equity and Equity Equivalents**

The last equation indicates that the total fund invested for the whole company (both core and non-core operations) has to be equal to the total fund provided by all investors. Since the process of separating operating from non-operating items may involve a huge amount of work, this equation can work as a valuable tool to check whether any items have mistakenly been left out or any errors have been made throughout the process. In this equation, debt refers to traditional loans including loans with banks, bonds and commercial papers, both short- and long-term, while debt equivalents are items that do not fall under the same category but do share similar economic characteristics with traditional loans, such as defined-benefit employee liabilities and provisions. Likewise, equity equivalents share similar traits with traditional equity and usually include non-controlling interests, dividend payables, and deferred taxes. The reason why deferred taxes are regarded as equity equivalent is that if the company managed to switch its accounting treatment for taxes from accrual to cash basis, the only account affected would be equity.

Classifying an asset as operating or non-operating may sometimes require judgment. As general criteria, an asset should be categorized as operating if i. it is core to the underlying operation and ii. it tends to fluctuate with revenue (Koller et al., 2015). Furthermore, companies may combine operating and non-operating assets together and report them under single accounts. Thus, a thorough investigation of the notes to those accounts may be required in order to break them down into operating and non-operating components.

5.1.2. Framework for analysis of NOPLAT

Net operating profit less after-tax (NOPLAT) is the after-tax profit generated by the company's core operation. It is available to all investors, both debt and equity holders. The creation of NOPLAT is attributable to the company's invested capital. In other words, the ownership of operating assets and liabilities helps generate NOPLAT for the company. An important implication of this definition is that any incomes or expenses that are created by non-operating assets or liabilities should be excluded from the NOPLAT calculation. It is, therefore, important to calculate NOPLAT in a manner that is consistent with the definition of invested capital. As before, incomes or expenses attributable to the invested capital are termed as "operating" and "non-operating" otherwise.

The after-tax profit reported by the company (net income) can be thought of as consisting of two different parts: after-tax profit generated by the core operation (NOPLAT), and after-tax profit attributable to non-operating operation. Thus, the NOPLAT analysis begins with the separation of the results attributable to these two different types of operations from the reported net income. Specifically, only operating incomes and expenses should be grouped together to calculate NOPLAT, while incomes and expenses that embed both operating and non-operating elements should be broken down before grouping.

Because NOPLAT is defined as available to all investors, both debt and equity holders, interests that the company has to pay regarding its outstanding debts should be considered as non-operating and, thus, excluded from the calculation of NOPLAT. However, the benefit of a tax shield stemming from those interests is real and has to be incorporated somehow. This can be done through the WACC estimation, which will be discussed in chapter 7. The exclusion of interests from the calculation helps prevent NOPLAT to be dependent on the company's specific capital structure. This, in turn, not only helps produce forecasting more easily and reliably but makes comparisons among companies more insightful.

Furthermore, since the reported income tax includes both operating (those attributable to the core operation) and non-operating (those raised by non-operating activities) elements, it should be broken down. It is only the operating component that determines the amount of tax caused by the core operation and, thus, enters the calculation of NOPLAT. Similarly, by separating operating from non-operating tax, NOPLAT is calculated in a way that ensures its independence from the company's capital structure.

Since NOPLAT is part of the reported net income, as a way of checking, the reconciliation to the net income can be carried out after NOPLAT has been determined. This reconciliation process can help locate any incomes or expenses that have been left out or any mistakes that have been made during the calculation process.

5.2. Restructuring of the financial statements

The primary purpose of financial statement analysis is to provide insights into the company's underlying business, which in turn helps produce reliable forecasts. Thus, one of the most important factors in the analysis is the length of the examination period over which the company should be analyzed. Specifically, if the company's core characteristics have fundamentally changed over time, its performance in the long past may have little-to-no relevance to its future prospect, and, thus, a short analysis period deems to be more relevant. Conversely, when the company is quite stable in terms of its core traits, a long analysis period can warrant more insights into the company's financial performance and its prospect.

Thus far, Heineken has yet to experience any major changes in its core operation. The company can be considered as quite stable with its underlying business. Therefore, a long analysis period is desired. In the following sections, a period of 10 years (2010 – 2019) will be used to examine the company's historical financial performance.

5.2.1. Financial statements as reported by Heineken

Exhibit 5: Heineken's income statement over the period 2010 – 2019

in million euro	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Revenue	16,133	17,123	18,383	19,203	19,257	20,511	20,792	25,843	26,811	28,521
Excise tax expense	-	-	-	-	-	-	-	(4,234)	(4,322)	(4,552)
Net revenue	**16,133**	**17,123**	**18,383**	**19,203**	**19,257**	**20,511**	**20,792**	**21,609**	**22,489**	**23,969**
Other income	**239**	**64**	**1,510**	**226**	**93**	**411**	**46**	**141**	**75**	**95**
Raw materials, consumables and services	(10,291)	(10,966)	(11,849)	(12,186)	(12,053)	(12,931)	(13,003)	(13,261)	(14,001)	(14,592)
Personnel expenses	(2,665)	(2,838)	(3,031)	(3,108)	(3,080)	(3,322)	(3,263)	(3,550)	(3,749)	(3,880)
Amortisation, depreciation and impairments	(1,118)	(1,168)	(1,316)	(1,581)	(1,437)	(1,594)	(1,817)	(1,587)	(1,693)	(1,959)
Total other expenses	**(14,074)**	**(14,972)**	**(16,196)**	**(16,875)**	**(16,570)**	**(17,847)**	**(18,083)**	**(18,398)**	**(19,443)**	**(20,431)**
Operating profit	**2,298**	**2,215**	**3,697**	**2,554**	**2,780**	**3,075**	**2,755**	**3,352**	**3,121**	**3,633**
Interest income	100	70	62	47	48	60	60	72	71	75
Interest expenses	(590)	(494)	(551)	(579)	(457)	(412)	(419)	(468)	(492)	(529)
Other net finance income (expenses)	(19)	(6)	168	(61)	(79)	(57)	(134)	(123)	(64)	(59)
Net finance expenses	**(509)**	**(430)**	**(321)**	**(593)**	**(488)**	**(409)**	**(493)**	**(519)**	**(485)**	**(513)**
Share of profit of associates and joint ventures	193	240	213	146	148	172	150	75	210	164
Profit before income tax	**1,982**	**2,025**	**3,589**	**2,107**	**2,440**	**2,838**	**2,412**	**2,908**	**2,846**	**3,284**
Income tax expense	(403)	(465)	(515)	(520)	(732)	(697)	(673)	(755)	(741)	(910)
Profit	**1,579**	**1,560**	**3,074**	**1,587**	**1,708**	**2,141**	**1,739**	**2,153**	**2,105**	**2,374**
Attributable to:										
Shareholders of the Company (net profit)	1,447	1,430	2,914	1,364	1,516	1,892	1,540	1,935	1,913	2,166
Non-controlling interests	132	130	160	223	192	249	199	218	192	208

(Source: Heineken's annual reports)

Exhibit 6: Heineken's consolidated financial position over the period 2010 – 2019

in million euro	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets										
Intangible assets	10,890	10,835	17,688	15,934	16,341	18,183	17,424	17,670	17,459	17,769
Property, plant and equipment (PP&E)	7,687	7,860	8,844	8,454	8,718	9,552	9,232	11,117	11,359	13,269
Investments in associates and joint ventures	1,673	1,764	1,950	1,883	2,033	1,985	2,166	1,841	2,021	4,868
Loans and advances to customers	904	741	680	366	322	335	332	331	341	277
Deferred tax assets	542	474	550	508	661	958	1,011	768	626	647
Other non-current assets	648	745	731	697	669	787	1,019	1,059	1,220	1,255
Total non-current assets	**22,344**	**22,419**	**30,443**	**27,842**	**28,744**	**31,800**	**31,184**	**32,786**	**33,026**	**38,085**
Inventory	1,206	1,352	1,596	1,512	1,634	1,702	1,618	1,814	1,920	2,213
Other investment	17	14	11	11	13	16	-	-	-	-
Trade and other receivables	2,273	2,260	2,537	2,427	2,743	2,873	3,052	3,496	3,448	3,766
Prepayment	206	170	232	218	317	343	328	399	382	385
Current tax assets	-	-	-	-	23	33	47	64	71	123
Cash and cash equivalents	610	813	1,037	1,290	668	3,232	3,035	2,442	2,903	1,821
Assets classified as held for sale	6	99	124	37	688	123	57	33	401	111
Total current assets	**4,318**	**4,708**	**5,537**	**5,495**	**6,086**	**8,322**	**8,137**	**8,248**	**9,125**	**8,419**
Total assets	**26,662**	**27,127**	**35,980**	**33,337**	**34,830**	**40,122**	**39,321**	**41,034**	**42,151**	**46,504**
Liabilities and Equity										
Shareholder's equity	9,932	9,774	11,734	11,402	12,409	13,535	13,238	13,321	14,525	16,147
Non-controlling interests	288	318	1,071	954	1,043	1,535	1,335	1,200	1,183	1,164
Total equity	**10,220**	**10,092**	**12,805**	**12,356**	**13,452**	**15,070**	**14,573**	**14,521**	**15,708**	**17,311**
Borrowings, non-current	8,078	8,199	11,437	9,853	9,499	10,658	10,954	12,301	12,628	13,366
Tax liabilities	178	160	140	112	3	3	3	-	-	-
Post-retirement obligations	1,097	1,174	1,575	1,202	1,443	1,289	1,420	1,289	954	1,189
Provisions	475	449	419	367	398	320	302	970	833	756
Deferred tax liabilities	991	894	1,792	1,444	1,503	1,858	1,672	1,495	1,431	1,422
Other non-current liabilities	-	-	-	-	-	-	-	-	168	153
Total non-current liabilities	**10,819**	**10,876**	**15,363**	**12,978**	**12,846**	**14,128**	**14,351**	**16,055**	**16,014**	**16,886**
Bank overdrafts and commercial papers	132	207	191	178	595	2,950	1,669	1,265	655	1,134
Borrowings, current	862	981	1,863	2,195	1,671	1,397	1,981	1,947	1,703	2,552
Trade and other payables	3,831	4,134	4,773	4,624	4,953	5,407	5,596	6,149	6,961	7,589
Returnable packaging deposits	434	490	512	507	580	606	628	607	569	565
Provisions	123	140	129	171	165	154	154	178	164	184
Current tax liabilities	241	207	305	317	390	379	352	310	245	283
Liabilities associated with assets held for sale	-	-	39	11	178	31	17	2	132	-
Total current liabilities	**5,623**	**6,159**	**7,812**	**8,003**	**8,532**	**10,924**	**10,397**	**10,458**	**10,429**	**12,307**
Total equity and liabilities	**26,662**	**27,127**	**35,980**	**33,337**	**34,830**	**40,122**	**39,321**	**41,034**	**42,151**	**46,504**

(Source: Heineken's annual reports)

Exhibit 5 and 6 are the income statement and consolidated financial position prepared and reported by Heineken over the period 2010 – 2019. All of the analyses that follow will be based on the information provided in these financial statements.

5.2.2. Restructuring of the financial statements

In this section, the information provided by Heineken's reported financial statements will be restructured and analyzed, in a manner that is consistent with the frameworks outlined earlier, with the purpose of identifying the company's historical invested capital, NOPLAT and ultimately its free cash flows. Moreover, these analyses form a solid basis for the historical financial performance analysis outlined in the next section.

5.2.2.1. A detailed version of the financial position statement

In the financial position statement prepared by Heineken, there are many accounts that contain both operating and non-operating items. Thus, it is necessary to break them down before grouping operating assets and liabilities together in order to accurately determine the company's invested capital. This is where the detailed version of the balance sheet comes in. By carefully going through the accompanying notes, accounts with such mixture have been identified and broken down into its components. Exhibit 7 presents all of Heineken's assets and liabilities that can readily be determined to be operating or non-operating. This table is the foundation for identifying the company's invested capital outlined in the next section. There are five main accounts that have been broken down into their components: intangible assets, loans and advances to customers, trade and other receivables, cash and cash equivalent, trade and other payables.

Intangible assets reported by Heineken contains goodwill, brands, software, customer-related intangibles such as customer lists and contract-based intangible. Apart from the software which can be separately purchased or internally developed when necessary, other intangible assets other than goodwill are grouped as acquired intangible assets, reflecting the fact that these assets can only arise in the event of business combinations (acquisitions). Since the characteristics and accounting treatments of goodwill and acquired intangibles differ from those of software, they should be separated and treated differently. A detailed treatment of them will be discussed in the following section.

"Loans and advances to customers" consists of traditional interest-bearing loans that Heineken lends to its customers to finance their purchases of Heineken's products and advances of sales discount to customers based on their annual performance. These advances do not carry any interest, and their settlements take place in the form of reduced sales discounts to customers. In essence, advances to customers share the same economic characteristics with the trade receivables account and, thus, should be considered as operating. By contrast, loans to customers should be viewed as non-operating due to their embedded financial elements. These loans are included in the "Other non-current asset" account, which also contains loans to joint-ventures and associates, derivatives, and lease receivables.

Apart from traditional trade receivables, "trade and other receivables" account also contains other receivables and derivatives which Heineken uses to hedge its operational risks such as

currency and commodity risks. Since other receivables stem from the company's contract brewing and royalty fees, which are recognized in the company's consolidated revenue, they should be considered as operating. By contrast, derivatives should be viewed as non-operating, and this classification can help avoid wild fluctuations in the performance that are not caused by underlying conditions but instead by external factors such as wild exchange rate movements.

Exhibit 7: Detailed version of Heineken's financial position over the period 2010 - 2019

in million euro	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets										
Goodwill	7,313	7,530	10,743	10,016	10,396	11,324	11,029	11,205	11,194	11,465
Acquired intangibles	3,441	3,170	6,722	5,700	5,764	6,624	6,128	6,151	5,863	5,820
Goodwill and acquired intangibles	10,754	10,700	17,465	15,716	16,160	17,948	17,157	17,356	17,057	17,285
Software, etc.	136	135	223	218	181	235	267	314	402	484
PP&E	7,687	7,860	8,844	8,454	8,718	9,552	9,232	11,117	11,359	13,269
Investments in associates and joint ventures	1,673	1,764	1,950	1,883	2,033	1,985	2,166	1,841	2,021	4,868
Advances to customers	449	357	312	301	254	266	274	277	289	222
Deferred tax assets	542	474	550	508	661	958	1,011	768	626	647
Minority interest in other entities	190	264	327	247	253	287	427	481	501	408
Other non-current assets	913	865	772	515	484	569	650	632	771	902
Total non-current assets	**22,344**	**22,419**	**30,443**	**27,842**	**28,744**	**31,800**	**31,184**	**32,786**	**33,026**	**38,085**
Inventory	1,206	1,352	1,596	1,512	1,634	1,702	1,618	1,814	1,920	2,213
Other investment	17	14	11	11	13	16	-	-	-	-
Trade receivables	1,680	1,657	1,944	1,804	2,017	2,169	2,283	2,582	2,588	2,913
Other receivables	481	524	529	556	580	625	701	672	817	813
Trade receivables from associates and joint ventures	102	42	27	22	24	27	20	23	8	12
Derivatives	10	37	37	45	122	52	48	219	35	28
Prepayment	206	170	232	218	317	343	328	399	382	385
Current tax assets	-	-	-	-	23	33	47	64	71	123
Operating cash	323	342	368	384	385	410	416	432	450	479
Excess cash	287	471	669	906	283	2,822	2,619	2,010	2,453	1,342
Assets classified as held for sale	6	99	124	37	688	123	57	33	401	111
Total current assets	**4,318**	**4,708**	**5,537**	**5,495**	**6,086**	**8,322**	**8,137**	**8,248**	**9,125**	**8,419**
Total assets	**26,662**	**27,127**	**35,980**	**33,337**	**34,830**	**40,122**	**39,321**	**41,034**	**42,151**	**46,504**
Liabilities and Equity										
Shareholder's equity	9,932	9,774	11,734	11,402	12,409	13,535	13,238	13,321	14,525	16,147
Non-controlling interests	288	318	1,071	954	1,043	1,535	1,335	1,200	1,183	1,164
Total equity	**10,220**	**10,092**	**12,805**	**12,356**	**13,452**	**15,070**	**14,573**	**14,521**	**15,708**	**17,311**
Borrowings, non-current	8,078	8,199	11,437	9,853	9,499	10,658	10,954	12,301	12,628	13,366
Tax liabilities	178	160	140	112	3	3	3	-	-	-
Post-retirement obligations	1,097	1,174	1,575	1,202	1,443	1,289	1,420	1,289	954	1,189
Provisions	475	449	419	367	398	320	302	970	833	756
Deferred tax liabilities	991	894	1,792	1,444	1,503	1,858	1,672	1,495	1,431	1,422
Other non-current liabilities	-	-	-	-	-	-	-	-	168	153
Total non-current liabilities	**10,819**	**10,876**	**15,363**	**12,978**	**12,846**	**14,128**	**14,351**	**16,055**	**16,014**	**16,886**
Bank overdrafts and commercial papers	132	207	191	178	595	2,950	1,669	1,265	655	1,134
Borrowings, current	862	981	1,863	2,195	1,671	1,397	1,981	1,947	1,703	2,552
Trade payables	1,660	2,009	2,244	2,140	2,339	2,797	2,934	3,430	4,016	4,720
Deferred income and Discount accruals	909	920	1,162	1,047	1,211	1,270	1,263	1,344	1,334	1,386
Interest payable	97	100	204	188	132	131	129	168	164	147
Dividend payable	53	33	47	36	45	46	45	30	19	12
Other payables	950	908	1,063	1,064	1,122	1,074	1,150	1,156	1,358	1,255
Derivatives	162	164	53	149	104	89	75	21	70	69
Returnable packaging deposits	434	490	512	507	580	606	628	607	569	565
Provisions	123	140	129	171	165	154	154	178	164	184
Current tax liabilities	241	207	305	317	390	379	352	310	245	283
Liabilities associated with assets held for sale	-	-	39	11	178	31	17	2	132	-
Total current liabilities	**5,623**	**6,159**	**7,812**	**8,003**	**8,532**	**10,924**	**10,397**	**10,458**	**10,429**	**12,307**
Total equity and liabilities	**26,662**	**27,127**	**35,980**	**33,337**	**34,830**	**40,122**	**39,321**	**41,034**	**42,151**	**46,504**

(Source: Heineken's annual reports)

"Cash and cash equivalents" contain both operating cash that is essential for conducting the core business and excess cash that is the result of Heineken amassing cash holdings for future plans such as new investments or financial cushion for uncertainties. The detail of how to separate them from the cash account will be discussed later in the following section.

"Trade and other payables" account contain various non-operating items. Apart from trade payables, deferred income, and discounts, it also contains interest payable that has been accrued but not yet paid, dividend payable that has been announced but not yet delivered, derivatives, and other payables. Since a large part of other payables is taxation and social security contribution, this account is assumed to be operating.

5.2.2.2. Invested Capital

Exhibit 8: Heineken's invested capital over the period 2010 – 2019

in million euro	NOTE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating cash	1	323	342	368	384	385	410	416	432	450	479
Inventory		1,206	1,352	1,596	1,512	1,634	1,702	1,618	1,814	1,920	2,213
Trade receivables		1,782	1,699	1,971	1,826	2,041	2,196	2,303	2,605	2,596	2,925
Other receivables		481	524	529	556	580	625	701	672	817	813
Prepayment		206	170	232	218	317	343	328	399	382	385
Current tax assets		-	-	-	-	23	33	47	64	71	123
Trade payables		(1,660)	(2,009)	(2,244)	(2,140)	(2,339)	(2,797)	(2,934)	(3,430)	(4,016)	(4,720)
Deferred income and Discount accruals		(909)	(920)	(1,162)	(1,047)	(1,211)	(1,270)	(1,263)	(1,344)	(1,334)	(1,386)
Returnable packaging deposits		(434)	(490)	(512)	(507)	(580)	(606)	(628)	(607)	(569)	(565)
Other payables		(950)	(908)	(1,063)	(1,064)	(1,122)	(1,074)	(1,150)	(1,156)	(1,358)	(1,255)
Current tax liabilities		(241)	(207)	(305)	(317)	(390)	(379)	(352)	(310)	(245)	(283)
Operating working capital		(196)	(447)	(590)	(579)	(662)	(817)	(914)	(861)	(1,286)	(1,271)
PP&E		7,687	7,860	8,844	8,454	8,718	9,552	9,232	11,117	11,359	12,230
Operating leased assets	2	269	313	384	436	618	693	908	1,060	1,252	1,039
PP&E, inlcuding leased assets		7,956	8,173	9,228	8,890	9,336	10,245	10,140	12,177	12,611	13,269
Software, etc.		136	135	223	218	181	235	267	314	402	484
Advances to customers		449	357	312	301	254	266	274	277	289	222
Invested capital, excluding goodwill and acquired intangibles		***8,345***	***8,218***	***9,173***	***8,830***	***9,109***	***9,929***	***9,767***	***11,907***	***12,016***	***12,704***
Goodwill and acquired intangibles		10,754	10,700	17,465	15,716	16,160	17,948	17,157	17,356	17,057	17,285
Adjusted accumulated amortization and impairment	4	4,099	4,510	4,745	6,169	5,563	5,489	6,353	7,925	8,151	8,084
Gross-up tax effect	5	(816)	(819)	(1,722)	(1,506)	(1,601)	(1,852)	(1,846)	(1,872)	(1,991)	(2,067)
Total net goodwill and acquired intangibles invested	3	14,038	14,391	20,488	20,380	20,123	21,585	21,664	23,409	23,218	23,303
Invested capital, including goodwill and acquired intangibles		***22,382***	***22,610***	***29,661***	***29,210***	***29,231***	***31,514***	***31,431***	***35,316***	***35,233***	***36,007***
Investments in associates and joint ventures		1,673	1,764	1,950	1,883	2,033	1,985	2,166	1,841	2,021	4,868
Minority interest in other entities		190	264	327	247	253	287	427	481	501	408
Other financial assets	6	606	691	712	336	1,022	637	660	861	837	819
Tax loss carry-forwards	5	213	237	238	220	177	364	391	460	407	410
Excess cash	1	287	471	669	906	283	2,822	2,619	2,010	2,453	1,342
Total capital invested		**25,352**	**26,036**	**33,558**	**32,801**	**32,999**	**37,609**	**37,694**	**40,969**	**41,453**	**43,854**
Shareholder's equity		9,932	9,774	11,734	11,402	12,409	13,535	13,238	13,321	14,525	16,147
Adjusted accumulated amortization and impairment	4	4,099	4,510	4,745	6,169	5,563	5,489	6,353	7,925	8,151	8,084
Gross-up tax effects released	5	(89)	(137)	(187)	(272)	(344)	(423)	(500)	(580)	(660)	(738)
Dividend payable		53	33	47	36	45	46	45	30	19	12
Deferred tax liabilities, net of assets, operating	5	437	486	607	517	508	527	450	427	440	670
Deferred tax liabilities, net of assets, non operating	5	(502)	(511)	(662)	(595)	(746)	(692)	(744)	(532)	(559)	(814)
Total shareholders' equity		13,931	14,155	16,284	17,258	17,436	18,482	18,842	20,591	21,917	23,362
Non-controlling interests		288	318	1,071	954	1,043	1,535	1,335	1,200	1,183	1,164
Borrowings, current		994	1,188	2,054	2,373	2,266	4,347	3,650	3,212	2,358	3,686
Interest payable		97	100	204	188	132	131	129	168	164	147
Borrowings, non-current		8,078	8,199	11,437	9,853	9,499	10,658	10,954	12,301	12,628	13,366
Lease liabilities	2	269	313	384	436	618	693	908	1,060	1252	- *
Post-retirement obligations		1,097	1,174	1,575	1,202	1,443	1,289	1,420	1,289	954	1,189
Provisions		598	589	548	538	563	474	456	1,148	997	940
Total capital provided		**25,352**	**26,036**	**33,558**	**32,801**	**32,999**	**37,609**	**37,694**	**40,969**	**41,453**	**43,854**

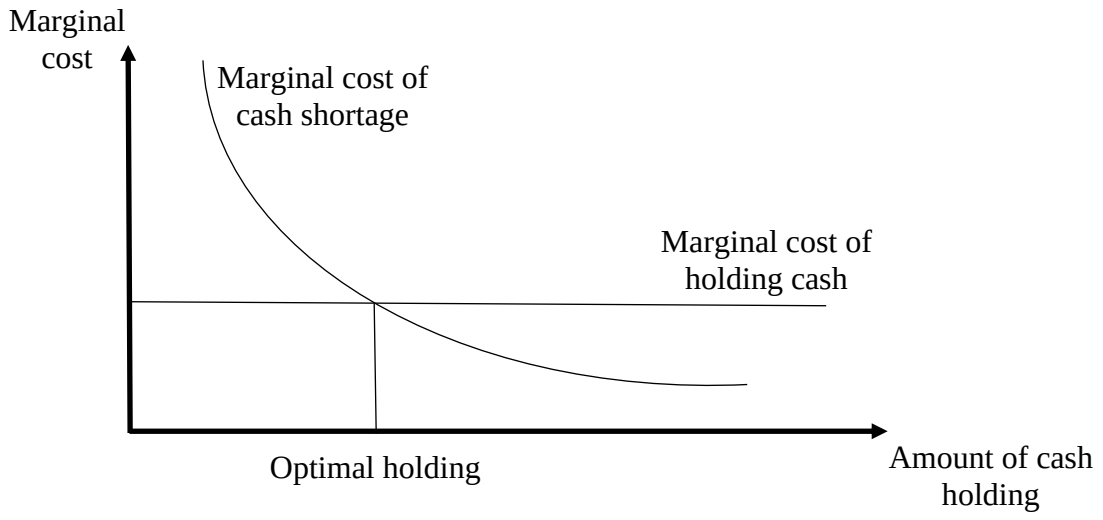
* *The lease liabilities are already included in current and non-current borrowings*

Invested capital is determined by grouping all operating assets and liabilities that are essential for Heineken's core operation, which is the production and sale of beer products to generate revenues and incomes. Built upon the detailed financial position statement, exhibit 8 outlines the assets and liabilities that are considered as operating, and, ultimately, the company's invested capital. However, there are many items in the exhibit that are not shown in the detailed financial position statement. Such items will be shed light on in different notes to the exhibit. At the end of the exhibit, the reconciliation between the total capital invested and provided is shown as a check on the validity of the work.

- **Note 1: Operating and excess cash**

While operating cash is an integral part of Heineken's core operation, excess cash is merely the result of the company amassing its cash holdings for various reasons. They are economically different and need to be distinguished from one another. Unfortunately, the company does not report them separately but instead combines them under "cash and cash equivalents" account. It is, therefore, necessary to break it down into its operating and non-operating components.

Opler et al. (1999) suggest that the optimal cash holding is the amount that equates the marginal cost of cash shortage and the marginal cost of holding cash (graph below). The cost of cash shortage stems from the company's actions to tackle its need for cash such as the sale of assets, raising capital in the financial market, cutting dividends, and potential investments—the greater the shortage, the greater the cost. By contrast, the cost of holding cash mainly refers to the opportunity cost for not investing it somewhere else. The model indicates that companies that experience volatile cash flows in their operation need to keep a higher amount of cash holding on their balance sheets compared to those that have stable cash flows. This is because they usually face a higher cost of cash shortage.



Since the beer industry is quite stable, the required amount of operating cash that Heineken needs to hold is assumed to be 2% of revenue. Exhibit 9 shows the break-down of Heineken's "cash and cash equivalent" account by its operating and non-operating components.

Exhibit 9: Estimation of Heineken's operating and excess cash over the period 2010 – 2019

in million eruo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating cash*	323	342	368	384	385	410	416	432	450	479
Excess cash	287	471	669	906	283	2,822	2,619	2,010	2,453	1,342
Total cash and bank balances	610	813	1,037	1,290	668	3,232	3,035	2,442	2,903	1,821

** Estimated at 2% of total revenue*

(Source: Heineken's annual reports)

❖ **Note 2: Operating leased assets**

Besides its own assets, Heineken also leases various assets such as stores, pubs, offices, warehouses, cars, forklift trucks, and other equipment in the ordinary course of business. As of 2019, the company had approximately 30,000 leases with a wide range of different terms and conditions. Before 2019, according to the accounting standard that Heineken adopts (IFRS), a good chunk of these leases was not shown on the balance sheet because they were designated as operating leases. Only the leases that were considered financial, were recognized and treated in a similar manner as the company's property, plant, and equipment. Nevertheless, from 2019 onwards, operating leases will be treated in the same manner as financial leases, with certain exceptions for short-term and low-value leases (Ernst and Young, 2019).

Economically, operating and financial leases share the same substance. They both work as if the company took out loans which it used to buy assets simultaneously. Therefore, the exclusion of operating leases tends to understate the invested capital required and, thus, distort the understanding of the company's financial performance. Furthermore, although Heineken did recognize operating leases on its balance sheet in 2019, it did not do so before that. This practice makes comparisons of invested capital among different years unreliable. Hence, the value of operating leases needs to be determined and added to Heineken's balance sheet over the period 2010 – 2018.

Since Heineken does not disclose the value of its operating leases before 2018, estimations based on the best available information provided by the company need to be made. Specifically, the value of operating leases is determined by discounting the company's lease

commitments at its incremental borrowing cost. This approach is in line with that suggested by the IFRS.

In its annual report 2019, Heineken claims that its incremental borrowing cost is 4.3% as of 1 January 2019. This cost is assumed to represent the incremental borrowing cost that the company faced over the period 2010 – 2018 since Heineken is believed to have not changed its financial risk profile substantially since 2010. Furthermore, lease commitments are reported on intervals instead of a yearly basis, making the discounting challenging (exhibit 10). To overcome this, the value of operating leases is estimated by discounting the sum of total lease commitments at Heineken's incremental borrowing cost for an estimated average number of years over which the commitments will be settled.

Exhibit 10: Estimation of Heineken's operating lease value over the period 2010 – 2018

Lease commitment (in million eruo)	2010	2011	2012	2013	2014	2015	2016	2017	2018
Less than 1 year	85	124	143	191	155	150	231	269	307
1-5 years	214	258	302	330	319	415	552	645	767
More than 5 years	134	121	173	180	519	549	677	790	939
Total lease commitments	433	503	618	701	993	1,114	1,460	1,704	2,013
Estimated incremental borrowing cost	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
Power to which lease commitments are discounted	11.28	11.28	11.28	11.28	11.28	11.28	11.28	11.28	11.28
Estimated leased asset value	269	313	384	436	618	693	908	1,060	1,252
Rental expense as reported	224	241	264	282	291	301	302	308	321
Depreciation	215	229	251	265	272	274	272	269	275
Leased interest expense	9	12	13	17	19	27	30	39	46

(Source: Heineken's annual reports)

Heineken reported the value of its operating leases as 1,252 million euros at the end of 2018. This value, along with the total amount of lease commitments and the company incremental borrowing cost, is used to estimate the average number of years over which Heineken is expected to fulfill its commitments. This average number of years is assumed to be also applicable to the years from 2010 to 2017. Exhibit 10 illustrates the estimation of the value of Heineken's operating leases. Because of the new regulation introduced by the IFRS, the value of operating leases in 2019 was already reported by the company and, thus, does not require any further treatment.

Another important aspect of operating leases is their associated depreciation and interests. The rental expenses for an operating lease can be viewed as payments by the lessee to compensate the lessor for the depreciation of the leased asset and the fact that the lessor has to forgo the benefits stemming from utilizing the leased asset (interest). The interest component is estimated by applying the company's incremental borrowing cost to the value of operating leases in the previous year. The depreciation component is then determined by taking the

difference between the rental expense and interest component. For instance, the leased interest in 2018 was equal to 46 million euros (4.3% * 1,060), and the leased depreciation was 275 million euros (= 321 – 46).

Because operating leases are economically similar to taking out loans to buy assets, the value of operating leases should be added to the asset side, while the corresponding lease liability to the liability side of the company's balance sheet. Furthermore, the depreciation component of the rental expenses is considered as operating in the income statement, while the interest component as non-operating. This classification will be used for the NOPLAT calculation in the next section.

- **Note 3: Goodwill and acquired intangible assets**

In essence, goodwill and acquired intangible assets reflect the management's assessment of the value of synergies and future prospects of target companies stemming from the acquisitions. Hence, they have little-to-no relevance to the level of invested capital required for the company to conduct its underlying business. In fact, invested capital with goodwill and acquired intangible assets is useful for appraising the management's ability to make good deals for the company, while invested capital without them is more relevant and insightful for forecasting the company's future performance and, consequently, its valuation. To get a holistic view of Heineken's core business's performance and its management's ability as a deal maker, both invested capital with and without the goodwill and acquired intangible assets are determined.

The costs of goodwill and acquired intangible assets that Heineken has invested are calculated by adding back accumulated amortization and impairment to their book values and taking out any gross-up tax effects. The treatments of these two adjustments will be discussed in more detail in note 4 and 5. The rationale behind this calculation approach is that the assessment of whether the company has created much value after paying premium prices should be based on the real money paid for those assets, not their book values.

To better understand and facilitate the application of the above calculation approach, a concrete formula for determining the real costs of goodwill and acquired intangible assets may be helpful. It starts with an accounting equation for the intangible assets (both goodwill and acquired intangible assets) reported by Heineken:

$$\textbf{Carrying amount}_t - \textbf{Carrying amount}_{t-1} = \textbf{Net investment}_t + \textbf{Net currency effect}_t - (\textbf{Amortization}_t + \textbf{Net impairment}_t)$$

Where:

Carrying amount$_t$ is the carrying amount of intangible assets at the end of year t.

Net investment$_t$ is the total net amount of intangible assets invested during year t.

Net currency effect$_t$ is the difference between currency effect attributable to the cost side and currency effect attributable to the "accumulated impairment and amortization" side of the "intangible assets" account during year t.

Amortization$_t$ is the amount of amortization incurred during year t.

Net impairment$_t$ is the net impairment loss that occurred during year t.

Applying the above equation to each and every year from when the company first recognized its first intangible assets (t = 0), and then adding them together leads to the following:

$$\sum_{t=0}^{t=n} \textbf{Carrying amount}_t - \textbf{Carrying amount}_{t-} = \sum_{t=0}^{t=n} \textbf{Net investment}_t + \sum_{t=0}^{t=n} \textbf{Net currency effect}_t - \sum_{t=0}^{t=n} (\textbf{Amortization}_t + \textbf{Net impairment}_t)$$

Simplifying the left-hand side of the equation and solving for net investment lead to:

$$\sum_{t=0}^{t=n} \textbf{Net investment}_t = \textbf{Carrying amount}_n + \sum_{t=0}^{t=n} (\textbf{Amortization}_t + \textbf{Net impairment}_t) - \sum_{t=0}^{t=n} \textbf{Net currency effect}_t \quad \textbf{(5)}$$

The left-hand side of formula (5) is the total gross amount of goodwill and acquired intangible assets recognized until year n. However, the figure also embeds gross-up tax effects, which need to be removed to derive the actual amount of real money the company has invested up to year n. This actual amount is displayed as "Total net goodwill and acquired intangibles invested" in exhibit 8.

Gross-up tax effects exist because of accounting treatments suggested by the IFRS. Specifically, when an intangible asset that is not tax-deductible (tax base = 0) is acquired in a business combination, the amount of deferred tax liability associated with the asset has to be recognized. This increase in liability has to be balanced by an equivalent increase in assets.

Thus, upon recognition, the value of the intangible asset increases by the same amount of the deferred tax liability recognized (gross-up effects). This increased amount will be drawn down with the recognized deferred tax liability over time. As a result, the company recognized the asset at an artificially higher amount even though no real cash was laid out.

- **Note 4: Adjusted accumulated impairment and amortization of goodwill and acquired intangibles**

Adjusted accumulated impairment and amortization consists of the last two terms on the right-hand side of formula (5), as shown in exhibit 11 and 12. Heineken has changed its accounting treatments of goodwill and acquired intangible assets over time. Before 2005, any premium prices Heineken paid for acquiring businesses were recognized under goodwill. However, from 2005 onwards, other acquired intangible assets such as brands and customer lists have been recognized separately. Furthermore, goodwill was subject to annual amortization in 2003 and 2004 before Heineken adopted IFRS, while it was directly written off from equity before that. All of these changes are taken into consideration, as shown in exhibit 12.

Exhibit 11: Adjusted accumulated impairment and amortization of goodwill and acquired intangibles over the period 2010 – 2019

in million eruo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Amortization of acquired intangible assets	158	193	200	339	288	317	310	320	317	312
Impairment of acquired intangible assets	16	1	-	5	2	3	12	(11)	-	12
Impairment of goodwill	-	-	7	94	16	-	-	-	20	6
Net currency effect	150	(217)	(28)	(986)	912	394	(542)	(1,263)	111	397
Accumulated net currency effect	(248)	(465)	(493)	(1,479)	(567)	(173)	(715)	(1,978)	(1,867)	(1,470)
Accumulated amortization and impairment of acquired intangible assets & goodwill	3,851	4,045	4,252	4,690	4,996	5,316	5,638	5,947	6,284	6,614
Accumulated net currency effect	248	465	493	1,479	567	173	715	1,978	1,867	1,470
Adjusted accumulated amortization and impairment of acquired intangible assets & goodwill	4,099	4,510	4,745	6,169	5,563	5,489	6,353	7,925	8,151	8,084

(Source: Heineken's annual reports)

Exhibit 12: Adjusted accumulated impairment and amortization of goodwill and acquired intangibles before 2010

in million eruo	Before 2003	2003-2004	2005	2006	2007	2008	2009
Amortization of acquired intangible assets	-	-	8	11	8	72	97
Amortization of goodwill	-	117	-	-	-	-	-
Goodwill directly written off from equity	3,027	-	-	-	-	-	-
Impairment of acquired intangible assets	-	-	1	1	3	-	24
Impairment of goodwill	-	-	14	17	1	275	1
Net currency effect	-	-	12	6	(23)	(527)	134
Accumulated net currency effect	-	-	12	18	(5)	(532)	(398)
Accumulated amortization and impairment of acquired intangible assets & goodwill	3,027	3,144	3,167	3,196	3,208	3,555	3,677
Accumulated net currency effect	-	-	(12)	(18)	5	532	398
Adjusted accumulated amortization and impairment of acquired intangible assets & goodwill	3,027	3,144	3,155	3,178	3,213	4,087	4,075

(Source: Heineken's annual reports and Koller et al., 2015)

In this paper, the total amount of goodwill directly written off from equity before 2003 was based on the work of Koller et al. (2015), who estimated the amount to be around 3 billion euros by adding up all the annual goodwill write-offs (net of reversals) since 1980.

❖ **Note 5: Gross-up tax effects and deferred tax**

Gross-up tax effects consist of two parts: the amount that has already been drawn down with the deferred tax liability in the form of amortization, and the amount that has yet to be released. The released amount is estimated as the product of the marginal tax rate facing Heineken (25%) and the company's accumulated amortization of intangible assets. By contrast, the amount that has not been drawn down is estimated to be equal to the amount of deferred tax liability attributable to intangible assets reported by Heineken, since the majority of the company's intangible assets are those only arising through business combinations. Exhibit 13 illustrates the estimation of the gross-up tax effects.

Exhibit 13: Estimation of gross-up tax effects for the period 2010 – 2019

in million eruo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Accumulated amortization of intangibles	354	547	747	1,086	1,374	1,691	2,001	2,321	2,638	2,950
Accumulated gross-up tax effect released	89	137	187	272	344	423	500	580	660	738
Deferred tax liabilities, net of assets, intangibles	727	682	1,535	1,234	1,257	1,429	1,346	1,292	1,331	1,329
Gross-up tax effects	816	819	1,722	1,506	1,601	1,852	1,846	1,872	1,991	2,067

(Source: Heineken's annual reports)

With regard to deferred taxes, since the assets and liabilities that have given rise to deferred taxes may be different in terms of economic substance, break-downs of deferred tax assets/liabilities are necessary. Exhibit 14 shows such break-downs. Tax losses carried forward that arise from previous unprofitable activities is one of the valuable non-operating assets for Heineken. It needs to be separated from other deferred taxes and treated separately. By contrast, deferred tax liabilities attributable to intangible assets are merely the result of accounting conventions and should be treated as part of the gross-up tax effects. Furthermore, while deferred taxes attributable to both operating assets such as PP&E and inventory and non-operating accounts like provisions and employee defined-benefit liability are treated as equity equivalent, only those related to operating are useful when analyzing the company's financial performance. The treatment of operating deferred taxes will be outlined in note 10.

Exhibit 14: Break-down of Heineken's deferred taxes over the period 2010 – 2019

in million eruo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Tax loss carry-forwards	213	237	238	220	177	364	391	460	407	410
Deferred tax liabilities, net of assets, PP&E and Inventory	437	486	607	517	508	527	450	427	440	670
Deferred tax liabilities, net of assets, non-operating	(502)	(511)	(662)	(595)	(746)	(692)	(744)	(532)	(559)	(814)
Deferred tax liabilities, net of assets, intangibles	727	682	1,535	1,234	1,257	1,429	1,346	1,292	1,331	1,329
Deferred tax liabilities, net of assets	449	420	1,242	936	842	900	661	727	805	775

(Source: Heineken's annual reports)

❖ **Note 6: Other financial assets**

Other financial assets mainly include "other non-current assets," short-term derivatives, and "assets held for sales." Among these accounts, the most significant is "other non-current assets," which contains loans to customers, joint-ventures and associates, long-term derivatives, and lease receivables. A detailed break-down of this account is shown in exhibit 15. As of 2019, the book value of this account reached 819 million euros. Although it is not considered as operating and, thus, excluded from the analysis and valuation of Heineken's core business, the account carries a tremendous value that needs to be appraised separately and added to the value of the core business, along with other non-operating assets, to derive the total enterprise value.

Exhibit 15: Break-down of "Other financial assets" account

in million eruo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other non-current assets	913	865	772	515	484	569	650	632	771	902
Other investment	17	14	11	11	13	16	-	-	-	-
Derivatives, assets (current)	10	37	37	45	122	52	48	219	35	28
Derivatives, liabilities (current)	(162)	(164)	(53)	(149)	(104)	(89)	(75)	(21)	(70)	(69)
Tax liabilities associated with FEMSA	(178)	(160)	(140)	(112)	(3)	(3)	(3)	-	-	-
Assets classified as held for sale, net liabilities	6	99	85	26	510	92	40	31	269	111
Other non-current liabilities	-	-	-	-	-	-	-	-	(168)	(153)
Other financial assets, net	606	691	712	336	1,022	637	660	861	837	819

(Source: Heineken's annual reports)

5.2.2.3. Net operating profit less adjusted tax (NOPLAT)

Exhibit 16: Calculation of Heineken's net operating profit less adjusted tax (NOPLAT)

in million euro	NOTE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net revenue		16,133	17,123	18,383	19,203	19,257	20,511	20,792	21,609	22,489	23,969
Raw materials, consumables and services		(10,291)	(10,966)	(11,849)	(12,186)	(12,053)	(12,931)	(13,003)	(13,261)	(14,001)	(14,592)
Rental expense		224	241	264	282	291	301	302	308	321	-
Restructuring expenses, others		4	28	62	19	10	16	42	11	11	7
Other provision expenses, net of reversals		121	(3)	14	25	41	(32)	31	(27)	24	(45)
Acquisition and integration cost		80	-	28	-	-	-	8	72	-	-
Adjusted raw materials, consumables and services	8	*(9,862)*	*(10,700)*	*(11,481)*	*(11,860)*	*(11,711)*	*(12,646)*	*(12,620)*	*(12,897)*	*(13,645)*	*(14,630)*
Personnel expenses		(2,665)	(2,838)	(3,031)	(3,108)	(3,080)	(3,322)	(3,263)	(3,550)	(3,749)	(3,880)
Expenses relating to defined benefit plan, as reported		89	56	20	41	(31)	78	88	59	105	78
Current service cost and administration expense		(80)	(74)	(63)	(83)	(79)	(89)	(88)	(89)	(92)	(84)
Restructuring expenses relating to personnel		35	53	35	80	101	90	38	82	111	84
Adjusted personnel expenses	9	*(2,621)*	*(2,803)*	*(3,039)*	*(3,070)*	*(3,089)*	*(3,243)*	*(3,225)*	*(3,498)*	*(3,625)*	*(3,802)*
Depreciation of PP&E		(893)	(936)	(1,017)	(1,073)	(1,080)	(1,151)	(1,163)	(1,172)	(1,155)	(1,488)
Depreciation of operating leased assets	2	(212)	(229)	(251)	(265)	(272)	(274)	(272)	(269)	(275)	- *
Depreciation of PP&E, inlcuding leased assets		(1,105)	(1,165)	(1,268)	(1,338)	(1,352)	(1,425)	(1,435)	(1,441)	(1,430)	(1,488)
Amortisation of software, etc.		(34)	(36)	(47)	(37)	(43)	(51)	(58)	(60)	(67)	(87)
Depreciation & amortization, operating fixed assets		*(1,139)*	*(1,201)*	*(1,315)*	*(1,375)*	*(1,395)*	*(1,476)*	*(1,493)*	*(1,501)*	*(1,497)*	*(1,575)*
Operating EBITA	7	2,511	2,419	2,548	2,898	3,062	3,146	3,454	3,713	3,722	3,962
Operating cash taxes	10	(722)	(641)	(668)	(837)	(830)	(859)	(877)	(951)	(968)	(1,027)
NOPLAT		**1,788**	**1,778**	**1,880**	**2,060**	**2,231**	**2,286**	**2,576**	**2,762**	**2,753**	**2,936**

* *Depreciation of operating leased assets is already included in "Depreciation of PP&E"*

Net operating profit less adjusted tax (NOPLAT) is the after-tax profit generated by Heineken's core business, which is to produce and sell beer products. The tax embedded in NOPLAT is the amount of tax that the company has to pay on the operating incomes generated

by its core operation. This type of tax is termed as operating, and any taxes that are not operating are called non-operating. NOPLAT is an important input for calculating the company's underlying business's free cash flows. It also plays a crucial role in analyzing and forecasting the company's financial performance. The importance of NOPLAT will be shed light on the "Free cash flow" and "Historical financial performance analysis" sections.

Since NOPLAT is generated by the company's core business, any incomes and expenses that are not considered as stemming from operating assets/liabilities should be excluded from its calculation. Exhibit 16 shows the determination of NOPLAT for Heineken over the period 2010 – 2019. Adjustments have to be made for many of the accounts in the income statement reported by the company since they mix together operating and non-operating incomes/expenses. These adjustments are detailed in notes 8 – 10, as indicated in exhibit 16. But first, the choice of metric for calculating NOPLAT is discussed in note 7.

- **Note 7: Usage of earnings before interest, tax, and amortization (EBITA) metric**

The goal of determining Heineken's NOPLAT cannot be achieved with the usage of earnings before interests and taxes (EBIT) or earnings before interests, taxes, depreciation, and amortization (EBITDA) metric. Specifically, EBITDA metric goes as far as excluding depreciation from the calculation. However, since depreciation can be perceived as a proxy for the amount of property, plant, and equipment that need to be replaced through new purchases because of their natural wear and tear or economic usage, the exclusion of depreciation tends to overstate the company's NOPLAT and distort the understanding of its financial performance.

By contrast, although the EBIT metric does include depreciation of the company's property, plant, and equipment, it also includes amortization of intangible assets in the calculation, which may be problematic. The issue stems from different accounting treatments, according to IFRS, for intangible assets that are acquired either individually or with other assets as a group through business combination and those that are internally developed. While the costs of acquired intangible assets are, in essence, capitalized after the purchases, those of the majority of internally-developed intangible assets are usually expensed as incurred. For instance, expenditures on research, product design, brands, training, and development of customer relationships are usually expensed as incurred. However, if the company buys the same assets from third parties, it will be capitalized.

As for tangible assets, intangible assets also need to be continuously replaced and invested in order to maintain and expand the business. However, due to the accounting rules, any subsequent costs related to acquired intangible assets after the purchases are immediately expensed as incurred. EBIT metric fails to take this fact into consideration. By incorporating amortization of such acquired intangible assets, the company can be considered as incurring the same costs twice: one in the form of amortization and one in the form of operating expenses such as those relating to customers, marketing, brands, and research and development. As a result, the company's NOPLAT tends to be understated.

Nevertheless, there are some intangible assets such as computer systems and software for which the accounting treatment is similar to that for intangible assets. The subsequent costs intended for the replacement of or new investment in those assets are capitalized instead of expensed. Consequently, the amortization of such intangibles should be included in the calculation of NOPLAT.

For the reasons outlined above, earnings before interests, taxes, and certain amortization (EBITA) stand to be the most suitable metric for the determination of the company's NOPLAT. However, even when EBITA metric is used, there are a number of accounts on the income statement that contain both operating and non-operating components. This may lead to inaccuracies. In order to deal with this issue, adjustments need to be made for such accounts. The following notes will detail such adjustments.

- **Note 8: Adjusted raw materials, consumables, and services**

Exhibit 17: Break-down of "Raw materials, consumables, and services" expenses

in million euro	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Raw materials	1,474	1,576	1,892	1,868	1,782	1,616	1,646	1,817	1,897	2,068
Non-returnable packaging	1,863	2,075	2,376	2,502	2,551	3,049	3,187	3,375	3,624	4,058
Goods for resale	1,655	1,498	1,616	1,551	1,495	1,775	1,523	1,592	1,533	1,501
Inventory movements	(8)	(8)	(85)	2	(15)	(141)	(54)	(130)	(43)	(75)
Marketing and selling expenses	2,072	2,186	2,250	2,418	2,447	2,755	2,836	2,533	2,494	2,632
Transport expenses	979	1,056	1,029	1,031	1,050	1,139	1,100	1,177	1,266	1,325
Energy and water	442	525	562	564	548	517	476	513	529	572
Repair and maintenance	375	417	458	482	458	485	475	509	527	519
Other expenses*	1,439	1,641	1,751	1,768	1,737	1,736	1,814	1,875	2,174	1,992
Raw materials, consumables and services	**10,291**	**10,966**	**11,849**	**12,186**	**12,053**	**12,931**	**13,003**	**13,261**	**14,001**	**14,592**

*Other expenses include rentals (lease expenses), consultant expenses, telecom and office automation, warehousing expenses, travel expenses of €162 million and other taxes

(Source: Heineken's annual reports)

"Raw materials, consumables, and services" account consist of various types of expenses. The most significant ones are raw materials such as barleys and hops, water and energy, non-returnable packaging which is sold with the beer products, goods for resale which are usually beer products not produced by Heineken but sold via the company's retail stores, marketing,

distribution and selling expenses, repair and maintenance as well as various other expenses. Exhibit 17 illustrates the break-down of this account by different categories.

The majority of these expenses can be considered as operating since they are related directly to Heineken's core business. Expenses on such items as barleys and hops, water and energy, marketing, selling, and distribution are at the heart of the underlying business. Nevertheless, the company does mix together operating and non-operating expenses under the "Other expense" category. The most notable non-operating expense included is rental expenses that arise from operating leases. Before 2019, Heineken recorded the lump sums as operating expenses, which normally arose as part of the company's ordinary course of business, instead of breaking them down into depreciation and interest components as it did in 2019 after the new accounting treatment of lease assets had been adopted. Clearly, this treatment overstated the "Raw materials, consumables and services" expenses. Thus, rental expenses before 2019 are taken out of the account and treated in the way suggested in note 3. Specifically, the depreciation component will be added to the depreciation of PP&E, while the interest component is treated as non-operating.

Other non-operating expenses include those relating to i. restructuring activities that were carried out with the purpose of improving the company's operating efficiency; ii. provisions such as litigation, taxes, and onerous contracts; iii. acquisition and integration costs, such as legal fees, consulting fees, and employee training. These expenses are considered as unrelated to Heineken's core business and unlikely to reoccur repeatedly in the future. Thus, they should be removed from the account and treated as non-operating.

- **Note 9: Adjusted personnel expenses**

Personnel expenses encompass all expenses relating to Heineken's workforce, which contained 85,853 full-time equivalent employees, excluding contractors, as of 2019. The main component of this account is wages and salaries. In 2019, this type of cost accounted for more than 65% of the total "personnel expense" account reported by Heineken. There are also other operating expenses included in this account such as social security contribution; contributions to defined contribution plans; other long-term employee benefits, including long-term bonus plans, termination benefits, medical plans, and jubilee benefits; and equity-settled share-based payment plan which Heineken uses to motivate its employee and enhance their performance. Nevertheless, there are two categories that mix together operating and non-operating expenses. They are "expenses related to defined benefit plans" and "other expenses."

The expense relating to defined benefit plans that are recognized as part of the total personnel expenses contains current service costs attributable to the services rendered by its employee over the course of the fiscal year, past service costs which arise due to changes in the company's policy on employee benefit, administration expense that the plans have to pay the asset managers for their management service, and effect of any settlement which is the difference between the actual amount settled and the expected amount to be settled. The composition is illustrated in exhibit 18.

Exhibit 18: Break-down of expenses related to defined benefit plans

in million euro	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Current service cost	77	71	60	80	75	83	86	85	88	81
Past service cost	(9)	(5)	(43)	(42)	(103)	(9)	1	5	14	(1)
Administration expense	3*	3*	3	3	4	6	2	4	4	3
Effect of any settlement	(15)	(41)	-	-	(7)	(2)	(1)	(35)	(1)	(5)
Expense recognized in personnel expense	56	28	20	41	(31)	78	88	59	105	78

**Since Heineken did not disclose the information, the figure stated is estimated*

(Source: Heineken's annual reports)

Since past service cost and effect of any settlements are attributable to services rendered by the employee in the past and do not represent the actual expenses that the company has to pay its employee for their services in the current fiscal year, they should be considered as non-operating and excluded from the "personnel expense" account. Furthermore, in 2010 and 2011, Heineken also included interest expenses related to employee defined-benefit obligation in the "personnel expense" account. Thus, in order to remove these non-operating expenses, all expenses related to defined benefit plans that are recognized in the "personnel expense" account are subtracted, while the current service cost and administration expense are added back to the account, as shown in exhibit 16.

By contrast, the "other expenses" category in the "personnel expense" account does contain employee expenses that are related to the company's restructuring programs. The significant type of those expenses is compensation cost for severing employee contracts (lay-offs). Since it is unlikely that such restructuring schemes will repeatedly reoccur in the future, the restructuring-related employee expenses should be removed from the "personnel expense" account and treated as non-operating.

❖ Note 10: Operating cash taxes

➢ Operating tax

The amount of tax that goes into the NOPLAT calculation should not be the income tax reported by the company since it contains both operating and non-operating taxes attributable to the core and non-core business activities. It is only the operating taxes that are relevant in the determination of NOPLAT. Thus, it is necessary to determine the operating component in the income tax as reported.

Income tax = Operating taxes (core business) + Non-operating taxes (non-core business)

The ideal approach to directly calculating operating taxes is to apply appropriate tax rates to each and every operating item on the income statement and then sum them up. However, this method is impractical since the company does not disclose such detailed tax information. This reason gives rise to the second approach, which indirectly calculates operating taxes as the difference between income tax and its non-operating tax component. This method is made feasible by the tax reconciliation table provided by the company. The tax reconciliation table provides information about how Heineken's statutory tax rate is reconciled to the effective tax rate that the company actually has to pay on its reported net income to tax authorities. Exhibit 19 illustrates Heineken's tax reconciliation table over the period 2010 – 2019.

Exhibit 19: Heineken's tax reconciliation table

%	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Statutory tax rate	25.5	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Effect of tax rates in foreign jurisdictions	1.9	3.5	1.9	4.1	3.8	2.1	(0.4)	0.6	(0.1)	0.7
Effect of non-deductible expenses	4.0	3.2	1.9	4.6	2.7	2.6	2.9	2.6	2.3	3.2
Effect of tax incentives and exempt income	(8.2)	(6.0)	(14.0)	(8.3)	(4.0)	(7.6)	(2.8)	(3.4)	(3.2)	(3.8)
De-recognition/(recognition) of deferred tax assets	(1.3)	(0.8)	(1.3)	(0.6)	(0.3)	(0.1)	(4.0)	0.4	-	(1.1)
Effect of unrecognized current year losses	0.8	1.0	0.8	1.3	0.7	2.1	6.8	1.7	3.4	2.8
Effect of changes in tax rates	0.2	0.1	0.1	(1.6)	0.4	0.8	0.1	(1.6)	(0.1)	-
Withholding taxes	1.4	1.5	0.8	2.1	2.6	1.9	3.1	2.3	3.2	2.1
Under/(over) provided in prior years	(2.3)	(1.5)	0.2	(0.1)	0.3	(1.4)	-	(0.5)	(1.4)	0.6
Other reconciling items	0.5	0.1	(0.1)	-	0.7	0.8	(1.0)	(0.4)	(1.0)	(0.3)
Effective tax rate	**22.5**	**26.1**	**15.3**	**26.5**	**31.9**	**26.2**	**29.7**	**26.7**	**28.1**	**29.2**

(Source: Heineken's annual reports)

In exhibit 19, "Effect of tax rates in foreign jurisdictions" item reflects the effects of differences between the statutory tax rate that Heineken faces at home (Netherland) and the tax rates it faces abroad (foreign markets). The company may pay higher or lower taxes for a given amount of profit generated by its foreign operations compared to home. By contrast, "Effect of non-deductible expenses" represents the tax effects of those expenses that are not allowed for tax deductibility such as certain amortization and impairment. "Effect of tax incentives and exempt income' item, on the other hand, reflects the tax effects of incomes that

are not subject to tax. Such incomes include the transfer of Multi Bintang Indonesia and Grande Brasserie de Nouvelle-Calédonie in 2010, upward revaluation of Heineken's equity interests in Asia Pacific Investment, and Asia Pacific Breweries in 2012, or gain on sale of Empaque in 2015.

Of the reconciling items in exhibit 19, those that arose as a result of Heineken's core business are termed as "operating reconciling items," and "non-operating reconciling items" otherwise. Based on this definition, "Effect of tax rates in foreign jurisdictions" is considered as the only operating reconciling items, and the rest assumes to be non-operating. The tax reconciliation can be expressed as follows, with "non-operating items" referring to both non-operating incomes and expenses:

Reported income tax = Net income * (Statutory tax rate + Operating reconciling items' tax rates + Non-operating reconciling items' tax rates)

↓

Reported income tax = Net income * Statutory tax rate + Operating reconciling items' taxes + Non-operating reconciling items' taxes

↓

Reported income tax – Non-operating reconciling items' taxes = (EBITA + non-operating items) * Statutory tax rate + Operating reconciling items' taxes

↓

Reported income tax – (Non-operating reconciling items' taxes + Non-operating items * *Statutory tax rate) = EBITA * Statutory tax rate + Operating reconciling items' taxes

If non-operating incomes and expenses are taxed domestically and subject to the statutory tax rate, the result of "Non-operating reconciling items' taxes + Non-operating items * Statutory tax rate" is the company's non-operating taxes and the left-hand side of last formula shown above is actually the company's operating taxes. In other words, if non-operating incomes and expenses are taxed domestically, the company's operating taxes can be determined by applying the statutory tax rate to its EBITA and adjusting for any operating reconciling items.

Over the last ten years, debt offerings that Heineken uses to raise its needs of capital have primarily taken place in the Netherlands (Market Line, 2020b). And since interest expenses make up a large part of non-operating expenses, Heineken's non-operating incomes and

expenses are assumed to be taxed domestically. This assumption implies that Heineken's operating taxes can be estimated by applying the company's statutory tax rate to its EBITA and adjusting for any effects of foreign tax rate differences. This calculation method is illustrated in exhibit 20.

Exhibit 20: Heineken's operating tax calculation

in million euro	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating EBITA	2,511	2,419	2,548	2,898	3,062	3,146	3,454	3,713	3,722	3,962
Statutory tax rate, domestic	25.5%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Income tax at statutory tax rate	640	605	637	724	765	786	863	928	930	991
Effect of difference in foreign tax rates	34	62	63	79	87	57	(9)	17	(3)	21
Operating tax	*674*	*667*	*700*	*803*	*852*	*843*	*854*	*945*	*927*	*1,012*

(Source: Heineken's annual reports)

- **Operating cash tax**

While operating tax is based on an accrued basis, operating cash tax reflects the actual amount of cash that was paid to tax authorities over the course of the fiscal year. In this paper, operating cash tax is preferred to operating tax for the determination of NOPLAT, and there are at least two reasons for this. Firstly, operating cash tax is closer to cash than operating tax. And as being built upon NOPLAT, the free cash flows can reflect the actual amount of cash available to the company, and, hence, the valuation of the company will be more reliable. Secondly, there are certain assets that constantly generate a higher amount of tax deductibility than indicated by the accounting rules. For instance, depreciation of property, plant, and equipment is based on the accelerating method for tax purposes, but on a straight-line basis for reporting purposes. This leads to a higher amount of tax deductibility that the company can actually claim from the usage of these assets and thus lower tax payments. Since the company can constantly defer this type of tax liability, operating tax may overstate the tax burden of the company and, thus, understate the valuation of the company.

As an accounting rule, the equation below shows the relationship between operating tax and operating cash tax, with deferred tax attributable to operating assets/liabilities being termed operating.

Current operating cash tax = Total current-year operating tax expense + change in operating deferred tax assets – change in operating deferred tax liabilities

In order to calculate operating cash tax, deferred taxes related to operating assets/liabilities need to be identified. As shown in exhibit 14, Heineken's operating deferred taxes come from its property, plant, and equipment and inventory. However, merely taking the annual changes

for these deferred tax accounts and adding the results to the operating tax may not derive the correct operating cash tax. This is because the changes also incorporate movements that do not stem from operating business activities. For instance, in 2019, out of an increase of 237 million euros in the deferred tax liability attributable to Heineken's property, plant, and equipment, an increase of 248 million euros was attributable to changes in accounting policy, changes in consolidation (acquisition/divestiture), currency effects and transfers. It is only the movements that stem from operating business activities and, thus, are recognized in the income statement that enter the formula above.

Exhibit 21 illustrates the calculation of Heineken's operating cash tax over the period 2010 – 2019. At the bottom of the exhibit, the operating cash tax rate is determined as the fraction of operating cash tax to EBITA. Over the last ten years, Heineken's operating cash tax rate has been ranging from 26% to 29%.

Exhibit 21: Heineken's operating cash tax calculation

in million euro	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Operating EBITA	2,511	2,419	2,548	2,898	3,062	3,146	3,454	3,713	3,722	3,962
Statutory tax rate, domestic	25.5%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Income tax at statutory tax rate	640	605	637	724	765	786	863	928	930	991
Effect of difference in foreign tax rates	34	62	63	79	87	57	(9)	17	(3)	21
Operating tax	*674*	*667*	*700*	*803*	*852*	*843*	*854*	*945*	*927*	*1,012*
(Increase) Decrease in operating deferred tax liabilities (net)	48	(26)	(32)	34	(22)	16	23	6	41	15
Operating cash taxes	**722**	**641**	**668**	**837**	**830**	**859**	**877**	**951**	**968**	**1,027**
Operating cash tax rate	***28.8%***	***26.5%***	***26.2%***	***28.9%***	***27.1%***	***27.3%***	***25.4%***	***25.6%***	***26.0%***	***25.9%***

(Source: Heineken's annual reports)

❖ Reconciliation from NOPLAT to net income

Exhibit 22: Reconciliation from NOPLAT to net income

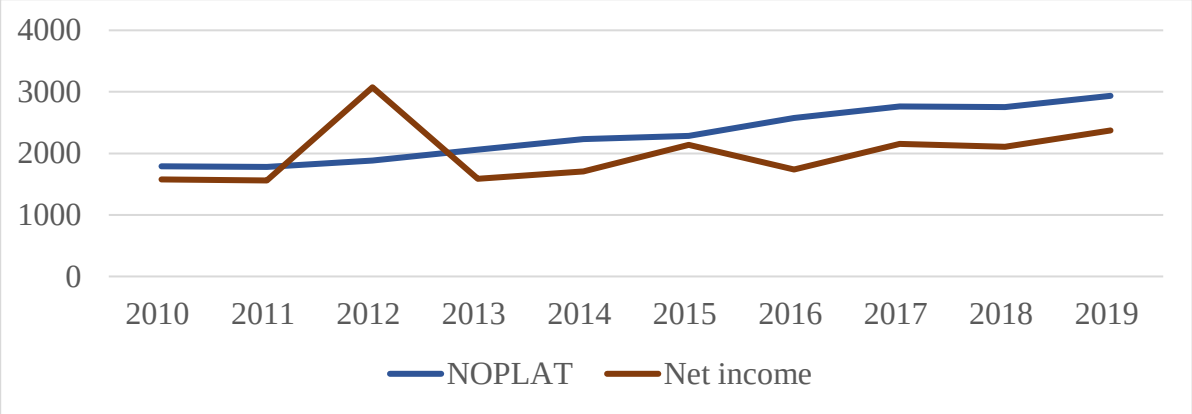
in million euro	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
NOPLAT	1,788	1,778	1,880	2,060	2,231	2,286	2,576	2,762	2,753	2,936
(Increase) Decrease in operating deferred tax liabilities (net)	48	(26)	(32)	34	(22)	16	23	6	41	15
Amortization of acquired intangibles	(158)	(193)	(200)	(339)	(288)	(317)	(310)	(320)	(317)	(312)
Impairment of PP&E	(14)	-	(44)	(16)	(8)	(71)	(274)	19	(133)	(52)
Impairment of softwares	-	(2)	-	(17)	-	(1)	-	-	(1)	(2)
Impairment of acquired intangible assets	(16)	(1)	-	(5)	(2)	(3)	(12)	11	-	(12)
Impairment of goodwill	-	-	(7)	(94)	(16)	-	-	-	(20)	(6)
Impairment of available-for-sale investments	(3)	-	(1)	-	-	-	-	-	-	-
Recycling of currency translation difference	-	-	-	-	-	-	-	(65)	-	-
Restructuring expenses	(39)	(81)	(97)	(99)	(111)	(106)	(80)	(93)	(122)	(91)
Other provision expenses, net of reversals	(121)	3	(14)	(25)	(41)	32	(31)	27	(24)	45
Acquisition and integration cost	(80)	-	(28)	-	-	-	(8)	(72)	-	-
Pension adjustment	(9)	18	43	42	110	11	-	30	(13)	6
Interest expenses	(590)	(494)	(551)	(579)	(457)	(412)	(419)	(468)	(492)	(529)
Lease interest expense	(12)	(12)	(13)	(17)	(19)	(27)	(30)	(39)	(46)	-
Interest expenses, including those from leased assets	(602)	(506)	(564)	(596)	(476)	(439)	(449)	(507)	(538)	(529)
Interest income	100	70	62	47	48	60	60	72	71	75
Dividend income from minority-holding entities	1	2	25	15	10	10	12	10	16	10
Other net finance income (expenses)	(20)	(8)	143	(76)	(89)	(67)	(146)	(133)	(80)	(69)
Other income	239	64	1,510	226	93	411	46	141	75	95
Share of profit of associates and joint ventures	193	240	213	146	148	172	150	75	210	164
Non-operating tax expense	271	202	185	283	120	146	181	190	186	102
Net income	**1,579**	**1,560**	**3,074**	**1,587**	**1,708**	**2,141**	**1,739**	**2,153**	**2,105**	**2,374**

(Source: Heineken's annual reports)

Reconciliation from NOPLAT to net income works as a check on whether any mistakes have been made during the calculation process. Exhibit 22 illustrates this reconciliation. In the calculation of NOPLAT, all items that are considered as non-operating are left out. These non-operating incomes and expenses have to be added back to NOPLAT in order to calculate the company's net income as reported. The most significant non-operating incomes/expenses include amortization of acquired intangible assets, impairment costs of both tangible and intangible assets, interest expenses, interest incomes, the share of profit of associates and joint ventures, and other income such as gains and losses on sales of assets.

Since the increase (decrease) in net operating deferred tax liabilities is subtracted from (added to) operating tax to determine operating cash tax, it has to be added back to (subtracted from) NOPLAT in order to determine the accrued profit generated by the company's underlying business. Moreover, non-operating tax expense is the amount of tax attributable to the non-operating incomes/expenses and determined as the difference between reported income tax and the company's operating tax calculated in note 10.

Graph 28: Heineken's NOPLAT and net income over the period 2010 – 2019



Since non-operating items are removed from the calculation, NOPLAT shows a clearer pattern and can be considered as more predictable than net income, as reported by the company (graph 28). For instance, in 2012, Heineken reported a spike in its net income. However, this spike was not caused by improved operating performance, but instead by an upward revaluation of its equity interests in Asia Pacific Investment and Asia Pacific Breweries. This non-cash exceptional gain of 1,486 million euros was reported in the "other income" account. This one-off accounting-based gain may distort the comprehension of the company's financial performance and, thus, make forecasting more challenging and less reliable if it is not excluded from NOPLAT.

5.2.2.4. Free cash flow (FCF)

Free cash flow (FCF) is the cash available to all the company's investors, both debt and equity holders, generated by the underlying business activities. It could be perceived as the cash flow generated by a company that holds only operating assets, which are financed entirely by equity. Free cash flow is determined as the difference between the gross cash flow generated by the core business and the gross investment that is required for the company to maintain and/or expand its operation.

Free cash flow = Gross cash flow – Gross investment

Gross cash flow is calculated by adding back any non-cash expenses such as depreciation to the company's NOPLAT. The two major non-expenses in the core operation of Heineken are depreciation of property, plant and equipment, and amortization of software. In 2019, these expenses amounted to 1,575 million euros and should be added back to the company's NOPLAT to determine the gross cash flow. The only exception is the depreciation relating to operating leases. Since this depreciation is a component of the rental expense and, thus, is real cash, it should not be added back to NOPLAT.

By contrast, gross investment is determined by examining the change in the company's invested capital. Heineken's invested capital for the underlying business consists of operating working capital, property, plant, and equipment (including leased assets), software, and advances to customers. While it is quite straightforward to calculate the investment in operating working capital and advances to customers by taking the changes in those accounts, adjustments need to be made in order to accurately determine the investment in property, plant and equipment and software, as the changes in the accounts also contain effects of depreciation, amortization, impairment, and currency. As an accounting rule, the change in the PP&E account is given as follows (the same argument can be applied for software), with the denotations being similar to those in note 3.

$$\text{Carrying amount}_t - \text{Carrying amount}_{t-1} = \\ = \text{Net investment}_t + \text{Net currency effect}_t - (\text{Depreciation}_t + \text{Net impairment}_t)$$

$$\text{Net investment}_t = \text{Carrying amount}_t - \text{Carrying amount}_{t-1} - \text{Net currency effect}_t + \\ (\text{Depreciation}_t + \text{Net impairment}_t)$$

The net investment in PP&E and software is calculated by adding depreciation, amortization, and net impairment to the change in the carrying amount of the account and adjusting for currency effects (exhibit 23). Moreover, since the "Total net goodwill and acquired intangibles invested" account in exhibit 8 represents the total actual amount of money that has been invested in goodwill and acquired intangibles, the change in this account reflects the actual investment in goodwill and acquired intangibles during the year.

In exhibit 23, the free cash flow is calculated for both before and after goodwill and acquired intangible assets, with the free cash flow before goodwill and acquired intangible assets measuring the cash flow available to all investors before paying premium prices for acquisitions.

Exhibit 23: Heineken's free cash flow calculation

in million euro	2011	2012	2013	2014	2015	2016	2017	2018	2019
NOPLAT	1,778	1,880	2,060	2,231	2,286	2,576	2,762	2,753	2,936
Depreciation of PP&E	936	1,017	1,073	1,080	1,151	1,163	1,172	1,155	1,488
Amortisation of software, etc.	36	47	37	43	51	58	60	67	87
Gross cash flow	**2,750**	**2,944**	**3,170**	**3,354**	**3,488**	**3,797**	**3,994**	**3,975**	**4,511**
Investment in operating working capital	250	144	(11)	83	155	97	(53)	425	(16)
Change in net PP&E (including leased assets) and software	(216)	(1,144)	343	(409)	(963)	73	(2,084)	(522)	(740)
Depreciation of PP&E and amortization of software charged	(972)	(1,064)	(1,110)	(1,123)	(1,202)	(1,221)	(1,232)	(1,222)	(1,575)
Impairment of PP&E and software charged	(2)	(44)	(33)	(8)	(72)	(274)	19	(134)	(54)
Effect of currency translation	(166)	81	(377)	110	(48)	(586)	(683)	(101)	232
Net investment in PP&E (including leased assets) and software	(1,356)	(2,171)	(1,177)	(1,430)	(2,285)	(2,008)	(3,980)	(1,979)	(2,137)
Investment in advances to customers	92	45	11	47	(12)	(8)	(3)	(12)	67
Gross investment before goodwill and acquired intangibles	**(1,013)**	**(1,982)**	**(1,177)**	**(1,300)**	**(2,142)**	**(1,919)**	**(4,036)**	**(1,566)**	**(2,086)**
Free cash flow before goodwill and acquired intangibles	**1,737**	**963**	**1,993**	**2,055**	**1,346**	**1,879**	**(42)**	**2,409**	**2,425**
Investment in goodwill and acquired intangibles	(354)	(6,097)	109	257	(1,463)	(79)	(1,745)	191	(85)
Gross investment after goodwill and acquired intangibles	**(1,367)**	**(8,079)**	**(1,068)**	**(1,043)**	**(3,605)**	**(1,997)**	**(5,781)**	**(1,375)**	**(2,171)**
Free cash flow after goodwill and acquired intangibles	**1,383**	**(5,134)**	**2,102**	**2,312**	**(117)**	**1,800**	**(1,787)**	**2,601**	**2,340**

(Source: Heineken's annual reports)

Heineken's relatively low free cash flows before goodwill and acquired intangibles in 2012, 2015, and 2017 were driven by large acquisitions that the company made in those years. When the premium prices that the company paid are taken into consideration, the free cash flows in all three years turn considerably negative. Specifically, the free cash flowed after goodwill and acquired intangible assets were negative 5,134 and negative 1,787 million euros in 2012 and 2017, respectively.

5.2.3. Summary of restructuring of the financial statements

Exhibit 24 summarizes the most important insights gained from the restructuring of Heineken's financial statements.

Exhibit 24: Insights from the restructuring of Heineken's financial statements

in million euro	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net revenue	17,123	18,383	19,203	19,257	20,511	20,792	21,609	22,489	23,969
Net operating profit less adjusted tax (NOPLAT)	1,778	1,880	2,060	2,231	2,286	2,576	2,762	2,753	2,936
Invested capital, excluding goodwill and acquired intangibles	8,218	9,173	8,830	9,109	9,929	9,767	11,907	12,016	12,704
Invested capital, including goodwill and acquired intangibles	22,610	29,661	29,210	29,231	31,514	31,431	35,316	35,233	36,007
Free cash flow before goodwill and acquired intangibles	1,737	963	1,993	2,055	1,346	1,879	(42)	2,409	2,425
Free cash flow after goodwill and acquired intangibles	1,383	(5,134)	2,102	2,312	(117)	1,800	(1,787)	2,601	2,340

5.3. Historical performance analysis

The purpose if historical performance analysis is to provide financial insights into the company's underlying business. These insights can serve as building blocks for producing reasonable forecasts of the company's future performance. Since financial analysis encompasses various aspects for various purposes, such as credit assessment, management, and valuation, this paper focuses on the aspects that are the most relevant to the determination of the fair value of Heineken's core operation. With respect to valuation, Koller et al. (2015) believe that the two most significant value drivers for any company are their return on invested capital and revenue growth rates. As outlined later in chapter 6, these two value drivers are key to the forecasts of Heineken's free cash flows and economic profits in the long run. In this section, the company's historical ROIC and revenue growth rate will be closely analyzed. And the analyses will serve as a solid foundation for the performance forecasting outlined in the next chapter.

Moreover, in order to get a complete understanding, Heineken will be analyzed not only in isolation but also in comparison with its peers, including AB InBev, Carlsberg, and Molson Coors. By comparing these companies' performances, insights may be revealed as to how Heineken performs with respect to its competitors as well as the prospect of the company's performance in the industry.

The peer companies are financially analyzed in a similar approach that is used for Heineken, and their detailed analyses are included in the appendix section.

5.3.1. Return on invested capital (ROIC) analysis

5.3.1.1. Heineken's ROIC analysis

Mathematically, return on invested capital (ROIC) is defined as the ratio of net operating profit less adjusted tax (NOPLAT) to Invested Capital. It measures the number of units of after-tax profit that can be generated by the underlying business by investing one unit of capital necessary for the core operation. It is given as the formula below.

$$\text{ROIC} = \frac{\text{NOPLAT}}{\text{Invested Capital}}$$

$$\text{ROIC} = (1 - \text{Operating tax rate}) \frac{\text{EBITA}}{\text{Invested Capital}}$$

$$\text{ROIC} = (1 - \text{Operating tax rate}) \frac{\text{EBITA}}{\text{Revenue}} * \frac{\text{Revenue}}{\text{Invested Capital}}$$

$$\text{ROIC} = (1 - \text{Operating tax rate}) * \text{Profit margin} * \text{Capital turnover}$$

As shown in the final formula, ROIC can also be expressed as a function of the company's operating tax rate, profit margin, and its capital turnover. The higher the profit margin the company can achieve, the higher its ROIC because it can earn more units of profit for a given unit of revenue generated. Similarly, the less capital it has to invest in order to generate one unit of revenue (high capital turnover), the higher its ROIC.

The calculation of Heineken's ROIC over the period 2011 – 2019 is presented in exhibit 25. As for the invested capital outlined previously, ROIC will be calculated for both invested capital with and without the goodwill and acquired intangible assets. Specifically, ROIC without the goodwill and acquired intangibles can be used as a measurement for the profitability and competitiveness of the underlying business, while ROIC without these assets indicates whether the company has managed to create value after paying premium prices for target companies. As valuation is a forward-looking practice, ROIC without the goodwill and acquired intangibles are more relevant as the premium prices paid to acquire these assets were

already incurred in the past and are unlikely to have any impacts on the company's future cash flows.

Exhibit 25: Heineken's return on invested capital (ROIC)

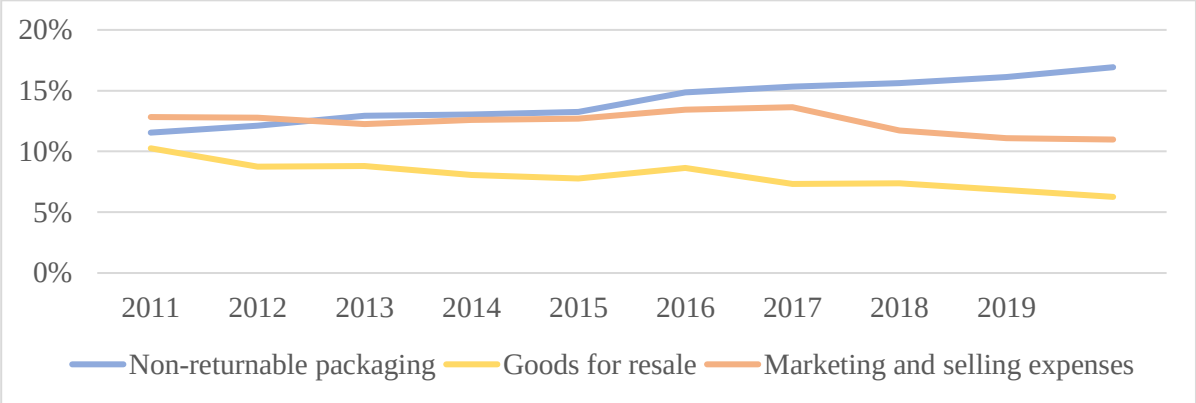
%	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating ratios									
EBITA/Revenues (Profit margin)	14.1%	13.9%	15.1%	15.9%	15.3%	16.6%	17.2%	16.5%	16.5%
Raw materials, consumables and services/Revenues	62.5%	62.5%	61.8%	60.8%	61.7%	60.7%	59.7%	60.7%	61.0%
Personnel expense/Revenues	16.4%	16.5%	16.0%	16.0%	15.8%	15.5%	16.2%	16.1%	15.9%
Depreciation & Amortization/Revenues	7.0%	7.2%	7.2%	7.2%	7.2%	7.2%	6.9%	6.7%	6.6%
Return on invested capital (ROIC) *									
Operating working capital/Revenues	-1.9%	-2.8%	-3.0%	-3.2%	-3.6%	-4.2%	-4.1%	-4.8%	-5.3%
Software, etc./Revenues	0.8%	1.0%	1.1%	1.0%	1.0%	1.2%	1.3%	1.6%	1.8%
PP&E (including leased assets)/Revenues	47.1%	47.3%	47.2%	47.3%	47.7%	49.0%	51.6%	55.1%	54.0%
Advances to customers/Revenues	2.4%	1.8%	1.6%	1.4%	1.3%	1.3%	1.3%	1.3%	1.1%
Invested capital/Revenues	48.4%	47.3%	46.9%	46.6%	46.4%	47.4%	50.2%	53.2%	51.6%
Revenues/Invested capital, times (Capital turnover)	2.1	2.1	2.1	2.1	2.2	2.1	2.0	1.9	1.9
Pretax ROIC	29.2%	29.3%	32.2%	34.1%	33.0%	35.1%	34.3%	31.1%	32.1%
Operating cash tax rate	26.5%	26.2%	28.9%	27.1%	27.3%	25.4%	25.6%	26.0%	25.9%
After-tax ROIC, excluding goodwill and acquired intangibles	**21.5%**	**21.6%**	**22.9%**	**24.9%**	**24.0%**	**26.2%**	**25.5%**	**23.0%**	**23.7%**
After-tax ROIC, including goodwill and acquired intangibles	**7.9%**	**7.2%**	**7.0%**	**7.6%**	**7.5%**	**8.2%**	**8.3%**	**7.8%**	**8.2%**

** Average invested capitals are used*

The company's profit margin has been quite stable, ranging from 14% to 17% over the period. This is due to the stability of its operating expenses relative to revenues. Specifically, while personnel and depreciation/operating amortization expenses hovered around 16% and 7% revenue respectively, the company's raw materials, consumables, and services expenses ranged from 60% to 62.5% revenue. However, a further investigation into the components of the raw materials, consumables, and services expenses reveals some noticeable trends. While most of the expenses within the account, such as water and energy, raw material, and transportation were quite stable in relation to revenue, expenses relating to non-returnable packaging steadily increased over the period, reaching 17% of revenue in 2019 compared to 12% in 2011. This constant increase was offset by constant decreases in expenses relating to marketing and selling activities as well as goods for resale in the company-owned retail stores. Together, they accounted for about 17% of revenue, compared to 22% in 2011 (graph 29).

The second component that is necessary for the calculation of Heineken's ROIC is its capital turnover. In exhibit 25, the invested capital (and its components) that is used to determine the ROIC in a given year is estimated to be the arithmetic average of the invested capital in that year and in the previous year. The rationale behind this approach is that the after-tax profit generated during the year is attributable to not only the invested capital at the end of the previous year but also new investment made during the year. The average invested capital can be considered as taking this observation into consideration and better reflect the ROIC achieved by the company in a given year.

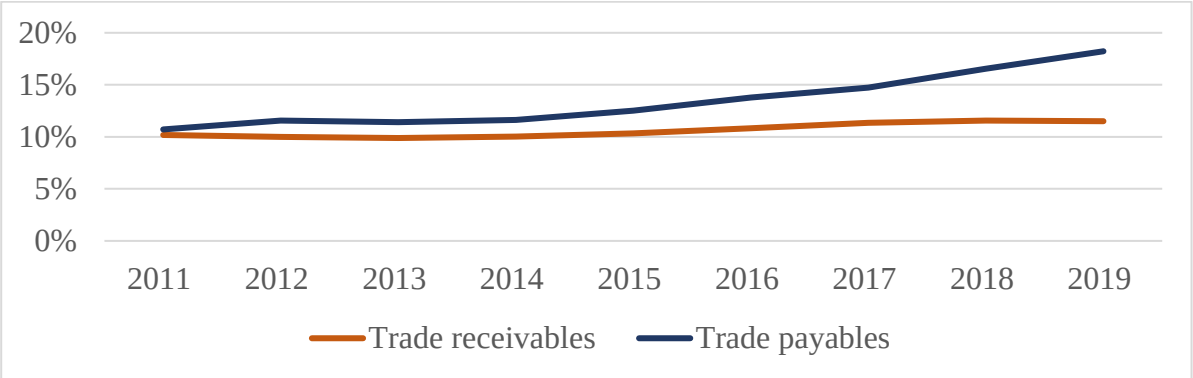
Graph 29: Certain expenses in relation to revenue over the period 2011 – 2019



(Source: Heineken's annual reports)

Over the period 2011 – 2019, Heineken managed to constantly improve its operating working capital, reaching negative 5.3% of revenue in 2019 compared to only negative 1.9% in 2011. This improvement was mainly driven by its ability to negotiate with suppliers. In 2019, the company's trade payable account reached over 18% of revenue, an increase of about 7.5% in comparison with 2011. Although Heineken also had to allow more of its customers to delay their payments in order to expand its business, the company managed to keep the increase over the same period only modest (1.3%) (graph 30).

Graph 30: Heineken's trade receivables and payables in relation to revenue



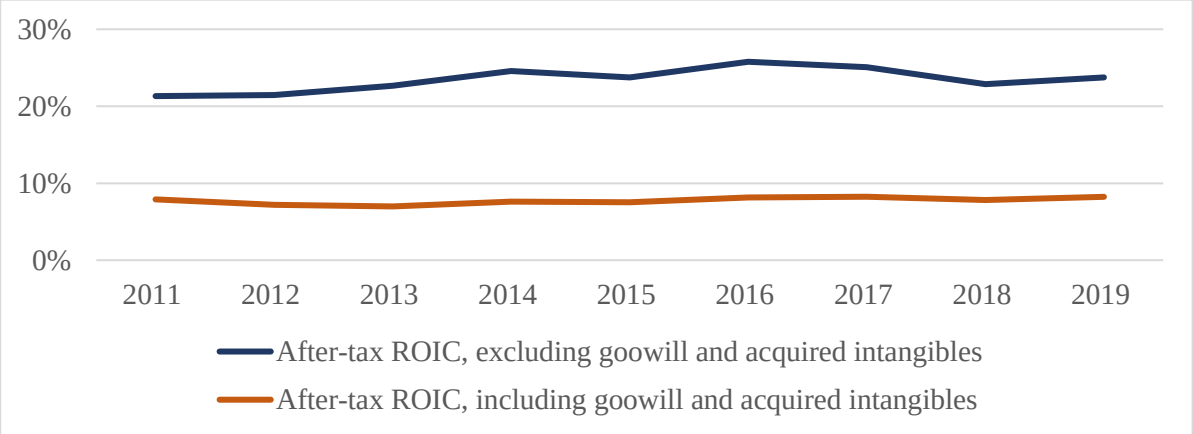
(Source: Heineken's annual reports)

By contrast, Heineken had increased its investment in its property, plant, and equipment as well as operating intangible assets such as software over the same period. While they stood at 48.3% of revenue in 2011, the figure had risen to 55.8% in 2019. These assets experienced a sudden jump in 2017 because of the significant acquisition of Basil Kirin that the company made during the year. The constant increase in the long-term operating assets outweighs the company's improvement in its working capital, leading to a fair increase in the total invested

capital over the period 2011 – 2019. The company's ratio of invested capital without the goodwill and acquired intangibles to revenue had reached 51.6% in 2019, compared to about 48.8% in 2011. Put it another way, Heineken's capital turnover hovered around two over the period, meaning that for every euro of capital invested in the underlying business, the company managed to generate 2 euros of revenue.

With all the pieces put together, the company's ROIC without the goodwill and acquired intangible assets was quite stable over the period, ranging from 22% to 26%. However, when goodwill and acquired intangible assets come into the calculation, the company's ROIC drops dramatically, hovering at about only 8%. It may be unreasonable to assert that the fairly flat low ROIC with goodwill and acquired intangible assets indicates that most of the value stemming from the acquisitions of target companies (market shares, revenue growth, synergies, cost efficiency, etc.) went to the sellers' pockets in the form of high premium prices that Heineken was willing to pay. In fact, the value that can be generated by these assets may take time to realize, and it may take several years for Heineken to see the improvement in its ROIC with goodwill and acquired intangibles.

Graph 31: Heineken's ROIC with and without the goodwill and acquired intangible assets



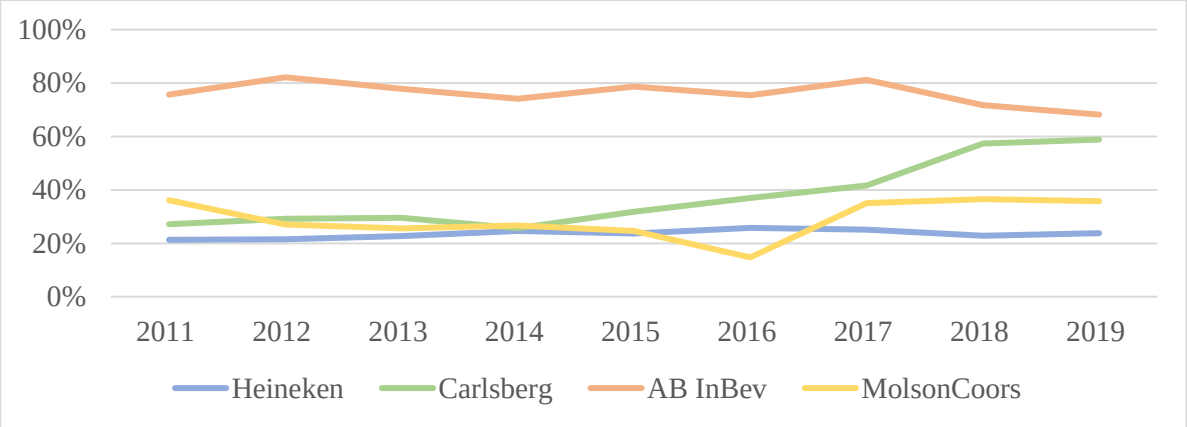
5.3.1.2. Heineken's ROIC in comparison with peers

To put Heineken's financial performance into a better perspective, its ROIC without the goodwill and acquired intangible assets is compared to that of its peers. As mentioned in the above section, ROIC without the goodwill and acquired intangibles is not affected by the arbitrary price premiums paid in acquisitions and thus can be perceived as comparable among

different companies. Graph 32 illustrates ROIC without the goodwill and acquired intangibles for Heineken and its main competitors over the period 2011 – 2019.

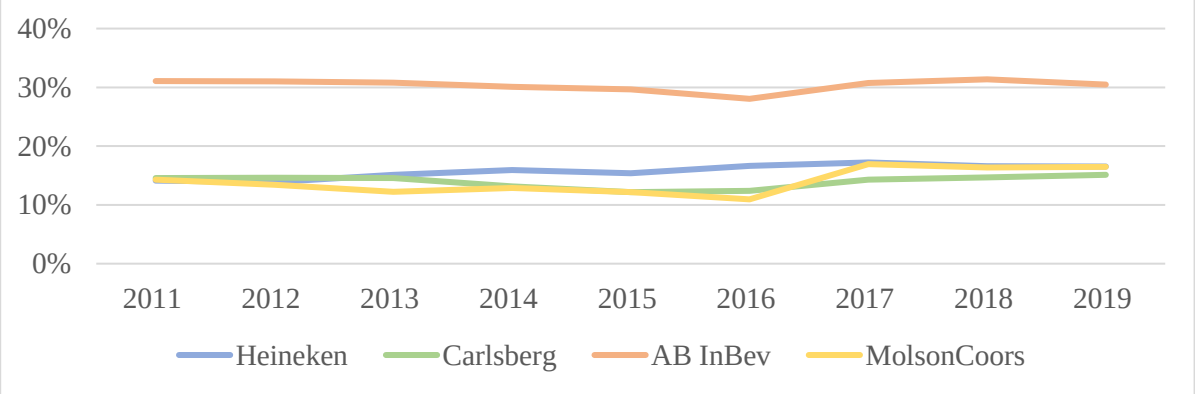
The best performer in the pack is AB InBev, whose ROIC ranged from 70% to 80%, an impressive achievement. Although its ROIC has dropped in the last three years, it still well outperformed its peers. Carlsberg, on the other hand, had constantly improved its ROIC substantially over the last five years, standing at only 27% in 2011 and reaching 59% in 2019. By contrast, Heineken and Molson Coors tracked one another quite closely, with Molson Coors slightly performing better, especially the last three years. It is striking that although Heineken is the second-largest beer company by sales volume, it has been constantly outperformed by its peers with regard to ROIC, with its ROIC being less than one-third of that of AB InBev. The ROIC formula outlined previously indicates that this inferiority may be due to either its worse profit margin or higher invested capital or both of them. An investigation detailed below will try to get to the bottom of Heineken's inferior ROIC.

Graph 32: ROIC without goodwill and acquired intangibles for Heineken and its peers



❖ **Profit margin**

Graph 33: Profit margins of Heineken and its peers over the period 2011 – 2019

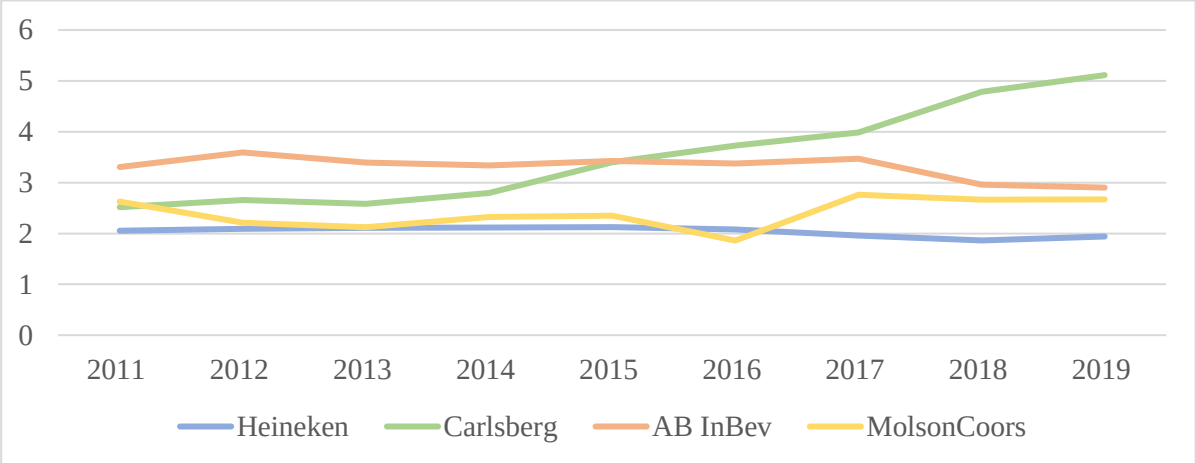


Graph 33 shows profit margins for Heineken and its peers over the period 2011 – 2019. Again, AB InBev is far ahead of its peers, with its profit margin hovering at around 30%, which is approximately double that of others. Furthermore, although Heineken did not substantially outperform Carlsberg and Molson Coors in this regard, it did outperform them. However, its ROIC is outperformed by these companies. This indicates that the main force that drove down its ROIC must be its relatively higher invested capital in comparison with its peers.

❖ **Capital turnover**

Graph 34 indicates that capital turnover that Heineken could achieve was too low compared to its peers. It hovered at around 2, meaning that for every unit of capital invested, the company managed to generate two units of revenue. By contrast, the figure for AB InBev ranged from 3 to 3.6, and Molson Coors managed to increase its capital turnover to nearly 3 in the last three years. The special case is Carlsberg, whose capital turnover constantly and substantially increased over the period. While its capital turnover was only 2.5 in 2011, it had reached 5.1 in 2019, an impressive improvement. Put it another way, compared to its peers, Heineken had to invest more heavily in order to manage to generate one unit of revenue.

Graph 34: Capital turnover of Heineken and its peers over the period 2011 – 2019



A further investigation into invested capital reveals areas where Heineken was outperformed by its peers. Exhibit 26 shows that Heineken had to invest relatively more in both operating working capital and non-current operating assets such as property, plant, and equipment and software. When it comes to working capital, Heineken was outperformed to a great extent, especially by AB InBev and Carlsberg. Relatively, Heineken had to spend around four times more for its working capital in comparison with these two companies. The main reason for this inferiority is that the company had to allow relatively much more postponed payments for

its customers, while only managing to achieve much less delayed payments with suppliers. For instance, in 2019, while Heineken's account receivables accounted for 11.5% of revenue, the figure for AB InBev and Carlsberg was 8.1% and 7.2%, respectively. Similarly, also in 2019, while Heineken's account payables were equal to 18.2% of revenue, the figure for AB InBev and Carlsberg was 30.9% and 25.3%, respectively.

With regard to non-current operating assets, Heineken also had to constantly invest relatively more. Although the performance gap between Heineken and AB InBev in this regard shortened over the period 2011 – 2019 (reducing from a difference of 8.6% in 2011 to only 1.8% in 2019), the gap between the company and Carlsberg and Molson Coors widened. Carlsberg has done a fantastic job in reducing its investment in property, plant, and equipment while keeping the normal production cycle running. It had substantially reduced its investment from 51.7% of revenue in 2011 to only 42.1% in 2019. This dramatic improvement is one of the main reasons behind the constant and rapid increase in its ROIC.

Exhibit 26: Invested capital relative to revenue and its breakdown

%	2011	2012	2013	2014	2015	2016	2017	2018	2019
Invested capital/Revenue									
Heineken	48.8%	47.8%	47.4%	47.2%	47.1%	48.2%	51.1%	53.7%	51.6%
Carlsberg	39.7%	37.6%	38.7%	35.8%	29.4%	26.8%	25.1%	20.9%	19.6%
AB InBev	30.2%	27.8%	29.5%	30.0%	29.2%	29.6%	28.8%	33.8%	34.5%
MolsonCoors	38.0%	45.2%	47.1%	43.1%	42.6%	53.8%	36.2%	37.5%	37.5%
Operating working capital/Revenue									
Heineken	-1.9%	-2.8%	-3.0%	-3.2%	-3.6%	-4.2%	-4.1%	-4.8%	-5.3%
Carlsberg	-12.0%	-12.1%	-13.8%	-15.9%	-18.1%	-19.2%	-19.4%	-21.1%	-22.5%
AB InBev	-11.7%	-14.3%	-15.4%	-15.7%	-18.0%	-22.1%	-20.2%	-20.0%	-20.6%
MolsonCoors	-2.0%	1.5%	0.0%	-2.4%	-4.9%	-8.7%	-5.5%	-5.6%	-5.8%
Non-current operating assets/Revenue									
Heineken	50.6%	50.6%	50.4%	50.4%	50.7%	52.3%	55.2%	58.5%	56.9%
Carlsberg	51.7%	49.7%	52.5%	51.7%	47.5%	46.0%	44.5%	42.0%	42.1%
AB InBev	42.0%	42.1%	44.9%	45.7%	47.3%	51.7%	49.0%	53.8%	55.1%
MolsonCoors	40.1%	43.7%	47.1%	45.4%	47.5%	62.4%	41.7%	43.1%	43.3%

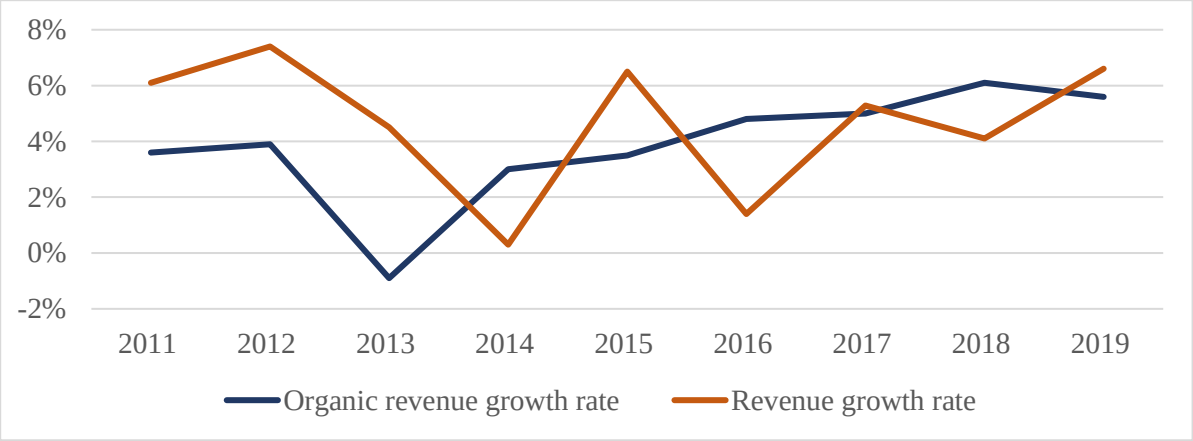
The fact that Heineken was inferior to its peers with regard to ROIC indicates that there is plenty of room for improvement. Specifically, there is great potential for the company to substantially improve its profit margin, as shown possible by AB InBev. Moreover, the company can also streamline its invested capital to a large and meaningful extent as similar to how Carlsberg has managed to achieve greater efficiency over the last ten years.

5.3.2. Revenue growth analysis

5.3.2.1. Heineken's revenue growth rate analysis

Heineken's revenue growth rate fluctuated quite strongly over the last ten years. Over the period 2011 – 2019, the company experienced the strongest growth in 2012, with 7.4% and the weakest in 2014, with growth being nearly 0%. Over the last four years, Heineken enjoyed strong growths, with the figure for 2019 being 6.6%. Nevertheless, the nominal revenue growth rate is neither a reliable measurement of the company's financial performance nor a reliable building block for making reasonable forecasts. This is due to the fact the revenue growth rate also incorporates the effects of currency movements and new acquisitions/divestitures.

Graph 35: Heineken's revenue growth rate analysis



The exchange rates at which Heineken translates the results of its subsidiaries into the currency presentation fluctuate, sometimes wildly, on an annual basis. These unpredictable movements in currencies artificially increase or decrease the revenues reported by the company even though these increases or decreases did not stem from the underlying operation that has improved or deteriorated. Thus, failing to recognize this type of effect is likely to lead to overstate or understate Heineken's real revenue growth rates. For instance, adverse currency movements had considerable negative impacts in 2016, 2017, and 2018, reducing the revenues reported by the company by 5.6%, 4%, and 4.5%, respectively (Exhibit 27).

Another significant effect embedded in revenue growth rates comes from acquisitions or divestitures made by the company. The larger the size of these deals, the stronger the effect. When Heineken successfully acquires a target company, according to the accounting rules, it starts to consolidate and incorporate the target company's financial statements into its own

from the moment the deal was successfully closed. Thus, at the end of the year in which the acquisition took place, part of the revenue reported by Heineken will also include the portion contributed by the target company. In essence, this increase in revenue is merely driven by buying another company's revenue instead of by improvement in the performance of the underlying business.

Exhibit 27: Heineken's revenue growth rate analysis

in million hectolitre or %	2011	2012	2013	2014	2015	2016	2017	2018	2019
Beer volume	164.6	171.7	178.3	181.3	188.3	200.1	218.0	233.8	241.4
Non-beer volume	20.5	20.5	18.9	18.5	19.1	19.5	24.9	27.4	26.4
Third-party volume	9.8	9.8	9.4	8.5	8.6	8.3	8.7	8.6	8.4
Consolidated volume (in million hectolitre)	194.9	202.0	206.6	208.3	216.0	227.9	251.6	269.8	276.2
Volume growth	12.8%	3.6%	2.3%	0.8%	3.7%	5.5%	10.4%	7.2%	2.4%
Net effect of acquisition/divestiture	10.7%	2.1%	5.8%	-1.0%	1.5%	2.9%	7.5%	3.2%	0.1%
Organic volume growth	**2.1%**	**1.5%**	**-3.5%**	**1.8%**	**2.2%**	**2.6%**	**2.9%**	**4.0%**	**2.3%**
Revenue per hectolitre's growth rate	1.5%	2.4%	2.6%	1.2%	1.3%	2.2%	2.1%	2.1%	3.3%
Organic revenue growth rate	**3.6%**	**3.9%**	**-0.9%**	**3.0%**	**3.5%**	**4.8%**	**5.0%**	**6.1%**	**5.6%**
Effect of currency movement	-2.2%	1.5%	-2.1%	-1.6%	2.5%	-5.6%	-4.0%	-4.5%	1.4%
Effect of acquisition/divestiture	4.7%	2.0%	7.5%	-1.1%	0.5%	2.2%	4.3%	2.5%	-0.4%
Revenue growth rate	6.1%	7.4%	4.5%	0.3%	6.5%	1.4%	5.3%	4.1%	6.6%

(Source: Heineken's full-year result reports)

Furthermore, the effect of acquisitions impacts not only the revenue reported in the year in which the deal occurred but also the revenue reported in the following year. This is because the revenue reported in the year in which the deal occurred included only a portion of the whole-year revenue generated by the target company (revenue generated from the moment when the deal was successfully closed to the end of the fiscal year when the financial statements were prepared), while the revenue reported in the following year incorporates the whole annual sales generated by the target company. This leads to an artificial increase in the revenue reported in the following year. Again, this increase in revenue has nothing to do with improvement in the underlying performance, but instead merely with the accounting rules. Similar arguments can be made for Heineken making divestitures. The only difference is that in the case of divestitures, the effect is the opposite: decreasing the consolidated revenue reported.

Failing to account for this effect brought by acquisitions or divestitures is likely to lead to overstate or understate Heineken's real revenue growth rates. For instance, in 2012, Heineken made an acquisition of Asia Pacific Investment (API) and Asia Pacific Breweries (APB). The deal was signed on 17 August 2012 from which the financial statements of API and APB were consolidated into those of Heineken. As a result, the acquisition contributed a 2% increase in revenue reported by Heineken at the end of 2012. However, the impact was felt most strongly

in the following year (2013) when the consolidated revenue included the whole-year sales generated by API and APB. In fact, the acquisition effect led to an increase of 7.5% of the revenue reported.

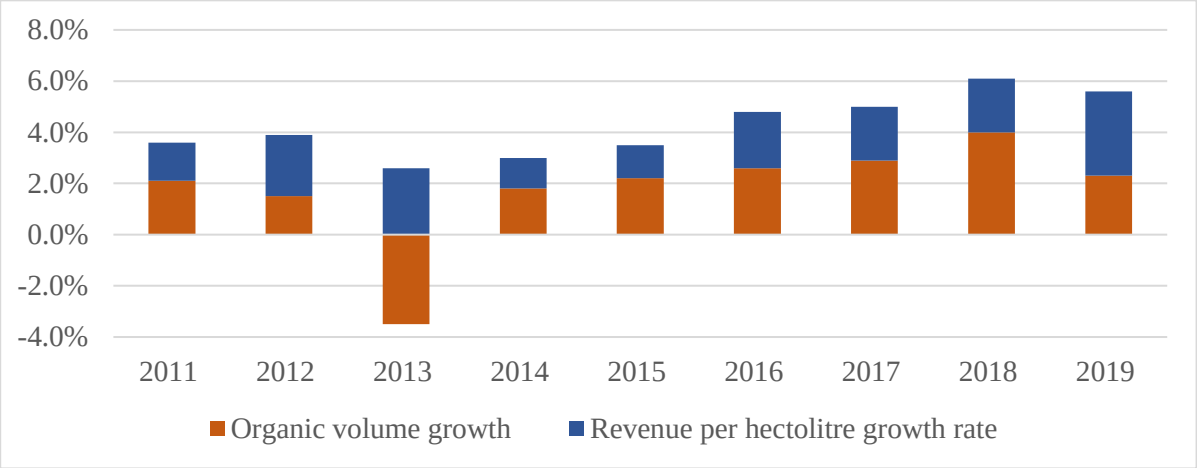
The effects of currency movements and acquisitions/divestitures need to be stripped out of revenue growth rates in order to derive Heineken's organic revenue growth. Organic revenue growth rates reflect the underlying performance of the company better and can be used as a building block to make reliable forecasts of its future financial performance. Exhibit 27 shows how Heineken's organic growth is determined by its reported revenue growth.

When putting together in graph 35, organic growth was much less volatile and experienced an upward trend since 2014, compared to the fairly wild fluctuation of revenue growth rates as reported. In 2016, Heineken enjoyed organic growth of 4.8%, while revenue growth, as reported, was only 1.4%. This is mainly due to the adverse currency effect that misleadingly reduced the revenue reported by 5.6%. The same pattern can be observed for 2018 in which the organic growth was 6.1%, while reported revenue growth was just 4.1%.

In order to better understand the main drivers of organic growth, it is broken down into organic volume growth and revenue per hectoliter growth rate, as shown in exhibit 27 and graph 36. Organic volume growth is the growth in Heineken's annual sales volume with any effects of acquisitions or divestitures being stripped out. The impact of acquisitions on sales volume growth, as reported, can be tremendous. For instance, in 2011, the company reported volume growth of 12.8%. However, Heineken's acquisitions of the Sona brewery group, Bedele brewery, and Harar brewery in the same year contributed a 10.7% increase, leaving the organic growth being only 2.1%. Similarly, although Heineken reported an increase of 3.8% in sales volume in 2013, its organic volume growth was actually negative 3.5%. What contributed to the reported increase was the number of acquisitions the company made during the year.

Over the last ten year, Heineken managed to maintain the ability to increase its price per hectoliter. In 2013, the negative organic growth of volume was substantially offset by an increase in the company's price per hectoliter. Furthermore, in 2019, revenue per hectoliter growth accounted for almost 60% of the organic revenue growth. This ability to maintain its pricing power may be attributable to the company's ownership of a large number of well-recognized brands.

Graph 36: Breakdown of Heineken's organic revenue growth rate

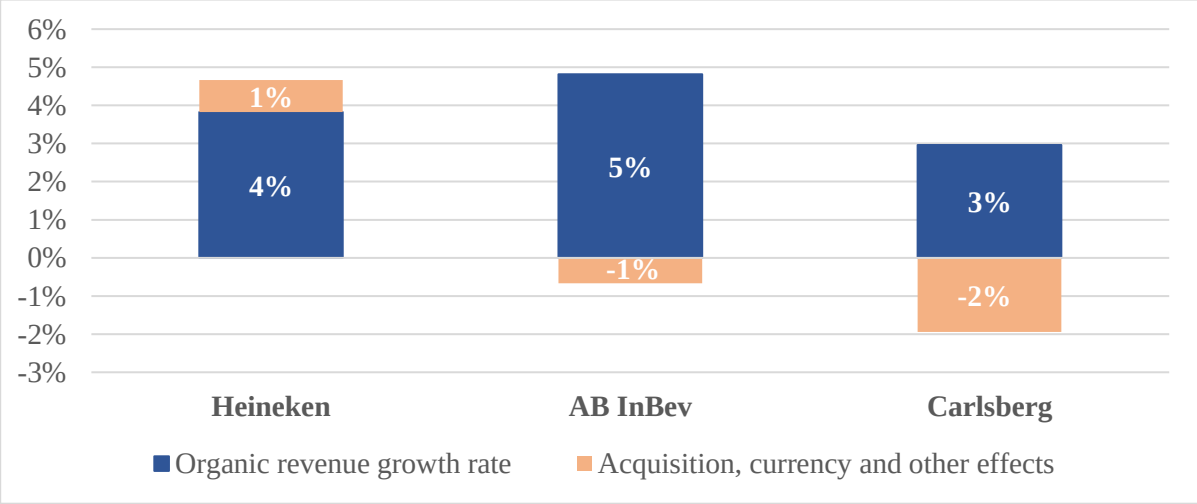


(Source: Heineken's full-year result reports)

5.3.2.2. Heineken's revenue growth rate in comparison with peers

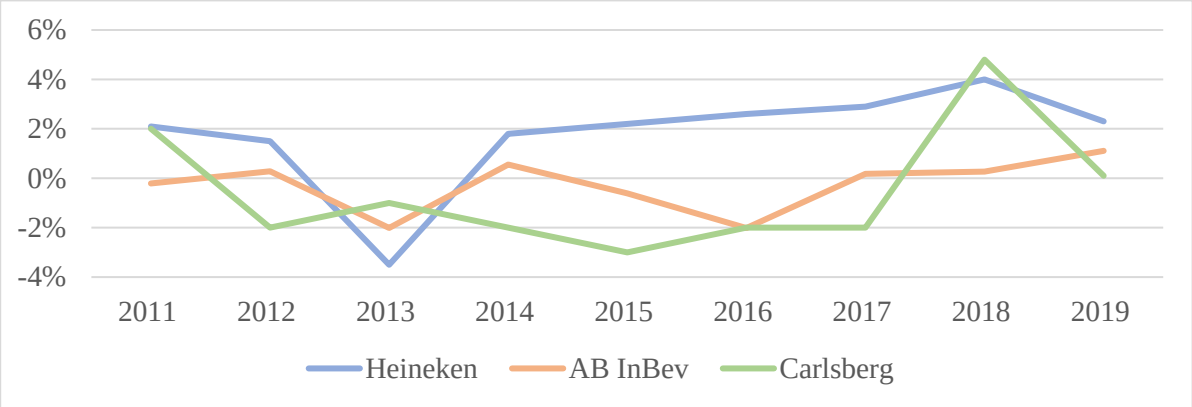
Over the period 2010 – 2019, Heineken's compound annual growth rate of revenue as reported stood at around 5%, while the figure for AB InBev and Carlsberg was about 4% and 1%, respectively (Graph 37). For all three companies, organic revenue growth rate (CAGR) was the component that contributed the most to the growth. Specifically, while Heineken enjoyed annual organic growth of 4%, AB InBev and Carlsberg saw a growth of 5% and 3%, respectively. Furthermore, acquisitions, currency movements and other effects such as changes in accounting policy led to an annual decrease of 1% and 2% of revenue reported for AB InBev and Carlsberg, respectively, while those effects added an increase of approximately 1% to Heineken's reported revenue.

Graph 37: Compound annual growth rate (CAGR) of reported revenue and its breakdown over the period 2010 – 2019



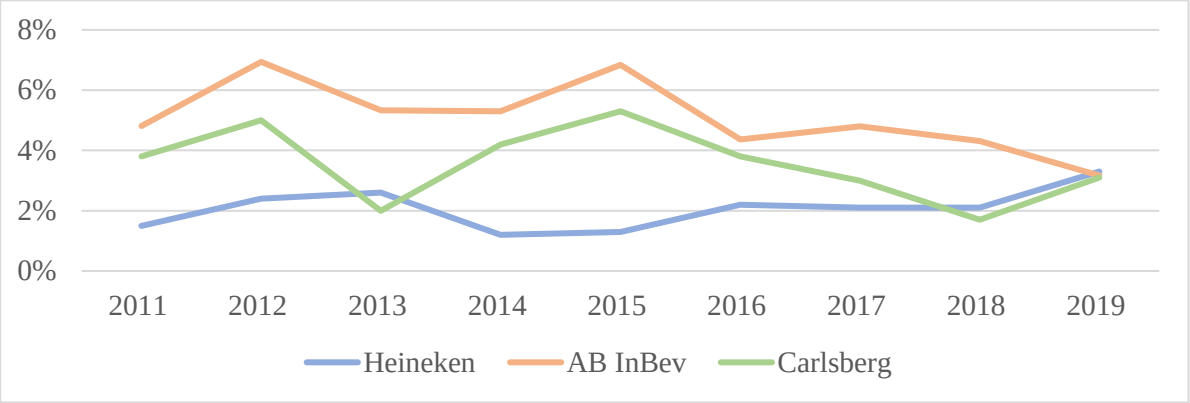
A further investigation into the breakdown of organic revenue growth reveals interesting insights into Heineken's organic volume growth and revenue per hectoliter growth in comparisons with its peers. Specifically, with regard to organic volume growth, Heineken fairly consistently outperformed AB InBev and Carlsberg over the period 2010 – 2019. While AB InBev and Carlsberg experienced near-zero or negative growth rates over the period (with two exceptions for Carlsberg in 2011 and 2018 in which it enjoyed a growth of 2% and 4.8% respectively), Heineken enjoyed above-2% growth rates in most of the years. The only year in which the company was outperformed by its peers was 2013 when its growth rate decreased to negative 3.5%, compared to only negative 2% and 1% for AB InBev and Carlsberg, respectively.

Graph 38: Organic sales volume growth rates over the period 2010 – 2019



By contrast, when it comes to revenue per hectoliter growth rate, Heineken was beaten by its peers in almost every year over the period 2010 – 2019. The best performer is AB InBev, which managed to raise its price per hectoliter fruitfully in the first half of the period, ranging from 5% to 7%. However, its pricing power decreased considerably over the last five years, falling from nearly 7% growth in 2015 to only over 3% in 2019. Although Carlsberg did not perform as well as AB InBev in this regard, it did a fairly good job of raising its revenue per hectoliter. Its growth rate was roughly in the range of 3% to 5%. By contrast, Heineken seemed to find it quite difficult to increase its price per hectoliter. Over the same period, the company could only raise its prices modestly at around 2% annually. The only noticeable growth was in 2019 when it managed to raise its revenue per hectoliter by 3.3%.

Graph 39: Revenue per hectoliter growth rates over the period 2010 – 2019



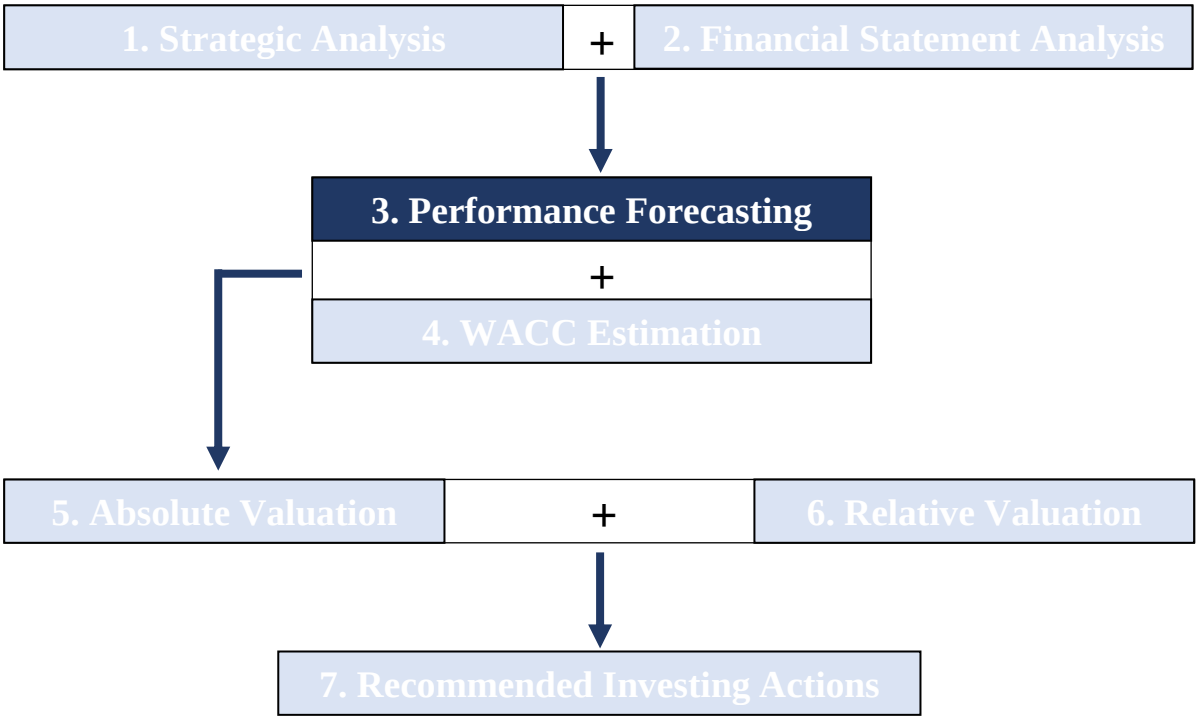
5.3.3. Summary of historical performance analysis

Exhibit 28 illustrates the most important insights gained from the historical performance analysis of Heineken.

Exhibit 28: Summary of historical performance analysis

%	2011	2012	2013	2014	2015	2016	2017	2018	2019
Profit margin									
AB InBev	31.0%	31.0%	30.8%	30.1%	29.7%	28.0%	30.8%	31.4%	30.5%
Carlsberg	14.5%	14.6%	14.6%	13.2%	12.2%	12.4%	14.3%	14.7%	15.1%
Heineken	14.1%	13.9%	15.1%	15.9%	15.3%	16.6%	17.2%	16.5%	16.5%
Molson Coors	14.3%	13.4%	12.2%	12.9%	12.1%	10.9%	16.9%	16.3%	16.5%
Capital turnover (times)									
AB InBev	3.3	3.6	3.4	3.3	3.4	3.4	3.5	3.0	2.9
Carlsberg	2.5	2.7	2.6	2.8	3.4	3.7	4.0	4.8	5.1
Heineken	2.1	2.1	2.1	2.1	2.2	2.1	2.0	1.9	1.9
Molson Coors	2.6	2.2	2.1	2.3	2.3	1.9	2.8	2.7	2.7
Return on invested capital (ROIC),* excluding goodwill and acquired									
AB InBev	75.7%	82.1%	77.9%	74.1%	78.7%	75.5%	81.2%	71.8%	68.2%
Carlsberg	27.1%	29.1%	29.6%	25.7%	31.8%	37.0%	41.7%	57.4%	58.8%
Heineken	21.5%	21.6%	22.9%	24.9%	24.0%	26.2%	25.5%	23.0%	23.7%
Molson Coors	36.2%	27.1%	25.6%	26.7%	24.7%	14.7%	35.1%	36.5%	35.8%
*Average invested capitals are used									
Organic growth rate of sales volume									
AB InBev	-0.2%	0.3%	-2.0%	0.6%	-0.6%	-2.0%	0.2%	0.3%	1.1%
Carlsberg	2.0%	-2.0%	-1.0%	-2.0%	-3.0%	-2.0%	-2.0%	4.8%	0.1%
Heineken	2.1%	1.5%	-3.5%	1.8%	2.2%	2.6%	2.9%	4.0%	2.3%
Growth rate of revenue per hectolitre									
AB InBev	4.8%	6.9%	5.3%	5.3%	6.8%	4.4%	4.8%	4.3%	3.2%
Carlsberg	3.8%	5.0%	2.0%	4.2%	5.3%	3.8%	3.0%	1.7%	3.1%
Heineken	1.5%	2.4%	2.6%	1.2%	1.3%	2.2%	2.1%	2.1%	3.3%
Organic growth rate of revenue									
AB InBev	4.6%	7.2%	3.3%	5.9%	6.2%	2.4%	5.0%	4.6%	4.3%
Carlsberg	5.8%	3.0%	1.0%	2.2%	2.3%	1.8%	1.0%	6.5%	3.2%
Heineken	3.6%	3.9%	-0.9%	3.0%	3.5%	4.8%	5.0%	6.1%	5.6%

6. Heineken's Performance Forcasting



As outlined in chapter 3, the value of a company is determined based on its ability to generate cash flows in the future. All else being equal, the greater the ability, the more valuable the company is to investors. Built upon the strategic and historical financial performance analysis outlined in chapter 4 and 5, this chapter aims to estimate Heineken's core operation's future performance in the form of free cash flows and economic profits. The results in this chapter will be used as the vital foundation for the determination of the company's value and, ultimately, its intrinsic share price in chapter 8. The chapter begins with the framework for forecasting where major guidelines are presented and, subsequently, moves on to the forecast of Heineken's revenue and its future financial statements, namely income statement and financial position. It ends with the forecasts of free cash flows and economic profits that the company is predicted to generate, which is the ultimate goal of this chapter.

6.1. Framework for forecasting

6.1.1. Length and details of forecasting

One of the most important aspects with regard to forecasting is to appropriately divide the future into different forecasting periods in which the magnitude of the company's key value

drivers is expected to vary. Generally, there are two types of forecasting periods: an explicit period and a continuing-value period. By definition, the company's key value drivers are expected to fluctuate in the explicit forecast period, while they are viewed as steady in the continuing-value forecast period. Thus, the explicit forecast period has to be long enough for the company to reach its steady stage. The company is considered to reach its steady stage if a) it grows at a constant rate by reinvesting a constant proportion of its operating profits into the business each year and b) it earns a constant rate of return on both existing capital and new capital invested (Koller et al., 2015). For instance, while the length of the explicit forecast period for companies that are new to their industries or whose industries are still young may be considerably longer in order for these companies to reach their steady stages, that of companies which are mature is relatively short since they have already reached or will soon reach steadiness.

Another important aspect is how detailed the forecasts should be in each forecast period. While forecasting each aspect of the company for the next five years may be feasible and reliable, it may be extremely hard and imprecise to forecast them for the next 10 or 20 years. When the explicit forecast period is considerably long, Koller et al. (2015) suggest breaking it into short-term and long-term periods. In the short-term forecast period, which usually lasts for 5 – 7 years, the company's complete income statements and financial position should be forecasted in detail, with as many links to real variables such as sales volume, price, cost per unit, as possible. By contrast, only such important variables as revenue growth, profit margins, return on invested capital, and capital turnover should be focused on in the long-term forecast period. This approach not only helps simplify intermediate forecast but also forces the focus to shift to the business's long-term fundamental economics, rather than each individual line items. Koller et al., 2015 argues that "You can do much more to improve your valuation through a careful analysis of whether your forecast of future return on invested capital (ROIC) is consistent with the company's ability to compete than by precisely (but perhaps inaccurately) forecasting accounts receivable ten years out."

Based on the guidelines above, this paper divides the future forecast for Heineken into short-term, long- term, and continuing-value periods. In the short-term forecast period (2020 – 2027), the impact of the coronavirus, attractive growths in emerging markets and how Heineken is expected to perform in its markets will be shed light on by forecasting the company's performance in the next eight years, including detailed forecasts of its income statement and financial position. By contrast, only key variables including revenue growth,

profit margin, return on invested capital and capital turnover are forecasted in the long-term period (2028 – 2037) in order to capture changes in fundamental economics during the period, such as lower growths in emerging markets and the relatively stable market shares of Heineken in its markets. Finally, the company is expected to reach its steady stage after the long-term period, beginning in 2038.

6.1.2. Guidelines for forecasting revenue

There are two approaches to revenue forecasting: top-down and bottom-up (Koller et al., 2015). In the top-down approach, sales of the entire market in which the company operates are first forecasted. Then, the forecast of the company's market share is carried out. Finally, the company's future revenue is the direct result of the two forecasts. This approach is most suitable for companies that are in mature industries since the development of the industries is relatively predictable, and there are numerous available forecasts from industry experts. In comparison, the bottom-up approach looks at the projections of the customer demand for the company's products. The company forecasts future demand of each of its customers and then add them up to derive forecasts of its future revenue. On top of it, the company has to also forecast new demand from new customers and lost demand from its existing customer base. This approach works best for companies in industries that are relatively new.

Regardless of the method, forecasting revenues over long time periods may be inaccurate due to possible disruptive changes in customer preferences, technologies, and corporate strategies in the industry. Therefore, a constant re-evaluation of whether the current forecast is still consistent with the industry dynamics and the company's competitive position should be periodically carried out (Koller et al, 2015).

In this paper, Heineken's future revenue will be forecasted based on the top-down approach for at least three reasons. Firstly, the beer industry is relatively old and mature and not expected to experience any major shocks in the future. Secondly, there are various industry forecasts from experts that are available and can be used to predict how the beer industry will behave in the future. Thirdly, Heineken accounts for considerable shares of the markets where it operates, making the forecast much easier than the bottom-up approach.

6.1.3. Guidelines for forecasting financial statements

As outlined previously, the company's financial statements should be forecasted in detail in the short-term part of the explicit forecast period. The purpose of this practice is to help produce reliable insights into how the company's financial statements may look like in the near future (e.g., 5 – 7 years), which in turn can be used as the foundation to better forecast its performance in the long-term part and value-continuing forecast period. Usually, the company's income statement and financial position are the most important information that needs to be forecasted.

In order to forecast each item in the company's income statement or financial position, a three-step process is used. The first step involves the identification of the economic relationship that drives the item being forecasted in the form of a ratio. Although most items are economically tied to revenue, some items have economic relationships with certain assets or liabilities. For instance, while account receivable item links to revenue (account receivable to revenue ratio), it is more appropriate to link depreciation and amortization to "Property, Plant and Equipment" and intangible assets. Once the economic-relationship ratio is identified, the next step involves the forecast of this ratio in the future. Finally, in the last step, this forecasted ratio is applied to the forecast of the item's driver to derive the forecast of the item. For instance, the forecast of the company's account receivable in a given year can be obtained by multiplying the forecasted account receivable-to-revenue ratio by the company's forecasted revenue for the year. In the following sub-sections, some typical economic-relationship ratios will be examined for different line items in both the income statement and financial position statement.

6.1.3.1. Guidelines for forecasting the income statement

Table 3 illustrates the most common items in the income statement and their forecast drivers. Since the cost of goods sold, including raw materials, transport expenses, repair and maintenance expenses, and selling, general and administrative costs, such as marketing, research and development, and employee expenses, are variable costs and tend to fluctuate with the company's revenue, their forecast driver should be revenue. By contrast, depreciation is based on the company's prior-year property, plant, and equipment (PP&E). Ideally, gross PP&E should be used to forecast depreciation because, according to accounting rules, depreciation is just the practice of allocating the purchase cost of PP&E. Nevertheless, given the complexity of accounting, the usage of gross PP&E may lead to an overestimate of

depreciation, specifically when assets that have already fully depreciated but still show up in the gross PP&E accounting figures. Thus, depreciation-to-net PP&E can be used as a proxy to circumvent this problem.

Table 3: Typical forecast drivers for various items in the income statement

Type	Line item	Typical forecast driver	Typical forecast ration
Operating	Cost of goods sold (COGS)	Revenue	COGS/Revenue
	Selling, general and administrative (SG&A)	Revenue	SG&A/Revenue
	Depreciation	Prior-year PP&E	Depreciation/Net $PP\&E_{t-1}$
Non-operating	Non-operating income	Appropriate non-operating asset	Non-operating income/Non-operating asset or growth in non-operating income
	Interest expense	Prior-year total debt	Interest $expense_t$/Total $debt_{t-1}$
	Interest income	Prior-year excess cash	Interest income/Excess $cash_{t-1}$

(Source: Koller et al., 2015)

Moreover, non-operating incomes and expenses should also be forecasted. However, since these line items do not show up in the calculation of NOPLAT and, consequently, do not run through free cash flows, their forecasts do not affect the valuation of the company's core operation. Instead, their forecasts serve two purposes. Firstly, they help managers grasp all possible aspects of the company's operation in the near future and plan the strategies and operation for the company accordingly. Secondly, together with the forecast of the financial position, they can work as a check on whether any mistakes have been made during the forecasting process for operating line items, which would not have been spotted if only operating items were forecasted.

The most common non-operating items are non-operating incomes and interest expenses and incomes. Non-operating incomes are generated by non-operating assets such as non-consolidated subsidiaries, customer financing, and other equity investment. Thus, the appropriate forecast drivers for them are their respective non-operating assets. By contrast, interest expenses (incomes) should be tied to the liabilities (assets) that give rise to them.

6.1.3.2. Guidelines for forecasting the financial position

Table 4 illustrates the most common items in the financial position statement and their forecast drivers. Most of the items that make up operating working capital, such as account receivable and accrued expenses, tend to fluctuate with the company's revenue, indicating that their appropriate forecast driver should be revenue. The two exceptions are inventories and accounts payable. Since they are tied to input prices, their forecast driver should be the company's cost of goods sold (COGS). However, when input prices do not deviate significantly from the company's cost per unit, revenue can be used as their forecast driver as similar to other components of working capital (Koller et al., 2015).

Table 4: Typical forecast drivers for the financial position statement

Type	Line item	Typical forecast driver	Typical forecast ration
Operating	Accounts receivable	Revenue	Accounts receivable/Revenue
	Inventories	Cost of goods sold	Inventories/COGS
	Accounts payable	Cost of goods sold	Accounts payable/ COGS
	Accrued expenses	Revenue	Accrued expenses/Revenue
	Net PP&E	Revenue	Net PP&E/Revenue
Non-Operating	Non-operating assets	None	Growth in non-operating assets
	Pension assets or liabilities	None	Trend toward zero
	Deferred taxes	Operating taxes or corresponding balance sheet item	Change in operating deferred taxes/Operating taxes, or deferred taxes/corresponding balance sheet item

(Source: Koller et al., 2015)

When a company is enjoying its growth, it has to invest a certain amount of capital in its property, plant, and equipment in order to maintain and expand its businesses. Thus, the most appropriate forecast driver for net PP&E year should be the company's revenue. Koller et al., 2015 argues that, over time, the ratio of net PP&E for a given year to revenue generated in that year is quite stable. Moreover, when net PP&E is forecasted based on revenue, net capital

expenditure should also be calculated based on the forecast in order to ensure the soundness of the forecast. For instance, forecasted net PP&E may result in negative capital expenditure for companies with low growth rates and fairly good improvements in capital efficiency, which implies asset sales. Although this scenario could be possible, check on whether the situation is likely to occur needs to be carried out.

Similar to the forecast of the income statement, non-operating assets and liabilities should also be forecasted in the financial position statement. Since these assets and liabilities do not run through free cash flows, their forecasts do not have any effect on the valuation of the company's core operation. Instead, their values are assessed separately at the valuation date and added to the estimated value of the core operation to derive the total fair value of the company as a whole. Nevertheless, the forecasts of them are necessary for the sense that a) they help managers better understand and plan the company's operation in the near future, and b) they work as a check on whether any mistakes haven occurred during the forecasting process for operating assets and liabilities. Most of non-operating assets and liabilities do not have their corresponding forecasts drivers. Instead, their historical growth rates work as the foundation for estimating their growths into the future.

6.2. Heineken's revenue forecasting

As outlined before, the top-down approach is used in this paper to forecast Heineken's revenue in the future. Specifically, in the following sub-sections, the sales volume of the beer industry will be first forecasted, followed by the forecast of Heineken's market shares in regions where it has main operations. Once those two inputs are already in place, it is ready to finally make forecasts of the company's revenue in the future.

6.2.1. Beer industry's sales volume forecasting

6.2.1.1. Heineken's definition of regional markets

Being one of the largest beer companies in the world, Heineken has its products served globally. In its annual reports, the company identifies four different regions where it operates, namely a) Africa, the Middle East and Eastern Europe; b) Americas; c) the Asia Pacific; and d) Europe. Nevertheless, a further investigation reveals that in each aforementioned region, the company has main operations through its own subsidiaries and breweries in only a certain number of countries, and the rest of the countries (markets) are served by its export or joint

ventures activities. It is the markets where Heineken has main operations and competes directly that generate the majority of the company's consolidated revenue. By contrast, according to accounting rules, revenue generated by its joint ventures are not recognized in the company's consolidated results, but instead recognized with the joint ventures, with appropriate portions of their net incomes are shown on Heineken's income statement. Thus, it is more relevant to focus on the behaviors of the markets where the company has main operations instead of those of the entire regions as defined by geography. Table 5 illustrates the countries where Heineken has the main operation as of December 31st, 2019. In the following sections, the terms "Africa, Middle East, and Eastern Europe," "Americas," "Asia Pacific" and "Europe" only refer to groups of countries shown in the table.

Table 5: Markets where Heineken has main operations as of December 31st, 2019

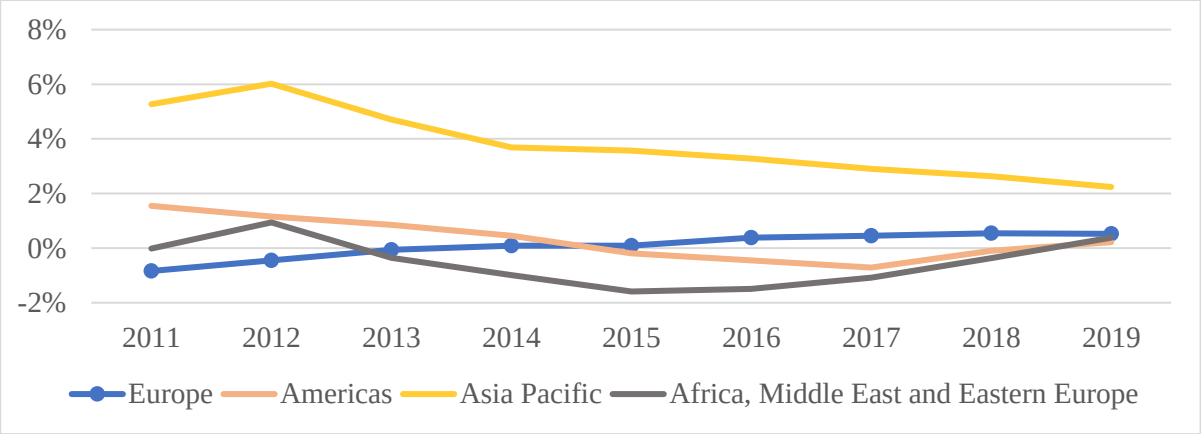
Africa, the Middle East, and Eastern Europe	Americas	Asia Pacific	Europe
Algeria	Argentina	Cambodia	Central
Democratic Republic of Congo	Brazil	Indonesia	Eastern
Egypt	Canada	Laos	Southern
Ethiopia	Costa Rica	Malaysia	Western
Nigeria	Mexico	Myanmar	
Guinea	Panama	New Caledonia	
Mozambique	United States	New Zealand	
Republic of Congo		Papua New Guinea	
South Africa		Philippines	
Tanzania		Singapore	
Zambia		Solomon Island	
Zimbabwe		South Korea	
Belarus		Sri Lanka	
Russia		Taiwan	
		Timor Leste	
		Vietnam	

(Source: Heineken's annual reports)

6.2.1.2. Historical growth rate analysis of sales volume

Graph 40 illustrates the growth rates of sales volume of the regional beer markets where Heineken operates over the period 2011 – 2019. The company has exposure to both fast-growing and saturated markets. Although the growth rate of Americas steadily decreased from the level of about 1.5% in 2011 to negative 0.7% in 2017, caused by the stagnation in the three largest markets in the region, namely the United States, Canada, and Brazil, it managed to bounce back to just above 0% in 2019, mainly driven by stable growth (roughly 2.5% annually) of the Mexican beer market. Mexico has increasingly grown in importance in the region, accounting for 16.5% of the total sales volume in the region in 2019 compared to its share of 13.6% in 2011. This is due to the fact that while the largest markets have been on a steady decline, it has constantly been growing over the same period. By contrast, Europe's growth rate hovered at around 0%, with the last three years enjoying stable growth of roughly 0.5%.

Graph 40: Sales volume growth rate in different regions where Heineken has operations



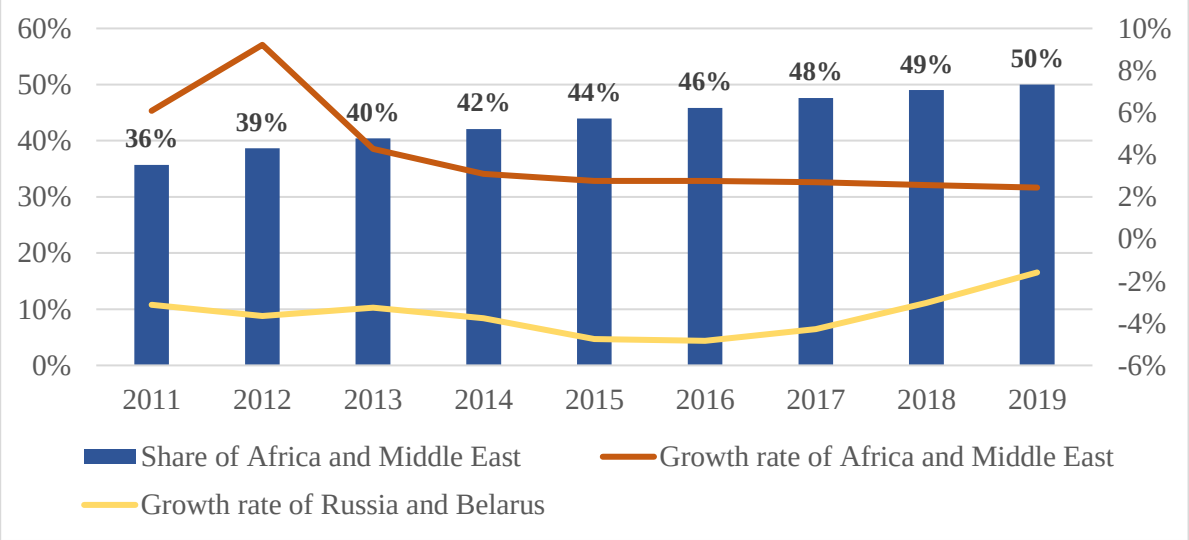
(Source: Statista, 2020a)

In comparison, Asia Pacific enjoyed relatively strong growth over the same period. Its growth increased impressively to 6% in 2012, but, ever since, has been steadily slowing down, reaching around 2.2% in 2019. Vietnam has been the main growth engine for the region. The country accounted for about 36% of sales volume in the region in 2010 and steadily increased its share to 43% in 2019. Its annual growth rate (CAGR) of sales volume has been stable at about 6% over the period 2010 – 2019, an impressive growth compared to how saturated beer markets in developed countries have been. The two other largest markets in the region are the Philippines and South Korea, which together accounted for 34% of the regional sales volume in 2019. While the South Korean market has been stagnant over the last ten years, the

Philippines' annual growth rate (CAGR) has been about 2% over the same period. Together, Vietnam and the Philippines have been the driving forces behind the region's relatively strong growth over the last ten years.

At first glance, Africa, the Middle East, and Eastern Europe (AMEEE) region seem to share a similar pattern with the Americas, implying that the region may already have been mature. However, a further investigation into the break-down of the region reveals valuable insights. To understand the dynamics of the AMEEE region, it is broken down into Africa and the Middle East and Eastern Europe, which consists of Russia and Belarus, as defined by Heineken. Graph 41 illustrates both growth rates of these two sub-regions and Africa and the Middle East's share of sales volume in the region over the period 2011 – 2019. In the graph, the right axis shows the growth rates, while the left axis refers to the share of volume sales.

Graph 41: Africa and the Middle East's share of sales volume and growth rates in sales volume of different sub-regions in Africa, the Middle East, and Eastern Europe region



(Source: Statista, 2020a)

The growth rate of Africa and the Middle East shares a similar pattern with that of Asia Pacific. In 2012, it increased to a whopping number of 9.2% but has steadily slowed down ever since, reaching around 2.4% in 2019. The sub-regions' growth engines include Ethiopia, Nigeria, and South Africa, which together have accounted for around 75% of the sub-regions' sales volume. On average, the sub-region has grown at roughly 4% (CAGR) over the period 2010 – 2019. By contrast, Eastern Europe sub-region has constantly experienced contraction over the same period, at a slower pace over the last three years. On average, its growth rate (CAGR) has been about negative 3.6% over the period 2010 – 2019. Additionally, the fact that the two

sub-regions have experienced growths in opposite directions leads to the growing importance of Africa and the Middle East in the region, whose share of sales volume drastically increased from around 36% in 2011 to about 50% in 2019.

6.2.1.3. Volume forecasts with the impact of a coronavirus-made pandemic

With the coronavirus still rampaging and lockdowns taking place in most of the countries, economic activities have been severely disrupted. One of the most significant questions about the pandemic is how the world economy will recover once the pandemic is over. Given prolonged lockdowns and the damages, the pandemic has already inflicted, the majority of economists no longer believe that a V-shape recovery is feasible. Instead, many of them have shifted their expectations to a Nike swoosh-shaped recovery, with some periods of stagnation before things start to pick up again to reach their 2019 levels (Jesus, the Beatles and Masa Son, 2020).

Beer industry being no exception, the pandemic has already taken its toll on the beer industry and is expected to continue to do so in the near future. This paper believes the Nike swoosh-shaped recovery will also apply to the beer industry. Specifically, the pandemic is expected to get under control by the end of 2020, and the industry will, to some extent, recover in 2021 and fully return to normalcy in 2022. Although there are many different forecasts for the beer industry that are available from different experts having different expectations about the recovery, the paper chooses to go with the forecasts made by Statista due to its similar belief in the Nike swoosh-shaped recovery.

Exhibit 29: Short-term forecast of sales volume for different regional markets

	Historical					Short -term Forecast			
million hectolitres or %	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Europe (sales volume)	**377.8**	**379.2**	**380.9**	**383.0**	**385.0**	**343.3**	**367.7**	**381.5**	**387.1**
Europe (growth rate)	0.1%	0.4%	0.5%	0.5%	0.5%	-10.8%	7.1%	3.8%	1.5%
Americas (sales volume)	**517.7**	**515.3**	**511.6**	**511.2**	**512.3**	**458.3**	**494.4**	**516.5**	**519.0**
Americas (growth rate)	-0.2%	-0.5%	-0.7%	-0.1%	0.2%	-10.5%	7.9%	4.5%	0.5%
Asia Pacific (sales volume)	**97.3**	**100.5**	**103.4**	**106.1**	**108.5**	**92.5**	**104.2**	**111.8**	**115.8**
Asia Pacific (growth rate)	3.6%	3.3%	2.9%	2.6%	2.2%	-14.8%	12.7%	7.3%	3.7%
Africa, Middle East and Eastern Europe (sales volume)	**172.9**	**170.3**	**168.4**	**167.8**	**168.5**	**165.9**	**169.8**	**172.3**	**174.3**
Africa, Middle East and Eastern Europe (growth rate)	-1.6%	-1.5%	-1.1%	-0.4%	0.4%	-1.5%	2.3%	1.5%	1.1%

(Source: Statista, 2020a)

Exhibit 29 illustrates sales volume forecasts for different regional markets where Heineken has main operations for the next four years. Europe, Americas, and the Asia Pacific are expected to scale back on their consumption of beer products to a relatively large extent in 2020, with the growth rates for Europe and Americas being forecasted to be about negative 10.8% and negative 10.5% respectively, while the figure for the Asia Pacific being almost

negative 15%. Interestingly, Africa, the Middle East, and Eastern Europe are forecasted to experience much less pain in 2020, with its expected growth being only negative 1.5%. This is due to the fact that, thus far, the region has not been affected by the pandemic as severely as others.

Americas and the Asia Pacific are expected to fully return to their 2019 consumption level in 2022. By contrast, it is going to take Europe another year (2023) in order for it to fully recover, while Africa, Middle East, and Eastern Europe region is expected to completely return to normalcy one year earlier (2021) because it is considered to be much less affected by the pandemic.

6.2.1.4. Volume forecasts after the pandemic

Exhibit 30 illustrates sales volume forecasts for different regions once the pandemic is over, and the beer industry has fully returned to normalcy. Given its saturation before the pandemic erupted, the European beer market is forecasted to grow slowly at its 2017 – 2019 period level of 0.5% annually going forward. With respect to the Americas, where the declining trend of most of the biggest markets in the region is offset by strong growth in the Mexican market, this dynamic is assumed to return once the region comes back to normal. Although Mexico had been steadily growing its share of regional sales volume, its share as of 2019 was still less than one-sixth. Thus, the Americas region is assumed to neither grow rapidly nor experience contraction in the future. Its growth rate is forecasted to be 0.5% annually from 2024 onwards, similar to that of Europe.

Exhibit 30: Long-term forecast of sales volume for different regional markets

	Short -term Forecast				Long -term Forecast										CV
million hectolitres or %	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Europe (sales volume)	**389.1**	**391.0**	**393.0**	**394.9**	**396.9**	**398.9**	**400.9**	**402.9**	**404.9**	**406.9**	**409.0**	**411.0**	**413.1**	**415.1**	**417.2**
Europe (growth rate)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Americas (sales volume)	**521.6**	**524.2**	**526.9**	**529.5**	**532.1**	**534.8**	**537.5**	**540.2**	**542.9**	**545.6**	**548.3**	**551.1**	**553.8**	**556.6**	**559.4**
Americas (growth rate)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Asia Pacific (sales volume)	**118.7**	**121.7**	**124.8**	**127.9**	**129.8**	**131.7**	**133.7**	**135.7**	**137.8**	**139.8**	**141.9**	**144.0**	**146.2**	**148.4**	**149.1**
Asia Pacific (growth rate)	2.5%	2.5%	2.5%	2.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	0.5%
Africa, Middle East and Eastern Europe (sales volume)	**176.9**	**179.5**	**182.2**	**184.9**	**186.8**	**188.7**	**190.6**	**192.5**	**194.4**	**196.3**	**198.3**	**200.3**	**202.3**	**204.3**	**205.3**
Africa, Middle East and Eastern Europe (growth rate)	1.5%	1.5%	1.5%	1.5%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.5%

By contrast, once it has fully returned to normalcy, Asia Pacific is assumed to grow at its historical level of 2.5% annually until 2027, after which the region's growth is expected to slow down and maintain at the level of 1.5% for the next ten years (until 2037). From 2038 onwards, the region is expected to reach its maturity and grow at a much slower pace, being 0.5% annually, similar to that of Europe and the Americas.

For Africa, the Middle East, and Eastern Europe, the sales volume growth pattern is expected to be similar to that of Asia Pacific. Specifically, after the pandemic is gone and the market has returned to normalcy, the region is expected to grow at 1.5% annually until 2027. Then, it is forecasted to grow at 1% over the next ten years (until 2037) before it reaches saturation from 2038 onwards, during which its growth will be 0.5%. It is worth noting that most of the growth that the region is expected to realize over the period 2024 – 2037 will be solely due to the rapid growth in Africa and Middle East beer markets.

6.2.2. Heineken's market share forecasting

6.2.2.1. Heineken's historical market share analysis

There are three main product categories offered by Heineken: beer, non-beer, and a third party. Beer products refer to both traditional and new beer products, which are produced through the process of fermentation of barley. This category includes premium, craft beer, and low- and non-alcoholic beer products. By contrast, the non-beer category consists of cider, water, and soft drinks, while third party category refers to beer and non-beer products of other companies which Heineken stores and sells in its retail stores, most of which are located in Europe. As shown later, the sales volume of each category will be forecasted separately in this paper in order to derive the forecasts for the company's consolidated sales volume.

It is worth noting that the historical data and future forecasts about different regional beer markets outlined above only refer to the premium and craft beer segments. Thus, the term "market shares" in this chapter refers to Heineken's shares of the sales volume of premium and craft beer products in different regional markets. Moreover, in order to make reliable forecasts, it is vital to grasp Heineken's historical market shares in different regional markets, which in turn requires data about the company's historical sales volume of premium and craft beer in these regions. Unfortunately, this type of information is not provided by the company. Therefore, this paper will try to estimate this information based on all available data provided by the company.

Exhibit 31 illustrates the break-downs of the company's consolidated beer volume based on the regional market and type of beer product. On the consolidated level, premium and craft beer category have been constantly accounted for roughly 94% of the consolidated beer volume over the last five years. It is assumed that, in each regional market, the share of premium and craft beer category in the total beer volume sold by the company in the region

in a given year was equal to that on the consolidated level. For instance, in 2019, premium and craft beer products accounted for about 94.2% of the consolidated beer volume sold by the company. This ratio of 94.2% is assumed to also hold in each region. Specifically, the sales volume of premium and craft beer products in Europe is estimated to be 76.3 million hectoliters (94.2% * 81), while the figures for America, Asia Pacific, and AMEEE are 80.6, 29.3 and 41.2 respectively.

Exhibit 31: Break-down of Heineken's consolidated beer volume

In million hectolitre	2015	2016	2017	2018	2019
Africa, Middle East and Eastern Europe	35.9	38.4	40.1	41.7	43.7
Americas	56.0	58.7	72.1	83.3	85.6
Asia Pacific	19.8	24.4	27.0	29.0	31.1
Europe	76.6	78.6	78.8	79.8	81
Consolidated beer volume	**188.3**	**200.1**	**218.0**	**233.8**	**241.4**
Premium and craft beer volume	177.0	187.8	205.0	220.7	227.3
Low- and non-alcoholic beer volume	11.3	12.3	13.0	13.1	14.1

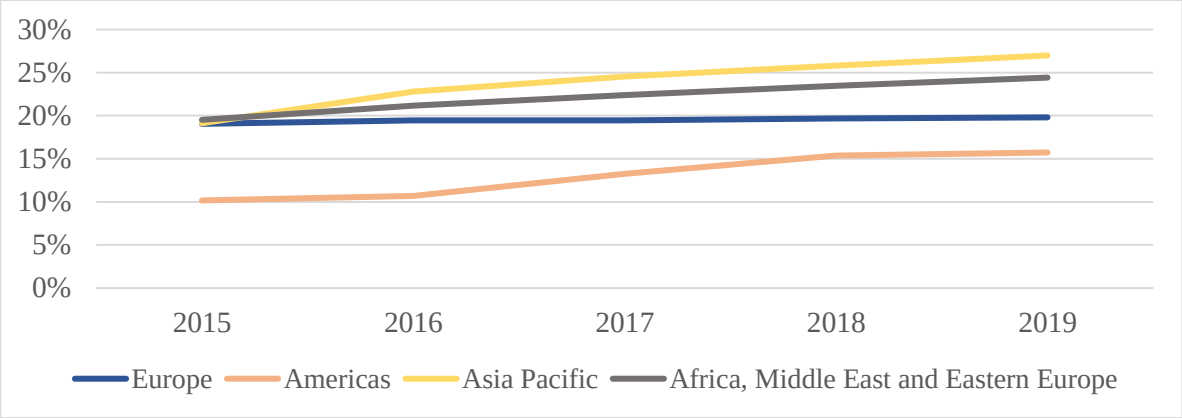
(Source: Heineken's full-year result reports)

Once the data about the sales volume of the premium and craft beer category has been estimated for each regional market, Heineken's market shares can be found by dividing these numbers by the regional markets' sales volume. Graph 42 illustrates Heineken's market shares in different regional markets over the last five years. Heineken has managed to increase its market shares in all four regional markets where it has main operations over the period. In the European market, the company increased its share from 19.1% in 2015 to nearly 20% in 2019. By contrast, its market share in the Americas rose by more than 5%, from 10.2% in 2015 to 15.7% in 2019. However, this improvement was mainly due to the company's acquisition of Brasil Kirin in 2017. Before the acquisition (2015 – 2016), its market share increased by only 0.5%, while the increase was about 0.3% after the acquisition (2018 – 2019). This indicates that gaining more market share in an organic manner in the Americas may be challenging, considering how formidable AB InBev is in this market.

In Africa, the Middle East, and Eastern Europe region, Heineken had steadily increased its market shares by nearly 5%, rising from 19.5% in 2015 to 24.4% in 2019. The improvement was attributable to both the rapid growth of the African beer market and the many acquisitions the company made during the period. Specifically, Heineken acquired DHN Drinks (Pty) Limited and Sedibeng Brewery (Pty) Limited in 2016 in order to expand and strengthen its presence in South Africa. Moreover, over the last three years, the company's organic growth

in the region ranged from 4.6% to 5%, driven by Heineken's commitment to expanding its operation in the region, such as increasing spends on marketing, building new breweries and improving production capacity.

Graph 42: Heineken's market shares in different markets over the period 2015 – 2019



In comparison, Heineken enjoyed even greater growth in the Asia Pacific region. Its market share had increased from 19.1% in 2015 to 27% in 2019, a whopping increase of about 8%. Unlike AMEEE region, the improvement in the Asia Pacific was mainly driven by the company's organic growth, which was, on average, more than 10% over the period. Its organic growth in 2016 was nearly 18%, while the figure for 2019 was about 12%. This achievement was attributable to both the rapid growth of the region and the company's commitment to the region in the form of increased marketing activities and production capacity in the region.

6.2.2.2. Heineken's market share forecasting

Because of the negative impacts of the coronavirus-made pandemic, this paper assumes that beer companies will focus on overcoming the adversaries and their recovery, instead of competing against one another, until things have fully returned to normalcy. Thus, Heineken's market shares in the four regional markets are forecasted to remain at the 2019 level until 2022, when the company is expected to fully recover.

For the next five years after 2022 (2023- 2027), Heineken is expected to gain more market shares in most of the regional markets. Specifically, its share in the European market is assumed to stay at the same level in 2019 since the market is already saturated, and gaining more share has proved to be challenging, as shown in the analysis above. By contrast, with the acquisition of Brasil Kirin in 2017 and its possession of many well-recognized brands in the region such as Lagunitas, Red Stripe, and Dos Equis, Heineken is in a good position to gain

more market share in Americas. However, this opportunity to expand may be hampered by the dominant position of AB InBev in the region, as shown in the periods before and after the acquisition of Brasil Kirin outlined previously. Thus, Heineken's market share in the Americas is forecasted to reach 17% by 2027 from its level of 15.7% in 2019. And this increase in market share is assumed to spread evenly throughout the five-year period, as shown in exhibit 32. After 2027, the company is expected to remain its market share constant at the level of 17%.

Exhibit 32: Forecast of Heineken's market shares in different regional markets

%	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e
Europe	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Americas	15.7%	15.7%	15.7%	16.0%	16.2%	16.5%	16.7%	17.0%	17.0%
Asia Pacific	27.0%	27.0%	27.0%	28.6%	30.2%	31.8%	33.4%	35.0%	35.0%
Africa, Middle East and Eastern Europe	24.4%	24.4%	24.4%	25.5%	26.6%	27.8%	28.9%	30.0%	30.0%

Given its marvelous performance in the region over the last five years, Heineken is expected to continue to take the Asia Pacific region by the storm for the next five years (2024 – 2028) after the pandemic is expected to be over and the market has returned to normalcy in 2022. The company is forecasted to increase its market share by another 8% over the five-year period as similar to its achievement over the last five years, reaching 35% by 2027. Similarly, this increase is also assumed to spread evenly over the period. Moreover, from 2028 onwards, it is expected to be challenging for Heineken to gain more market share, and the company will be able to maintain its position in the region at the level of 35%.

A similar prospect is expected for Heineken's performance in Africa, the Middle East, and the Eastern Europe region. Once things are assumed to have returned to normalcy in 2022, the company's market share in the region is forecasted to increase by roughly another 5% as it did over the last five years, reaching 30% by 2027. Similarly, this increase is also expected to spread evenly over the five-year period (2023 – 2027). After that, Heineken's assumed to maintain its market share at 30% from 2028 onwards.

6.2.3. Heineken's revenue forecasting

As outlined previously, Heineken offers three different product categories: beer, non-beer, and a third party. In the following sections, each category will be forecasted in order to derive the forecasts of the company's consolidated sales volume, which in turn is an important input for ultimately forecasting its future revenue. Moreover, revenue growth rate forecasts will be broken down into three forecasting periods: short-term, long-term, and continuing-value, which are consistent with the classification outlined at the beginning of the chapter. In the

short-term forecasting period (2020 – 2027), Heineken is expected to experience shocks to its revenue growth caused by a) the impacts of the coronavirus-made pandemic; b) rapid growths of premium and craft segments in emerging markets; c) expected increases in market shares for its premium and craft segments, and d) potential growth for its low- and non-alcoholic beer products. This short-term forecast is shown in exhibit 33. By contrast, in the long-term forecasting period (2028 – 2037), growths are expected to be slower, albeit still attractive, mainly driven by slower growths of both premium & craft and low- & non-alcoholic segments. The long-term forecast is presented in exhibit 34. Finally, Heineken's revenue is expected to grow at a lower constant rate in the continuing-value forecasting period (from 2038 onwards).

Exhibit 33: Heineken's revenue growth rate short-term forecasts

	Historical				Short-term forecast							
In million hectolitres or %	**2018**	**2019**	**1Q 2020**	**Rest of 2020**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Beer volume (premium and craft)	220.7	227.3	-	-	-	-	229.8	237.9	245.4	253.1	261.1	269.2
Beer volume (low- and non-alcoholic)	13.1	14.1	-	-	-	-	14.1	15.5	17.1	18.8	20.6	22.7
Total beer volume	233.8	241.4	51.6	162.3	213.9	227.64	243.9	253.4	262.5	271.9	281.7	291.9
Non-beer volume	27.4	26.4	5.2	17.0	22.2	24.28	26.4	26.9	27.5	28.0	28.6	29.1
Third-party volume	8.6	8.4	1.5	5.5	7.0	7.72	8.5	8.5	8.5	8.5	8.5	8.5
Total consolidated volume	269.8	276.2	58.3	184.8	243.1	259.6	278.8	288.8	298.4	308.4	318.8	329.6
Gross volume growth	7.2%	2.4%	-	-	-12.0%	6.8%	7.4%	3.6%	3.3%	3.3%	3.4%	3.4%
Net effect of acquisition/divestiture	3.2%	0.1%	-	-	-	-	-	-	-	-	-	-
Organic volume growth	**4.0%**	**2.3%**	**-**	**-**	**-12.0%**	**6.8%**	**7.4%**	**3.6%**	**3.3%**	**3.3%**	**3.4%**	**3.4%**
Revenue per hectolitre growth	**2.1%**	**3.3%**	**-**	**-**	**0%**	**0%**	**1%**	**2%**	**2%**	**2%**	**2%**	**2%**
Organic revenue growth rate	**6.1%**	**5.6%**	**-**	**-**	**-12.0%**	**6.8%**	**8.4%**	**5.6%**	**5.3%**	**5.3%**	**5.4%**	**5.4%**
Effect of currency movement	-4.5%	1.4%	-	-	-	-	-	-	-	-	-	-
Effect of acquisition	2.5%	-0.4%	-	-	-	-	-	-	-	-	-	-
Nominal revenue growth rate	**4.1%**	**6.6%**	**-**	**-**	**-12.0%**	**6.8%**	**8.4%**	**5.6%**	**5.3%**	**5.3%**	**5.4%**	**5.4%**

Exhibit 34: Heineken's revenue growth rate long-term forecasts

	Long-term forecast										CV
In million hectolitres or %	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Beer volume (premium and craft)	271.3	273.4	275.5	277.6	279.8	282.0	284.2	286.4	288.6	290.9	292.3
Beer volume (low- and non-alcoholic)	24.3	26.0	27.8	29.8	31.8	33.1	34.4	35.8	37.3	38.7	39.1
Total beer volume	295.6	299.4	303.3	307.4	311.6	315.1	318.6	322.2	325.9	329.6	331.5
Non-beer volume	29.7	30.3	30.9	31.6	32.2	32.7	33.2	33.7	34.2	34.7	35.0
Third-party volume	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Total consolidated volume	333.9	338.2	342.8	347.5	352.3	356.3	360.3	364.4	368.6	372.8	375.0
Gross volume growth	1.3%	1.3%	1.3%	1.4%	1.4%	1.1%	1.1%	1.1%	1.1%	1.2%	0.6%
Net effect of acquisition/divestiture	-	-	-	-	-	-	-	-	-	-	-
Organic volume growth	**1.3%**	**1.3%**	**1.3%**	**1.4%**	**1.4%**	**1.1%**	**1.1%**	**1.1%**	**1.1%**	**1.2%**	**0.6%**
Revenue per hectolitre growth	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**
Organic revenue growth rate	**3.3%**	**3.3%**	**3.3%**	**3.4%**	**3.4%**	**3.1%**	**3.1%**	**3.1%**	**3.1%**	**3.2%**	**2.6%**
Effect of currency movement	-	-	-	-	-	-	-	-	-	-	-
Effect of acquisition	-	-	-	-	-	-	-	-	-	-	-
Nominal revenue growth rate	**3.3%**	**3.3%**	**3.3%**	**3.4%**	**3.4%**	**3.1%**	**3.1%**	**3.1%**	**3.1%**	**3.2%**	**2.6%**

Before delving into the details of the revenue forecasts, the paper adopts two main assumptions that apply to all the forecasting periods. Firstly, while Heineken has been active in its merger & acquisitions (M&A) activities over the last ten years, the company is assumed to no longer make M&A deals in the future. This assumption is based on the fact that a) in its annual report 2019, Jean-Francois van Boxmeer, the company's CEO, believes that Heineken now has "the right geographical footprint and its exposure is "well balanced between developed and developing markets," signaling that it has achieved the optimal mix of markets; and b)

empirical evidence points out how acquisitions fail to create value for acquirers because high premiums tend to outweigh any synergies generated from the deals, implying that the intrinsic value of a company will not be affected much by incorporating zero-value acquisitions into the valuation model (Koller et al., 2015). Secondly, the currency movement is assumed to have no effects on revenue. This assumption is based on the fact that a) the recognition of currency effects is sometimes required for reporting purpose only and companies do not always need to actually convert the revenue generated by their subsidiaries into their reporting currencies; and b) currency movement is hard to predict and, thus, making inaccurate forecasts of its effects is very likely to occur, which may undermine the underlying valuation.

In the following sub-sections, the structure will be based on the before-and-after the coronavirus-made pandemic manner, instead of the three forecasting periods mentioned above. This is due to the fact that the forecasting technique for the company's product categories before the pandemic gets under control, and things have fully returned to normalcy is different from that after the pandemic. However, the forecasts themselves are structured based on the type of forecasting period in order to facilitate the valuation of Heineken in chapter 8.

6.2.3.1. Forecasts with the impact of the coronavirus-made pandemic

In order to forecast the impacts of the pandemic on Heineken's revenue in 2020, the data from its first-quarter report for 2020 will be used as the foundation. With regard to beer volume, at first glance, the company reported a sales volume contraction of only 2.1% on the quarter-on-quarter basis. However, this figure includes both January, February, and part of March's performance before lockdowns were implemented by the majority of governments worldwide. Thus, it is obvious that the real impacts of the pandemic will be understated if the forecast is based on this number. Fortunately, the company also released sales volume contraction for its March performance, which is roughly 14%. This paper believes that the contraction rate in March represents much better than the negative impacts of the pandemic and can be used as the foundation for forecasting the company's revenue in 2020. It is worth noting that even this figure may understate the impacts since the majority of the lockdowns in most countries became effective somewhen in the middle of March. However, since most countries are beginning to loosening their lockdowns, it is likely that sales volume for the rest of the year will suffer less from the pandemic compared to March. Thus, this paper assumes that, for the last three quarters of 2020, the contraction rates for beer volume will be 14% on the quarter-

on-quarter basis. The following formula is applied to calculate the forecast of Heineken's beer volume in the last three quarters of 2020, and the beer volume in the first quarter of 2019 is 52.7 million hectoliters.

Beer volume in the last three quarters of 2020 =
= (Total beer volume in 2019 – Beer volume in the first quarter of 2019) * (1 – 14%)

A similar pattern and argument can be applied to non-beer and third-party volumes. During the first quarter of 2020, they both suffered a quarter-on-quarter contraction rate of 16%. This contraction rate is assumed to also apply to the rest of the year. Moreover, the formula for calculating the forecasts is similar to the one above, with the sales volume of non-beer and third-party products in the first quarter of 2019 being 6.2 million and 1.8 million hectoliters, respectively.

Based on the aforementioned assumptions, Heineken's forecasted consolidated sales volume is about 243.1 million hectoliters. This means a contraction rate of 12% compared to 2019. Since it is assumed that Heineken will no longer carry out any acquisition deals in the future, this contraction rate is also the company's organic growth rate for the year. Furthermore, because economic activities are likely to be slow in 2020, it is reasonable to assume that the company will not be able to raise its revenue per hectoliter for the year. Thus, the ultimate nominal revenue growth rate of the company is forecasted to be negative 12% for 2020.

Regarding 2021, it is assumed that the pandemic will get under control by the end of 2020, and the beer markets will return to normalcy from 2021, albeit at a slow pace as consistent with the stand the paper takes on the recovery shape outlined previously. As a result, over the course of 2021, Heineken is assumed to recover 50% of its lost sales volume that it suffered during 2020, in comparison with 2019, for all three product categories. Thus, Heineken's forecasted consolidated sales volume in 2021 is forecasted to be 259.6 million hectoliters, an increase of 6.8% compared to 2020. Moreover, by 2021, economic activities are assumed to pick up again, albeit also at a slow pace, still making it challenging for Heineken to raise its prices. Therefore, the company's revenue per hectoliter growth rate is assumed to still be 0% in 2021. Overall, the ultimate nominal revenue growth rate of the company is forecasted to be 6.8% in 2021.

By 2022, Heineken is expected to fully recover, with sales volume for its low- and non-alcoholic, non-beer, and third-party products being equal to their 2019 level. By contrast, the

sales volume of its premium and craft segments is also assumed to have fully recovered and estimated by using the sales volume forecasts of the regional markets where it operates, along with the forecasts of its market shares in those markets, as outlined in the previous sections. The following formula is used to calculate forecasts of sales volume of Heineken's premium and craft segments, with i representing the four regions where Heineken has main operations.

$$\textbf{Heineken's sales volume in year t} = \sum \textbf{Region}_i\textbf{'s sales volume}_{t-1} * (1 + \textbf{Growth rate}_{it}) * \textbf{Heineken's market share}_{it}$$

The resulted forecast of Heineken's consolidated sales volume in 2022 stands at 278.8 million hectoliters. This implies an increase of about 7.4% compared to 2021. It is also assumed that by 2022, Heineken will resume its ability to increase its prices, albeit slightly. The company's revenue per hectoliter is forecasted to grow by 1% for the year, and its nominal revenue growth, thus, is forecasted to be 8.4%.

6.2.3.2. Forecasts after the pandemic

As stated before, by the end of 2022, it is assumed that the pandemic has been contained, and things have fully returned to normalcy. This sub-section aims to forecast Heineken's future revenue growth rate from 2023 onwards. The growth rate of each of the company's product categories will be forecasted separately and, by adding them together, the company's consolidated sales volume will be ultimately estimated. Exhibit 33 and 34 illustrate the forecasts for Heineken's revenue growth rate in the future in detail.

Sales volume of Heineken's premium and craft products can be forecasted by using the formula at the end of section 6.2.3.1, along with the forecasts of regional market's sales volume growth rate and the forecasts of the company's shares in these markets, which are analyzed in sub-sections 6.2.1 and 6.2.2. Over the next five years after the pandemic (2023 – 2027), the segments are expected to enjoy volume growth ranging from 3.1% to 3.5%, driven by strong growths in emerging markets and Heineken's increases in market shares. However, over the next ten years that come after (2028 – 2037), their growths are expected to drastically decrease, hovering at about only 0.77% annually. This is due to slower growth in emerging markets and a halt in an increase in the company's market shares. Finally, when emerging markets become saturated, their volume growth is forecasted to be 0.5% annually from 2038 onwards.

With regard to the low- and non-alcoholic segment, over the next five years (2023 – 2027), after its sales volume gets back to the 2019 level in 2022, the segment is expected to grow at an annual rate of 10%. This paper believes that this growth rate is well feasible, due to a) the segment's growth rate in 2019 being 7.6%; b) the current customer trends towards health consciousness outlined in the strategic analysis; c) Heineken's strong position in this market, and d) high expectation about the potential of the market by peers like AB InBev which has even predicted that 20% of its massive sales volume will be attributable to its low- and non-alcoholic beer products by 2025. However, the segment's growth is expected to slow down over the next ten years (2028 – 2037), with annual growth of 7% over 2028 – 2032 and 4% over 2033 – 2037. Finally, the market is assumed to be saturated from 2038 onwards, and, consequently, the segments' volume growth is forecasted to be 1% annually.

Regarding the non-beer category, over the next ten years (2023 – 2032), after its sales volume gets back to the 2019 level in 2022, its volume growth is expected to grow 2% annually. This is due to the fact that a) Heineken is the largest cider producer in the world and in possession of valuable cider brands like Strongbow and Orchard Thieves; b) the segment is beginning to grow outside the United Kingdom, especially Russia, Africa, and the Asia Pacific; c) however ciders do not account for the majority of sales volume of the segment (e.g., only about 20% in 2019). Moreover, over the next five years that come after (2033 – 2037), the segment's growth is expected to stand at 1.5%. Finally, from 2038 onwards, it is forecasted to grow at 1% annually.

Third-party volumes, on the other hand, are assumed to maintain at the 2019 level after it is expected to have fully returned to normalcy in 2022. This forecast is built upon the observation that the company's third-party volumes have been staying roughly at the same level of 8.5 million hectoliters over the last five years. Furthermore, since this segment is not important to Heineken and accounts for an insignificant share of its sales volume (only 3% in 2019), the paper believes that small deviations in its volume forecast should only negligibly affect the company's valuation.

Once the forecasts of growth rates for all the product categories are in place, forecasts of Heineken's consolidated volume can be derived by adding them together, as shown in Exhibits 33 and 34. And in order to forecast the company's revenue growth rates, its revenue per hectoliter growth rate should be next forecasted. As outlined in the financial performance analysis in chapter 5, it has been quite difficult for Heineken to raise its prices compared to

peers like AB InBev and Carlsberg. Over the last ten years, the company has been able to raise its revenue per hectoliter by only 2% annually, compared to about 5% on average for peers. Thus, the paper believes that once its business has fully returned to normalcy in 2022, Heineken will resume its historical ability to increase prices, raising its revenue per hectoliter by 2% annually from 2023 onwards.

Based on the assumptions made above, Heineken's sales volume is expected to grow at 0.6% and its revenue to grow at 2.6% annually in the continuing-value forecasting period (from 2038 onwards).

6.3. Financial statement forecasting

This sub-section will shed light on the detailed forecasts of Heineken's financial statements, namely its income statement and financial position over the next eight years (short-term forecast period). The information in this section is the foundation for making forecasts in the long-term and value-continuing periods. The sub-section will begin with the forecast assumptions about the income statement and financial position statement and, subsequently, move on to present the resulted forecasts based on these assumptions.

6.3.1. Forecasting assumptions

6.3.1.1. Assumptions about the income statement

Exhibit 35: Forecasting assumptions about the income statement

Forecast drivers	Historical		Forecast							
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Revenue growth, %										
Organic volume growth	4.0%	2.3%	-12.0%	6.8%	7.4%	3.6%	3.3%	3.3%	3.4%	3.4%
Revenue per hectolitre	2.1%	3.3%	0.0%	0.0%	1.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Organic revenue growth rate	6.1%	5.6%	-12.0%	6.8%	8.4%	5.6%	5.3%	5.3%	5.4%	5.4%
Effect of currency movement	-4.5%	1.4%	-	-	-	-	-	-	-	-
Effect of acquisition	2.5%	-0.4%	-	-	-	-	-	-	-	-
Nominal revenue growth rate	4.1%	6.6%	-12.0%	6.8%	8.4%	5.6%	5.3%	5.3%	5.4%	5.4%
Operating expense ratios, %										
Raw materials, consumables & services/Revenue	60.7%	61.0%	63.0%	62.0%	61.0%	61.0%	61.0%	61.0%	61.0%	61.0%
Personnel expense/Revenues	16.1%	15.9%	18.0%	16.9%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%
Depreciation expense$_t$ / Net assets$_{t-1}$	11.5%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%
Operating amortization expense$_t$ / Net assets$_{t-1}$	21.3%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%
Amortization of acquired intangibles$_t$ / Net assets$_{t-1}$	5.2%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%
Taxes, %										
Statutory tax rate	25%	25%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Operating tax rate	24.9%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%
Operating cash tax rate	26.0%	25.9%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%
Interest rate, %										
Interest expense$_t$ / Total borrowings$_{t-1}$	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Interest income$_t$ / Excess cash & other financial assets$_{t-1}$	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Dividend income$_t$ / Investment in minority-holding entities$_{t-1}$	3.3%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Interest on net defined benefit$_t$ / Post-retirement obligation$_{t-1}$	2.4%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Others										
Income to non-controlling interests/Net income	9.1%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%
Share of profit$_t$ / investment in associates and joint ventures$_{t-1}$	11.4%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
Gains (loss) from sale of assets	75	95	-	-	-	-	-	-	-	-
Other net finance income (expense)	(80)	(69)	-	-	-	-	-	-	-	-
Dividend to shareholders/Net income (beia)	35.1%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
Dividend to NCI/income to NCI	110%	131%	100%	100%	100%	100%	100%	100%	100%	100%

❖ **Operating expense ratio**

As outlined in chapter 5, "Raw materials, consumables, and service expense" consists mainly of raw materials, non-returnable packaging, goods for resale, marketing and selling expenses, transport expenses, energy and water costs, and repair and maintenance expenses. Thus, this line item can be perceived as a variable cost that tends to fluctuate with revenue. In fact, its ratio to revenue has been quite stable over the last ten years, staying at around 61%. However, so far, in 2020, Heineken has committed to many relief initiatives that are designed to help the local communities where it operates to lessen the negative impacts of the pandemic. For instance, on March 26th, the company donated 15 million euros to support the International Federation of Red Cross and Red Crescent Societies (IFRC) relief efforts for the most vulnerable people affected by Covid-19. In Nigeria, the company has donated over 1.5 million euros to the government in an effort to combat the pandemic. Similarly, it has donated over a million Rands worth of personal protective equipment for healthcare workers in South Africa. And Russia, Mexico, Brazil, Austria, Poland, Spain, Malaysia, Singapore, and Vietnam are among countries that have received similar help from Heineken (Heineken, 2020). This paper perceives these relief efforts by the company as its marketing expenses. Thus, the "Raw materials, consumables and service" expense is forecasted to be 63% of revenue in 2020, slightly higher than its historical level of about 61% over the last ten years. Furthermore, the expense is forecasted to be 62% in 2021 as the company is expected to carry out similar relief efforts in 2021, albeit to a lesser extent than in 2020. From 2022 onwards, the expense-to-revenue ratio is assumed to be the same as its historical level of 61% as things are expected to have fully returned to normalcy.

Similarly, the personnel expense relative to revenue has been quite stable over the last ten years, hovering at the level of 16%. However, the pandemic will also have negative impacts on this type of expense in 2020 and 2021. Recently, Heineken has announced that it will not carry out any structural layoffs until the end of 2020. Also, it is quite unlikely that the company will hire more people or increase salaries for its employee until things have fully returned to normalcy. Thus, the company's personnel expense is assumed to stay at its 2019 level in both 2020 and 2021, making the expense-to-revenue ratio in these years rise to 18% and 16.9%, respectively. From 2022 onwards, the expense-to-revenue ratio is assumed to be the same as its historical level of 16% as things are expected to have fully returned to normalcy.

On the other hand, depreciation and amortization (of both operating and non-operating intangible assets) relative to their corresponding net assets are not expected to rise or fall due to the pandemic. Instead, they are assumed to stay at the same levels in 2019 for the next eight years. Similarly, Heineken's operating tax and operating cash tax rates are assumed to stay constant over the next eight years and be equal to the average of their levels over the last five years. Specifically, the forecasted levels of the company's operating tax and operating cash tax rates for the next eight years stay at about 25.5% and 26.1%, respectively. These assumptions implicitly contain the forecasts of the company's change in deferred tax liabilities, which is shown later in the resulted forecast of the income statement.

- **Interest rates and other non-operating items**

As outlined previously, the forecasts for non-operating items do not affect the valuation of the core operation since they do not run through free cash flows. However, they help complete the forecasts of the financial statements as a whole and, thus, work as a check on whether any mistakes have been made during the process of forecasting operating items. Given this standpoint, the forecast drivers of most of the non-operating items are assumed to be equal to their 2019 levels, as shown in exhibit 35. By contrast, "Gain or loss from asset sales" and "Other net finance or income" are assumed to be 0 in the future, while dividend to non-controlling interests (NCI) relative to income to NCI is assumed to be 100% from 2020 onwards, implying that Heineken will give out all the income entitled by NCI every year.

6.3.1.2. Assumptions about the financial position statement

Exhibit 36 illustrates the forecast assumptions for the mainline items in Heineken's financial position statement.

- **Operating working capital**

Because of the pandemic, Heineken is expected to need more cash for its ordinary course of business than normal. Its operating cash relative to revenue is forecasted to be 4% in 2020, and 3% in 2021 as the company begins to recover. From 2022 onwards, it is expected to return to its historical level of 2%.

Inventory, on the other hand, maybe affected considerably by the pandemic. This is due to the fact that a) most of the contracts to provide raw materials for the year that Heineken has with third parties are signed in the previous year; b) the company commits to paying suppliers at agreed payment terms as part of its relief efforts to supports its suppliers, and c) its sales

volume is expected to decrease significantly. Its inventory, as expressed in revenue days, is forecasted to reach 45 by the end of 2020 and decrease to 40 in 2021 as the company starts to recover. And from 2022 onwards, it is expected to return to its 2019 level of 33.7 revenue days.

Exhibit 36: Forecasting assumptions about the financial position statement

Forecast drivers	Historical		Forecast							
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Operating working capital										
Operating cash, % of revenue	2.0%	2.0%	4.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Inventory, revenue days	31.2	33.7	45.0	40.0	33.7	33.7	33.7	33.7	33.7	33.7
Trade receivables, revenue days	42.1	44.5	50.0	47.0	45.0	45.0	45.0	45.0	45.0	45.0
Other receivables, revenue days	13.3	12.4	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Prepayment, revenue days	6.2	5.9	5.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0
Current tax assets, % of revenue	0.3%	0.5%	-	-	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Trade payables, revenue days	(65)	(72)	(60.0)	(65.0)	(72)	(76)	(80)	(84)	(87)	(91)
Deferred income and Discount accruals, revenue days	(22)	(21)	(15)	(18)	(21)	(21)	(21)	(21)	(21)	(21)
Returnable packaging deposits, revenue days	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Other payables, revenue days	(22)	(19)	(19)	(19)	(21)	(21)	(21)	(21)	(21)	(21)
Current tax liabilities, % of revenue	-1.1%	-1.2%	-5.0%	-2.5%	-1.1%	-1.1%	-1.1%	-1.1%	-1.1%	-1.1%
Total working capital, % of revenue	-5.7%	-5.3%	1.8%	-1.0%	-5.6%	-6.7%	-7.8%	-8.8%	-9.9%	-10.9%
Fixed assets, % of revenue										
PP&E, including operating leased assets	56.1%	55.4%	62.9%	58.9%	54.9%	55.7%	55.7%	55.7%	55.7%	55.7%
Software, etc.	1.8%	2.0%	2.3%	2.1%	2.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Advances to customers	1.3%	0.9%	1.1%	1.0%	0.9%	1.3%	1.3%	1.3%	1.3%	1.3%
Other assets										
Investments in associates and joint ventures	2,021	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868
Minority interest in other entities	501	408	408	408	408	408	408	408	408	408
Other financial assets	568	708	708	708	708	708	708	708	708	708
Tax loss carry-forwards	407	410	410	410	410	410	410	410	410	410
Other liabilities										
Post-retirement obligations, % of revenue	4.2%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Provisions	997	940	940	940	940	940	940	940	940	940
Dividend payables$_t$,% of dividend declared$_{t-1}$	1.9%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Interest payable$_t$,% of total debt$_{t-1}$	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Goodwill and acquired intangible assets										
Amortization of acquired intangible assets	317	312	308	292	277	262	248	235	222	211
Impairment of acquired intangible assets	-	12	-	-	-	-	-	-	-	-
Impairment of goodwill	20	6	-	-	-	-	-	-	-	-
Net currency effect	111	397	-	-	-	-	-	-	-	-
Accumulated amortization of intangibles	2,638	2,950	3,258	3,551	3,827	4,089	4,337	4,572	4,795	5,005
Accumulated net currency effect	(1,867)	(1,470)	(1,470)	(1,470)	(1,470)	(1,470)	(1,470)	(1,470)	(1,470)	(1,470)
Accumulated amortization and impairment of acquired intangible assets & goodwill	6,284	6,614	6,922	7,215	7,491	7,753	8,001	8,236	8,459	8,669
Accumulated gross-up tax effect released	(660)	(738)	(815)	(888)	(957)	(1,022)	(1,084)	(1,143)	(1,199)	(1,251)
Accumulated net currency effect	1,867	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470
Adjusted accumulated amortization and impairment of acquired intangible assets & goodwill	7,492	7,347	7,578	7,797	8,004	8,201	8,387	8,563	8,730	8,888

Trade receivable, as expressed in revenue days, is also expected to rise over the next two years as the company's relief efforts also cover its customers. Specifically, it is forecasted to be 50 in 2020 and reduce to 47 in 2021, before return to its 2019 level of 44.5 from 2022 onwards. By contrast, other receivable is forecasted to be the average of its level over the last two years, being about 12.8 revenue days from 2020 onwards.

Heineken is expected to make fewer prepayments over the next two years due to the pandemic, staying at the level of 5 and 5.5 days of revenue in 2020 and 2021, respectively. Similarly, it is assumed to stay at the average of its levels over the last two years (6 revenue days). By contrast, most of Heineken's current tax assets come from its operation in Singapore, whose government has implemented its tax relief program due to the virus, allowing corporations to

postpone their tax payments for the year 2020. Thus, the company's current tax asset is assumed to be 0 in 2020 and 2021 before return to its historical level, which is estimated as the average level over the last two years (0.4% of revenue).

As part of its relief efforts, Heineken is committed to not only paying suppliers at agreed terms but also early payments for its most vulnerable small and medium-sized suppliers. As a result, its account payable at the end of 2020 and 2021 may decrease considerably. The paper forecasts the company's account payable to be 60 and 65 revenue days at the end of 2020 and 2021, respectively. It is assumed to climb back to its 2019 level of 72 in 2022 once things are expected to have fully returned to normalcy. Moreover, over the period 2023 – 2027, Heineken is expected to further improve its account payable, which has been so far inferior to its peers, as outlined in chapter 5, reaching 25% of revenue by 2027 (the level that Carlsberg was at in 2019). The improvement is also assumed to spread evenly over the period.

The company's deferred income and discount accruals are also expected to drop over the next two years due to the pandemic. It is forecasted to be 15 and 18 revenue days at the end of 2020 and 2021, respectively, before return to its historical level of 21 from 2022 onwards. Moreover, because most of the governments have now announced their tax relief programs in response to the pandemic, Heineken is expected to postpone its tax payment up to 5% of its revenue in 2020 and 2.5% in 2021, before return to its historical level of 1.1% from 2022 onwards.

- **Long-term operating assets**

Heineken's long-term operating assets consist of property, plant, and equipment (PP&E), operating intangible assets such as software, and advances to customers. Before things have fully returned to normalcy, it is assumed that Heineken will not make purchases of new assets meant for expansion, but instead will only purchase new assets to replace part of its existing assets that have suffered from wear and tear. As a result, over the next three years, the book values of all three asset categories are expected to rise at the inflation rate, which is assumed to be equal to the growth rate of Heineken's revenue per hectoliter.

From 2022 onwards, Heineken's PP&E relative to revenue is forecasted to return to its historical level, which is estimated as the average of its level over the last two years (55.7%). The paper believes that the result of this approach better represents the long-term prospect of the company's PP&E than taking an average of three or more years. This is because the figures

from 2017 backward are affected by acquisition deals that the company made, especially by mega-deals such as the acquisition of Brasil Kirin in 2017. By contrast, Heineken has not made any significant deals over the last two years.

Netbook value of software relative to revenue, on the other hand, is expected to stay a higher level than its 2019 level, being 3% from 2022 onwards. This is driven by the fact that Heineken has already been trying to adapt and integrate information technology into its business model. For instance, the company is shifting its marketing approach towards more personalized and digital to help its brands remain relevant across different places and occasions. Also, its sales force is equipped and informed by data-driven sales and distribution programs, such as Beerwulf platform, which helps identify and analyze relevant data to produce valuable insights into how to create value for customers. Furthermore, Heineken's advances to customers are assumed to return to its historical level of 1.3% of revenue from 2022 onwards.

- **Non-operating assets and liabilities**

As for the non-operating items in the income statement, the forecasts of non-operating assets and liabilities do not affect the valuation of Heineken's core business since they do not run through the company's free cash flows as their operating counterparts do. Instead, their fair values will be estimated separately at the valuation date and added back to the value of the core operation in order to determine the value of the company as a whole. However, their forecasts help make the forecasts of the financial statements complete and, thus, serve as a check on whether any mistakes have occurred while making forecasts for operating assets and liabilities. For this reason, they or their forecast drivers are assumed to be equal to their 2019 levels from 2020 onwards, as shown in exhibit 36.

6.3.2. Income statement forecasting

Based on the forecasting assumptions made in the previous section, exhibit 37 illustrates the complete forecast of Heineken's income statement over the next eight years (2020 – 2027).

Based on the forecast assumptions for Heineken's operating tax and operating cash tax rates, the forecasts of its deferred operating taxes are inherently embedded and determined by taking the difference between its forecasted operating cash tax and operating tax. Moreover, the impairment costs of the company's non-current assets (both operating and non-operating), acquisition and integration costs, as well as restructuring costs, are assumed to be equal to 0 in the future. Since these items do not run through free cash flows, their assumptions do not

affect the valuation. Finally, in order to produce complete forecasts of the financial statements, Heineken's changes in shareholders' equity and non-controlling interests (NCI) are also forecasted at the end of exhibit 37.

Exhibit 37: Forecast of Heineken's complete income statement

	Historical		Forecast							
in million euro	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Net revenue	22,489	23,969	21,096	22,533	24,422	25,786	27,161	28,614	30,149	31,773
Raw materials, consumables and services	(13,645)	(14,630)	(13,290)	(13,970)	(14,897)	(15,730)	(16,568)	(17,455)	(18,391)	(19,382)
Personnel expenses	(3,625)	(3,802)	(3,802)	(3,802)	(3,907)	(4,126)	(4,346)	(4,578)	(4,824)	(5,084)
Depreciation of PP&E, including leased assets	(1,421)	(1,488)	(1,566)	(1,566)	(1,566)	(1,581)	(1,695)	(1,786)	(1,881)	(1,982)
Amortisation of software, etc.	(67)	(87)	(105)	(105)	(105)	(106)	(167)	(176)	(185)	(195)
Operating EBITA	3,731	3,962	2,333	3,090	3,947	4,244	4,385	4,619	4,868	5,130
Operating cash taxes	(971)	(1,027)	(609)	(807)	(1,028)	(1,106)	(1,142)	(1,204)	(1,268)	(1,337)
NOPLAT	**2,760**	**2,936**	**1,724**	**2,284**	**2,918**	**3,138**	**3,242**	**3,416**	**3,599**	**3,794**
Calculation of operating deferred tax										
Operating tax rate	24.9%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%
Operating cash tax rate	26.0%	25.9%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%
(Increase) Decrease in operating deferred tax liabilities (net)	41	15	13	18	21	22	23	24	25	27
Reconciliation to net income										
NOPLAT	2,760	2,936	1,724	2,284	2,918	3,138	3,242	3,416	3,599	3,794
(Increase) Decrease in operating deferred tax liabilities (net)	41	15	13	18	21	22	23	24	25	27
Amortization of acquired intangibles	(317)	(312)	(308)	(292)	(277)	(262)	(248)	(235)	(222)	(211)
Impairment of PP&E	(133)	(52)	-	-	-	-	-	-	-	-
Impairment of softwares	(1)	(2)	-	-	-	-	-	-	-	-
Impairment of acquired intangible assets	-	(12)	-	-	-	-	-	-	-	-
Impairment of goodwill	(20)	(6)	-	-	-	-	-	-	-	-
Impairment of available-for-sale investments	-	-	-	-	-	-	-	-	-	-
Recycling of currency translation difference	-	-	-	-	-	-	-	-	-	-
Restructuring expenses	(122)	(91)	-	-	-	-	-	-	-	-
Other provision expenses, net of reversals	(24)	45	-	-	-	-	-	-	-	-
Acquisition and integration cost	-	-	-	-	-	-	-	-	-	-
Pension adjustment	(13)	6	-	-	-	-	-	-	-	-
Interest expenses, including those from leased assets	(547)	(529)	(556)	(534)	(471)	(381)	(353)	(304)	(251)	(194)
Interest income	71	75	52	18	18	18	18	18	18	18
Dividend income from minority-holding entities	16	10	8	8	8	8	8	8	8	8
Other net finance income (expenses)	(80)	(69)	(32)	(29)	(30)	(33)	(35)	(37)	(39)	(41)
Other income	75	95	-	-	-	-	-	-	-	-
Share of profit of associates and joint ventures	210	164	395	395	395	395	395	395	395	395
Non-operating tax expense	189	102	209	207	188	163	153	137	121	105
Net income	**2,105**	**2,374**	**1,505**	**2,075**	**2,770**	**3,068**	**3,203**	**3,423**	**3,656**	**3,901**
Income to non-controlling interests	(192)	(208)	(132)	(182)	(243)	(269)	(281)	(300)	(320)	(342)
Income to shareholders	1,913	2,166	1,373	1,893	2,527	2,799	2,922	3,123	3,335	3,559
Change in shareholders' equity										
Position as of January 1	13,477	14,528	16,147	16,881	17,942	19,403	21,038	22,754	24,600	26,582
Income to shareholders	1,913	2,166	1,373	1,893	2,527	2,799	2,922	3,123	3,335	3,559
Other comprehensive income	(55)	162	-	-	-	-	-	-	-	-
Realized hedge result from non-financial assets	-	(66)	-	-	-	-	-	-	-	-
Dividend to shareholders	(866)	(949)	(640)	(831)	(1,066)	(1,164)	(1,206)	(1,277)	(1,353)	(1,434)
Purchase of own/non-controlling shares, net of shares issued	(12)	292	-	-	-	-	-	-	-	-
Share-based payment	26	14	-	-	-	-	-	-	-	-
Changes in consolidation	42	-	-	-	-	-	-	-	-	-
Changes in accounting policy	3	-	-	-	-	-	-	-	-	-
Position as of December 31	*14,528*	*16,147*	*16,881*	*17,942*	*19,403*	*21,038*	*22,754*	*24,600*	*26,582*	*28,707*
Change in non-controlling interests										
Position as of January 1	1,201	1,183	1,164	1,164	1,164	1,164	1,164	1,164	1,164	1,164
Income to non-controlling interests	192	208	132	182	243	269	281	300	320	342
Other comprehensive income	4	24	-	-	-	-	-	-	-	-
Dividend to non-controlling interests	(212)	(272)	(132)	(182)	(243)	(269)	(281)	(300)	(320)	(342)
Purchase of own/non-controlling shares, net of shares issued	(10)	16	-	-	-	-	-	-	-	-
Changes in consolidation	8	5	-	-	-	-	-	-	-	-
Position as of December 31	*1,183*	*1,164*	*1,164*	*1,164*	*1,164*	*1,164*	*1,164*	*1,164*	*1,164*	*1,164*

6.3.3. Financial position forecasting

Based on the forecasting assumptions made in the previous section, exhibit 38 illustrates the forecast of Heineken's complete financial position statement over the next eight years (2020 – 2027).

Exhibit 38: Forecast of Heineken's complete financial position statement

	Historical		Forecast							
in million euro	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Operating cash	450	479	844	676	488	516	543	572	603	635
Inventory	1,920	2,213	2,601	2,469	2,255	2,381	2,508	2,642	2,784	2,934
Trade receivables	2,596	2,925	2,890	2,901	3,011	3,179	3,349	3,528	3,717	3,917
Other receivables	817	813	741	791	858	906	954	1,005	1,059	1,116
Prepayment	382	385	289	340	404	426	449	473	498	525
Current tax assets	71	123	-	-	101	107	113	119	125	132
Trade payables	(4,016)	(4,720)	(3,468)	(4,013)	(4,811)	(5,353)	(5,927)	(6,547)	(7,218)	(7,943)
Deferred income and Discount accruals	(1,334)	(1,386)	(867)	(1,111)	(1,430)	(1,510)	(1,591)	(1,676)	(1,766)	(1,861)
Returnable packaging deposits	(569)	(565)	(497)	(531)	(597)	(630)	(664)	(699)	(737)	(776)
Other payables	(1,358)	(1,255)	(1,105)	(1,180)	(1,377)	(1,454)	(1,531)	(1,613)	(1,700)	(1,791)
Current tax liabilities	(245)	(283)	(1,055)	(563)	(277)	(293)	(308)	(325)	(342)	(361)
Operating working capital	(1,286)	(1,271)	373	(220)	(1,375)	(1,726)	(2,106)	(2,522)	(2,976)	(3,474)
PP&E, including leased assets	12,611	13,269	13,269	13,269	13,402	14,368	15,134	15,943	16,799	17,703
Software, etc.	402	484	484	484	489	774	815	858	904	953
Advances to customers	289	222	222	222	224	335	353	372	392	413
Invested capital, excluding goodwill and acquired intangibles	***12,016***	***12,704***	***14,348***	***13,755***	***12,739***	***13,751***	***14,196***	***14,652***	***15,119***	***15,596***
Goowill	11,194	11,465	11,465	11,465	11,465	11,465	11,465	11,465	11,465	11,465
Acquired intangible assets	5,863	5,820	5,512	5,219	4,943	4,681	4,433	4,198	3,975	3,765
Goodwill and acquired intangibles assets	17,057	17,285	16,977	16,684	16,408	16,146	15,898	15,663	15,440	15,230
Adjusted accumulated amortization and impairment	7,492	7,347	7,578	7,797	8,004	8,201	8,387	8,563	8,730	8,888
Gross-up tax effect	(1,331)	(1,329)	(1,252)	(1,179)	(1,110)	(1,044)	(982)	(923)	(868)	(815)
Total goodwill and acquired intangible asets invested	23,218	23,303	23,303	23,303	23,303	23,303	23,303	23,303	23,303	23,303
Invested capital, including goodwill and acquired intangibles	***35,233***	***36,007***	***37,651***	***37,057***	***36,042***	***37,053***	***37,499***	***37,954***	***38,421***	***38,899***
Investments in associates and joint ventures	2,021	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868
Minority interest in other entities	501	408	408	408	408	408	408	408	408	408
Other financial assets	568	708	708	708	708	708	708	708	708	708
Tax loss carry-forwards	407	410	410	410	410	410	410	410	410	410
Excess cash	2,453	1,342	-	-	-	-	-	-	-	-
Assets classified as held for sale, net of liabilities	269	111	-	-	-	-	-	-	-	-
Total capital invested	**41,453**	**43,854**	**44,045**	**43,451**	**42,436**	**43,447**	**43,893**	**44,348**	**44,815**	**45,293**
Shareholder's equity	14,525	16,147	16,881	17,942	19,403	21,038	22,754	24,600	26,582	28,707
Accumulated amortization and impairment	7,492	7,347	7,578	7,797	8,004	8,201	8,387	8,563	8,730	8,888
Dividend payable	19	12	14	9	11	15	16	17	18	19
Deferred tax liabilities, net of assets, PP&E and Inven	440	670	670	670	670	670	670	670	670	670
Deferred tax liabilities, net of assets, non operating	(559)	(814)	(814)	(814)	(814)	(814)	(814)	(814)	(814)	(814)
Total shareholders' equity	21,917	23,362	24,328	25,604	27,275	29,109	31,013	33,036	35,186	37,470
Non-controlling interests	1,183	1,164	1,164	1,164	1,164	1,164	1,164	1,164	1,164	1,164
Borrowings, current	2,358	3,686	3,686	3,686	3,686	3,686	3,686	3,686	3,686	3,686
Interest payable	164	147	167	161	142	115	106	91	76	58
Borrowings, non-current	12,628	13,366	12,713	10,779	8,018	7,154	5,636	4,012	2,268	398
Lease liabilities	1,252	-	-	-	-	-	-	-	-	-
Post-retirement obligations	954	1,189	1,046	1,118	1,211	1,279	1,347	1,419	1,496	1,576
Provisions	997	940	940	940	940	940	940	940	940	940
Total capital provided	**41,453**	**43,854**	**44,045**	**43,451**	**42,436**	**43,447**	**43,893**	**44,348**	**44,815**	**45,293**

Since, as outlined in section 6.2.3, is it assumed that Heineken would not make any M&A deals in the future, its goodwill is assumed to stay at the 2019 level from 2020 onwards, while its acquired intangible assets are forecasted to reduce by the amounts equal to their annual

amortization. However, on the overall basis, the company's total investment in goodwill and acquired intangibles is expected to stay constant at the 2019 level of 23.303 billion euros from 2020 onwards. Moreover, it is assumed that Heineken will keep its short-term debts constant going into the future, while constantly changing the amount of excess cash and long-term debts in the manner ensuring that the balance sheet holds. Specifically, in any given year in the future, if the total capital invested excluding excess cash is greater than the total capital provided excluding long-term debts, excess cash is set to be 0, while long-term debt is set to be equal to the difference between the total capital invested excluding excess cash and the total capital provided excluding long-term debts. The same process applies to the opposite scenario. In exhibit 38, Heineken is assumed to use the cash flows generated by its core business to pay down its long-term debts over time.

6.4. Free Cash Flow and Economic Profit forecasting

Built upon the previous sections, the purpose of chapter 6, in general, and this section, in particular, is to shed light on the forecasts of Heineken's free cash flows and economic profits in the future. These forecasts serve as an important input for the determination of the company's fair share price, which will be outlined in detail in chapter 8.

6.4.1. Short-term forecasts

Based on the forecasts made in section 6.3, exhibit 39 illustrates the forecasts for Heineken's free cash flows (FCF), its return on invested capital (ROIC), and economic profits (EP) over the next eight years (2020 – 2027). It is worth noting that the calculation of FCFs and ROIC is carried out with the same approach that is applied to determine historical FCFs and ROIC in chapter 5. By contrast, economic profit generated in a given year, by its definition, is calculated by taking the difference between NOPLAT and capital charge for the year. And the capital charge is defined as the economic interest required by investors for their provision of funds that the company uses to invest in its invested capital. Mathematically, it is the product of the company's invested capital at the beginning of a given year and its WACC. As shown later in the next chapter, the WACC for Heineken is estimated to be 6.84%.

$$\text{Economic Profit}_t = \text{NOPLAT}_t - \text{Capital charge}_t$$

$$\text{Economic Profit}_t = \text{NOPLAT}_t - \text{Invested Capital}_{t-1} * \text{WACC}$$

Exhibit 39: Short-term forecasts of Free Cash Flows, Return on Invested Capital (ROIC) and Economic Profits (EP)

Free Cash Flows (FCF)

	Historical		Short-tem forecast							
in million euro	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
NOPLAT	2,753	2,936	1,724	2,284	2,918	3,138	3,242	3,416	3,599	3,794
Depreciation of PP&E	1,155	1,488	1,566	1,566	1,566	1,581	1,695	1,786	1,881	1,982
Amortisation of software, etc.	67	87	105	105	105	106	167	176	185	195
Gross cash flow	3,975	4,511	3,395	3,954	4,589	4,825	5,105	5,378	5,666	5,971
Investment in operating working capital	425	(16)	(1,644)	593	1,155	350	380	416	455	497
Change in net PP&E (including leased assets) and softwares	(522)	(740)	-	-	(138)	(1,251)	(807)	(853)	(902)	(953)
Depreciation of PP&E and amortization of softwares charged	(1,222)	(1,575)	(1,670)	(1,670)	(1,670)	(1,687)	(1,862)	(1,962)	(2,067)	(2,178)
Impairment of PP&E and softwares charged	(134)	(54)	-	-	-	-	-	-	-	-
Effect of currency translation	(101)	232	-	-	-	-	-	-	-	-
Net investment in PP&E and softwares	(1,979)	(2,137)	(1,670)	(1,670)	(1,808)	(2,938)	(2,670)	(2,815)	(2,968)	(3,131)
Investment advances to customers	(12)	67	-	-	(2)	(111)	(18)	(19)	(20)	(21)
Gross investment before goodwill and acquired intangibles	**(1,566)**	**(2,086)**	**(3,314)**	**(1,077)**	**(655)**	**(2,698)**	**(2,308)**	**(2,418)**	**(2,533)**	**(2,655)**
Free cash flow before goodwill and acquired intangibles	**2,409**	**2,425**	**81**	**2,877**	**3,934**	**2,127**	**2,797**	**2,960**	**3,133**	**3,316**
Investment in goodwill and acquired intangibles	191	(85)	-	-	-	-	-	-	-	-
Gross investment after goodwill and acquired intangibles	**(1,375)**	**(2,171)**	**(3,314)**	**(1,077)**	**(655)**	**(2,698)**	**(2,308)**	**(2,418)**	**(2,533)**	**(2,655)**
Free cash flow after goodwill and acquired intangibles	**2,601**	**2,340**	**81**	**2,877**	**3,934**	**2,127**	**2,797**	**2,960**	**3,133**	**3,316**

Return on invested capital (ROIC)

	Historical		Short-tem forecast							
%	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Operating ratios										
Operating EBITA/Revenues	16.5%	16.5%	11.1%	13.7%	16.2%	16.5%	16.1%	16.1%	16.1%	16.1%
Raw material/Revenues	60.7%	61.0%	63.0%	62.0%	61.0%	61.0%	61.0%	61.0%	61.0%	61.0%
Personnel expense/Revenues	16.1%	15.9%	18.0%	16.9%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%
Depreciation & Amortization/Revenues	6.7%	6.6%	7.9%	7.4%	6.8%	6.5%	6.9%	6.9%	6.9%	6.9%
Return on invested capital (ROIC)										
Operating working capital/Revenues	-4.8%	-5.3%	-6.0%	1.7%	-0.9%	-5.3%	-6.4%	-7.4%	-8.4%	-9.4%
Software, etc./Revenues	1.6%	1.8%	2.3%	2.1%	2.0%	1.9%	2.8%	2.8%	2.8%	2.8%
PP&E (including leased assets)/Revenues	55.1%	54.0%	62.9%	58.9%	54.3%	52.0%	52.9%	52.9%	52.9%	52.9%
Loans and advances to customers/Revenues	1.3%	1.1%	1.1%	1.0%	0.9%	0.9%	1.2%	1.2%	1.2%	1.2%
Invested capital/Revenues	53.2%	51.6%	60.2%	63.7%	56.3%	49.4%	50.6%	49.6%	48.6%	47.6%
Revenues/Invested capital, times	1.9	1.9	1.7	1.6	1.8	2.0	2.0	2.0	2.1	2.1
Pretax ROIC	31.1%	32.1%	18.4%	21.5%	28.7%	33.3%	31.9%	32.5%	33.2%	33.9%
Operating cash tax rate	26.0%	25.9%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%
After-tax ROIC	**23.0%**	**23.7%**	**13.6%**	**15.9%**	**21.2%**	**24.6%**	**23.6%**	**24.1%**	**24.6%**	**25.1%**

Economic Profit (EP)

	Historical		Short-tem forecast							
%	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
NOPLAT	2,753	2,936	1,724	2,284	2,918	3,138	3,242	3,416	3,599	3,794
Invested capital at the beginning of the year	11,907	12,016	12,704	14,348	13,755	12,739	13,751	14,196	14,652	15,119
WACC	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%
Capital charge	(814)	(822)	(869)	(981)	(941)	(871)	(941)	(971)	(1,002)	(1,034)
Economic Profit (EP)	**1,939**	**2,114**	**855**	**1,302**	**1,978**	**2,267**	**2,302**	**2,445**	**2,597**	**2,759**

The free cash flow generated the Heineken's core operation is expected to be adversely impacted by the pandemic to a large extent in 2020, staying at only 81 million euros compared to more than 2.3 billion euros in 2019 (after goodwill and acquired intangibles). This is due to the fact that the company is expected to generate less NOPLAT, while have to put in more operating invested capital as a result of the pandemic. It is worth noting that since Heineken

is not expected to make any M&A deals in the future, its FCF before and after goodwill and acquired intangible assets are identical.

Regarding return on invested capital, Heineken's ROIC is forecasted to suffer over the next two years, with its level in 2020 and 2021 being only 13.6% and 15.9%, respectively, compared to that of 23.7% in 2019. This is due to the expected fall in both profit margin and capital turnover caused by the pandemic. However, from 2022 onwards, the company's ROIC is forecasted to recover and slightly improve, reaching 25.1% in 2027, driven mainly by the improvement of its account payable.

Similarly, Heineken's economic profit is projected to suffer from the pandemic over the next two years, standing at only 855 million and 1,302 million euros in 2020 and 2021, respectively, compared to over 2.1 billion euros in 2019. Nevertheless, it is assumed to steadily recover and improve from 2022 onwards.

6.4.2. Long-term forecasts

As outlined previously, for the long-term forecasting period, only key value-driven variables are forecasted because a) forecasts of detailed financial statements are no longer feasible and reliable; and b) the focus should be shifted to the forecasts of the company's fundamentals and competitive advantages in the long-run. The key variables that are forecasted include revenue growth, profit margin, operating cash tax, and after-tax ROIC. Exhibit 40 illustrates the long-term forecasts of those variables for Heineken.

Exhibit 40: Long-term forecasts of Heineken's Free Cash Flows and Economic Profits

	Long-term forecast										CV
%	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Revenue growth	3.3%	3.3%	3.3%	3.4%	3.4%	3.1%	3.1%	3.1%	3.1%	3.2%	2.6%
EBITA margin	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%	16.1%
Operating cash tax	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%	26.1%
Revenue/Invested capital, times	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
After-tax ROIC, excluding goodwill and acquired intangibles	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%	25.1%

	Long-term forecast										CV
Million euros	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Net revenue	32,818	33,905	35,038	36,219	37,451	38,617	39,824	41,073	42,365	43,702	44,838
Operating EBITA	5,299	5,474	5,657	5,848	6,047	6,235	6,430	6,632	6,840	7,056	7,240
Operating cash tax	(1,381)	(1,426)	(1,474)	(1,524)	(1,575)	(1,625)	(1,675)	(1,728)	(1,782)	(1,838)	(1,886)
NOPLAT	**3,918**	**4,048**	**4,183**	**4,324**	**4,472**	**4,611**	**4,755**	**4,904**	**5,058**	**5,218**	**5,354**
Invested capital, without goodwill and acquired intangibles	16,133	16,672	17,234	17,820	18,375	18,949	19,544	20,158	20,795	21,335	21,890
Change in invested capital	(537)	(539)	(562)	(586)	(555)	(574)	(594)	(615)	(636)	(541)	(555)
WACC	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%	6.84%
Capital charge	(1,067)	(1,103)	(1,140)	(1,179)	(1,219)	(1,257)	(1,296)	(1,337)	(1,379)	(1,422)	(1,459)
Free cash flow (FCF)	**3,381**	**3,509**	**3,622**	**3,738**	**3,916**	**4,037**	**4,161**	**4,289**	**4,422**	**4,677**	**4,799**
Economic profit (EP)	**2,852**	**2,945**	**3,043**	**3,146**	**3,253**	**3,354**	**3,459**	**3,567**	**3,679**	**3,796**	**3,894**

Over the period 2028 – 2037, the forecasts for revenue growth are taken from section 6.2, while the company's profit margin is assumed to be equal to the level it is expected to achieve in 2027, which is about 16.1%. Similarly, over the same period, Heineken's operating cash tax rate and ROIC are projected to be equal to their forecasted level in 2027, which is 26.1% and 25.1%, respectively. From 2038 onwards (continuing-value period), revenue is expected to grow at a constant rate of 2.6% as outlined in section 6.2, while profit margin, operating cash tax rate, and ROIC are assumed to be equal to their forecasted levels in 2037. The paper believes that these forecasts are reasonable due to the fact that Heineken's ownership of a wide range of well-recognized brands as well as its geographically diversified operation, along with the favorable competitive structure of the beer industry as outlined in chapter 4, can help the company maintain attractive profit margin and high return on invested capital for a long period of time. Moreover, this view is strengthened by Heineken's stable performance over the last ten years and supported by empirical evidence conducted by McKinsey & Company (Koller et al., 2015).

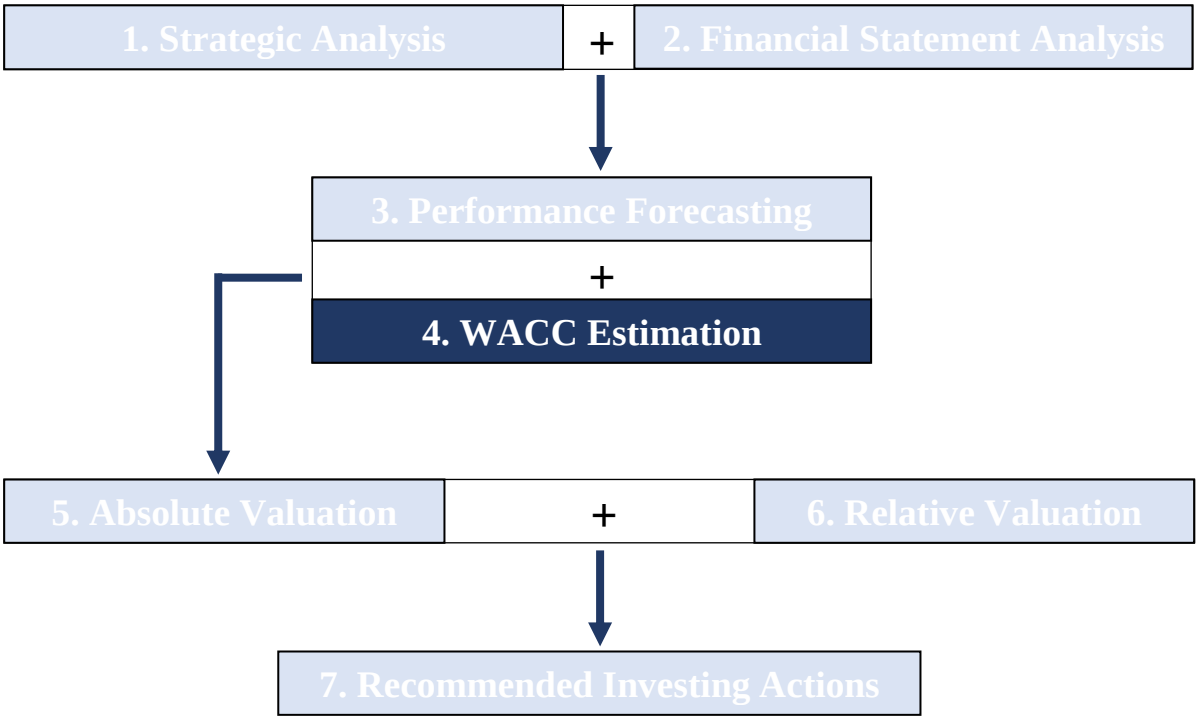
Furthermore, it is worth noting that, based on the forecasting assumptions above, Heineken's free cash flows and economic profits in the continuing-value forecasting period are projected to grow at a constant rate of 2.6%. This is vital information for the calculation of the company's core operation's continuing value, which in turn is an important input for the final valuation of Heineken outlined in chapter 8.

6.5. Summary of Heineken's performance forecasting

Exhibit 41: Forecasts of Heineken's key value drivers

	Year	Sales volume growth rate	Revenue per hectolitre growth	Revenue growth rate	Profit margin	ROIC	Free cash flow (in million euros)	Economic profit (in million euros)
Short-term forecasts	2020	-12.0%	0%	-12.0%	11.1%	13.6%	81	855
	2021	6.8%	0%	6.8%	13.7%	15.9%	2,877	1,302
	2022	7.4%	1%	8.4%	16.2%	21.2%	3,934	1,978
	2023	3.6%	2%	5.6%	16.5%	24.6%	2,127	2,267
	2024	3.3%	2%	5.3%	16.1%	23.6%	2,797	2,302
	2025	3.3%	2%	5.3%	16.1%	24.1%	2,960	2,445
	2026	3.4%	2%	5.4%	16.1%	24.6%	3,133	2,597
	2027	3.4%	2%	5.4%	16.1%	25.1%	3,316	2,759
Long-term forecasts	2028	1.3%	2%	3.3%	16.1%	25.1%	3,381	2,852
	2029	1.3%	2%	3.3%	16.1%	25.1%	3,509	2,945
	2030	1.3%	2%	3.3%	16.1%	25.1%	3,622	3,043
	2031	1.4%	2%	3.4%	16.1%	25.1%	3,738	3,146
	2032	1.4%	2%	3.4%	16.1%	25.1%	3,916	3,253
	2033	1.1%	2%	3.1%	16.1%	25.1%	4,037	3,354
	2034	1.1%	2%	3.1%	16.1%	25.1%	4,161	3,459
	2035	1.1%	2%	3.1%	16.1%	25.1%	4,289	3,567
	2036	1.1%	2%	3.1%	16.1%	25.1%	4,422	3,679
	2037	1.2%	2%	3.2%	16.1%	25.1%	4,677	3,796
CV	2038	0.6%	2%	2.6%	16.1%	25.1%	4,799	3,894

7. Heineken's Cost of Capital Estimation



As outlined in chapter 3, the value of a company's operation can be determined by adding all the discounted cash flows that the operation is expected to generate in the future. The chapter also points out that when certain conditions are met, these cash flows can be discounted at a single number termed as the weighted average cost of capital (WACC). By definition, WACC represents the average cost of capital required by all types of investors, both equity and debt holders, for them to be willing to invest in the company instead of elsewhere.

The aim of this chapter is to estimate Heineken's weighted cost of capital, which is an important input for the determination of its valuation and share price outlined in chapter 8 Exhibit 42 illustrates this chapter's result of the estimation of Heineken's weighted average cost of capital (WACC). In the following sections, each line item in the exhibit will be shed light on in more detail. But first, the framework for how to deal with them will be examined.

Exhibit 42: Estimation of Heineken's weighted average cost of capital (WACC)

Cost of debt (net of tax)	3.12%
Cost of equity	7.92%
Debt ratio	0.23
Equity ratio	0.77
Effective tax rate	25%
Weighted average cost of capital (WACC)	**6.84%**

7.1. Framework for estimating the cost of capital

The cost of capital is the weighted average cost of investment, either in the form of equity, debt, or both (Damodaran, 2016). Since Heineken has a mixture of debt and equity in its capital, the paper uses the Weighted Average Cost of Capital (WACC) model to estimate the cost of capital for Heineken. The WACC has two components: cost of equity and cost of debt. The formula for WACC is given as follows:

$$\mathbf{WACC} = \frac{\mathbf{E}}{\mathbf{D+E}}\mathbf{R_E} + \frac{\mathbf{D}}{\mathbf{D+E}}\mathbf{R_D}*(\mathbf{1-T})$$

Where:

E represents the market value of equity

D represents the market value of debt

R_E represents cost of equity

R_D represents cost of debt

T represents marginal tax rate

Heineken's estimated WACC is 6.84% and it is based upon a target capital structure of 22% debt and 78% equity, cost of equity of 7.92% and after-tax cost of debt of 3.12%.

7.1.1. Framework for cost of equity

Damodaran (2012) states the cost of equity as return required to compensate for risks shareholders undertake through investment. However, there are generally two types of risk: diversifiable and non-diversifiable. Diversifiable risks are those that are attributable to firm-specific factors such as quality of management, strikes, outcomes of legal proceedings. This type of risk can be diversified away by an investor holding a well-diversified portfolio. By contrast, non-diversifiable risks are characterized as systematic and faced by all companies. Even an investor who holds a well-diversified portfolio cannot diversify away this type of risk. Examples of such risks include development of macro factors, wars, world disaster such as pandemic and global warming. As the company's shareholders are assumed to invest in well-diversified portfolios, they are assumed to require compensation for only non-diversifiable risks. Thus, only systematic risks are relevant for the analysis of the company's cost of equity. And in order to measure such risks and obtain the company's cost of equity, there are three

major models: capital asset pricing model (CAPM), Fama – French three-factor model, and arbitrage pricing theory (APT) (Koller, 2015). Each model will be discussed below.

- **Capital asset pricing model (CAPM)**

The CAPM model, which is derived from the capital markets, attempts to measure expected returns based on market relationships and the assumption that investors behave in the manner prescribed by portfolio theory (Hitchner, 2017). The formula for CAPM is given as follows:

$$E(Ri) = Rf + \beta*(Rm - Rf)$$

Where:
E(Ri) represents expected return on the security (cost of equity)
Rf represents the rate of return of a risk-free asset
β is the coefficient that measures the security's sensitivity to the market
Rm represents the expected return of the market
(Rm - Rf) represents market risk premium

The beta in the formula represents the systematic risks that cannot be diversified away. It measures the risk of investment in the stock relative to the market index. The beta of greater than one means that the investment is riskier than the market and vice-versa. By contrast, the market return is the long-term average return of a diversified market index.

The rationale behind CAPM is that an investor needs to be compensated for two factors: time value of money and additional risk. The risk-free rate in the formula compensates for the time value of money, while the beta and market risk premium capture the compensation for the additional risk the investor is willing to take.

- **Fama – French three-factor model**

Fama – French three-factor model, developed by Eugene Fama and Kenneth French, measures the sensitivity of the stock to the portfolio of the stock market, a portfolio based on market capitalization of the firm, and a portfolio based on the book-to-market ratios. Thus, the model expands the CAPM model by adding the size risk and value risk factors to the market risk factor of the company (Hayes, 2020a). Fama & French (1992) also concludes that beta does not seem to help explain the cross section of average stock returns.

The formula for Fama-French three-factor model is given as follows:

$$\mathbf{Ri_t - Rf_t = \alpha i_t + \beta_1(RM_t - Rf_t) + \beta_2 SMB_t + \beta_3 HML_t}$$

Where:

Ri_t represents total return of a stock or portfolio i at time t

Rf_t represents risk free rate of return at time t

RM_t represents total market portfolio returns at time t

$Ri_t - Rf_t$ represents expected excess return

$RM_t - Rf_t$ represents excess return on the market portfolio (index)

SMB_t represents size premium (small minus big)

HML_t represents value premium (high minus low)

$\beta_{1,2,3}$ represents factor coefficients

The model predicts that a company receives a risk premium if its return is correlated with those of small company stocks or high book to market value stocks. Koller et al. (2015) suggests that despite being empirically sound, Fama French model has some shortcomings while evaluating individual stocks: a) Fama French model is based on empirical evidence, but it is not theoretically superior than CAPM; and b) both CAPM and Fama French factor models requires estimate of beta coefficients. Use of industry beta can make the estimation more precise and while it is easy to use industry beta in CAMP model, finding industry beta for three betas in Fama French three factor model is complicated as these betas also depend on each other.

- **Arbitrage pricing theory (APT)**

APT is a multi-factor asset pricing model based on the idea that an asset's returns can be predicted using the linear relationship between the asset's expected return and a number of macroeconomic variables that capture systematic risks (Hayes, 2020b)

APT is a generalized version of Fama-French three-factor model. For a well-diversified portfolio, return on security can be given by:

$$\mathbf{E(R_i) = rf + \beta_1\lambda_1 + \beta_2\lambda_2 + ... + \beta_k\lambda_k}$$

Where,

$E(R_i)$ represents total return on security i

rf represents risk free rate

$\beta_{1,2,k}$ *represents factor coefficient*
$\lambda_{1,2,k}$ *represents factor risk premium*

Though the theory appears powerful, there is no clear guidance on what factors to use and how many of them to use. This makes the implementation of the model difficult.

- **Choice of model**

To measure systematic risks, the widely-used model is the Capital Assets Pricing Model (CAPM) (Berk and De Marzo, 2014). Koller et al. (2015) also mentions that CAPM is more intuitive. Therefore, this paper will use the CAPM model for the calculation of cost of equity. Each component of the model will be discussed in more detail below.

The risk-free rate is often referred to as the safe rate or the cost of money. The risk-free rate in an economy is the rate available on investments that are considered to have no risk of default (Hitchner, 2017). Damodaran (2006) also highlights that to be qualified as risk free rate, the investment should have no default and reinvestment risk. This condition is only met by zero-coupon bonds issued by financially strong and well-recognized governments. As these government bonds only pay out at the maturity, they are considered to have neither default nor reinvestment risk.

Equity or levered beta measures the volatility of the stock in comparison to the benchmark market index. The equity beta is sensitive to the leverage of the firm. On the contrary, the unlevered or the asset beta is the volatility of the return of the enterprise without considering its financial leverage. The formula for equity beta is as follows:

$$\textbf{Equity Beta} = \frac{\textbf{Variance } (r_m)}{\textbf{Covariance } (r_i, r_m)}$$

Where:
r_i *= Return on the stock of the target company*
r_m *= Return on the market index*

A simplistic way to measure equity beta is to regress the return of company's stock price on the return of a benchmark index. However, one major limitation of this method is that it has a high standard deviation in the estimate since it only looks at the movement of a single stock that may also be attributable to company-specific factors (Damodaran, 2012). To tackle the

issue, the usual practice is to calculate the industry's unlevered beta (Koller et al., 2015). This paper applies the same practice. Specifically, Heineken's and competitors' equity betas will be first estimated and converted to asset betas. These asset betas will be then used to estimate the industry' asset beta, which represents the operating risks that companies in the beer industry, similarly face. It is worth noting that the median (or average) of companies' asset betas is a better estimate of the industry's asset beta than any asset beta coming from a single company (Koller et al., 2015). Next, by using Heineken's target capital structure, the industry's asset beta will be relevered to estimate the company's equity beta. The relationship between equity beta and asset beta are illustrated in the formula below.

$$\textbf{Unlevered Beta} = \frac{\textbf{Levered Beta}}{\textbf{[1 + (1 – tax rate)]}\dfrac{\textbf{Debt}}{\textbf{Equity}}}$$

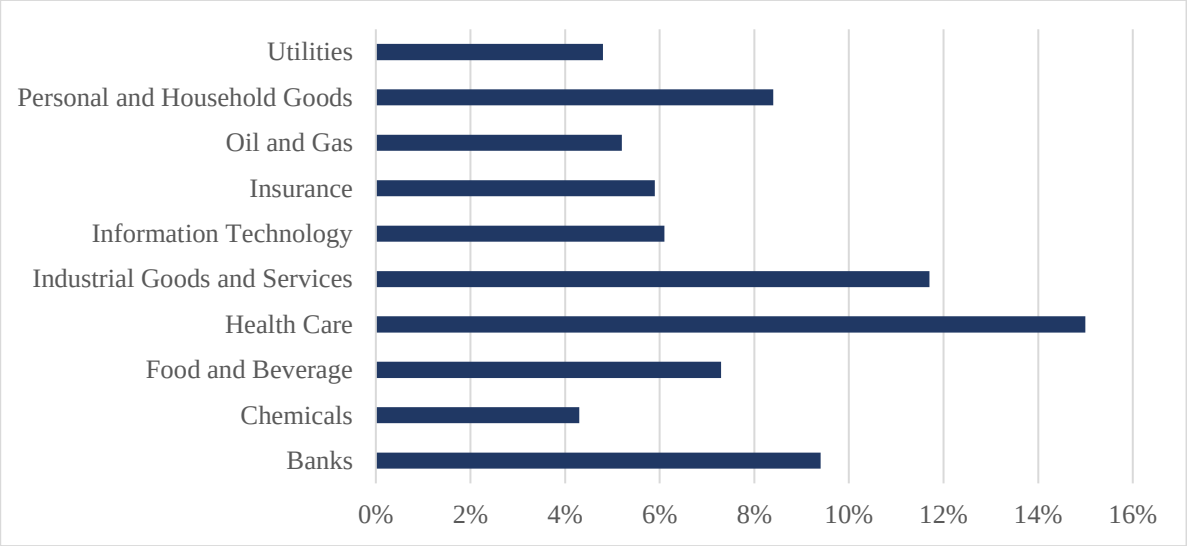
The major assumption for this formula is that the debt is riskless (i.e. debt has a beta of zero). Koller et al. (2015) points out that the formula can work well for investment-grade companies because their debts are close to risk-free and, thus, any errors using this formula is likely to be small. This means that the formula can be well applied to Heineken, AB InBev, Carlsberg and Molson Coors since they all are rated as investment-grade.

Furthermore, the benchmark market index holds key importance as the selection of inappropriate market index can lead to significant errors. In this paper, STOXX Europe 600 is used as the benchmark index for the analysis. STOXX Europe 600 is a stock index of small, medium, and large capitalization European companies designed by STOXX Ltd. that covers 17 European markets (STOXX, 2020). Graph 43 illustrates the component sectors in the index. Health care and Industrial goods and services form the biggest part, accounting for 15% and 11.7% respectively.

Market Risk Premium is the difference between the expected return on a diversified stock market and the risk-free rate. It gives the additional compensation an investor requires to take the additional risk associated with the equity market. There are two major ways to estimate market risk premiums. First, it can be calculated by taking the difference between the historical returns from the stock market and the risk-free rate in that market. This approach, however, has a major limitation. It is influenced by the time frame used as the differences in risk premium over any period is explained by the investor's risk aversion over time. Damodaran (2006) also points out that the historical market risk premium can be influenced by

survivorship bias and noisy estimates. Moreover, the use of different techniques such as arithmetic average or geometric average to calculate the risk premium also influences the result (Damodaran, 2006).

Graph 43: Composition of the STOXX index as of April 2020



(STOXX Index Guide, 2020)

Another approach of calculating the market risk premium is to use an implied market risk premium. This method assumes that the market is correctly priced, and the market risk premium can be derived from the current price of a large sample of companies and the underlying performance of these companies. The major advantage of this approach is that it reflects the latest information in the market and can be adjusted to changing information. In this paper, the implied market risk premium method will be used.

7.1.2. Framework for cost of debt

The cost of debt reflects the cost at which the company can borrow at present and it accounts for the default risk of the company and the current risk-free interest rates in the market. Heineken, in its financial statement ending December 2019, stated that the interest rate on its net debt position was 3% (Heineken, 2020). This can give an approximation of the cost of debt for Heineken. However, the underlying risk of the company has changed significantly since December 2019 due to COVID-19. Moreover, the rate is highly skewed towards the cost of debt for short term debt due to its weight in the total borrowings. Since the paper aims to compare the rates from the perspective of a long-term investor, short term interest rate is,

therefore, irrelevant for the calculation. Thus, the paper uses alternative approaches to calculate the cost of debt.

There are two major approaches used in the calculation of the cost of debt for a company (Damodaran, 2006). Firstly, the yield to maturity (YTM) of the company's long-term straight bonds can be used as a proxy for the cost of debt. This method is appropriate for investment grade corporate debt (BBB+ or higher) since the probability of default is lower for these bonds (Koller, 2015). It might overstate the returns as it calculates the promised return rather than expected return to the bondholders. However, (Koller. 2015) states that this inconsistency is immaterial for investment-grade companies due to their low probability of default, especially when compared with the estimation error surrounding the cost of equity.

If the bonds are illiquid, the company's credit ratings can be used to establish the credit spread that the company would have to pay over and above the risk-free rate to calculate the cost of debt. Secondly, the other method as proposed by Damodaran (2006) is to base the estimation on synthetic rating using the interest coverage ratio. It is mostly used for private companies by establishing a relative rating using the company's interest coverage ratio. The interest coverage ratio calculates the capability of the company to finance its interest expenses through operations. The relative credit rating spread is added into the risk-free rate and used as a proxy for the cost of debt.

Since the debt of Heineken is investment graded and liquid, this paper uses the YTM approach to calculate the cost of debt for the company.

7.2. Cost of equity estimation

Exhibit 43: Estimation of Heineken's cost of equity

Risk free rate	2.00%
Market risk premium	6.75%
Unlevered beta	0.72
Levered beta	0.88
Unlevered cost of equity	**6.86%**
Levered cost of equity	**7.92%**

Exhibit 43 illustrates the estimated cost of equity for Heineken. The company's unlevered and levered cost of equity are 6.86% and 7.92% respectively. Each line item will be examined in detail later in this section.

To calculate the risk-free rate, one option would be to use the Dutch government bond yield as Heineken is incorporated in the Netherlands. However, the most popular and liquid Euro-denominated (same currency to avoid exchange rate risks) government bonds are of Germany. Therefore, this paper chooses German government bonds as the basis of the risk-free rate. The German 10-year bond yield as of March 31st, 2020 was -0.46% (Tett, 2019)

Graph 44: Development of 10-year German bond yield (%)

(Source: Investing.com, 2020)

The risk-free rate has been declining steadily since the 2007-2008 financial crisis. The interest rate was briefly negative in 2016, and the main drivers of the negative interest rate were the sluggish global economic growth and the uncertainty around Brexit (Ewing, 2016). The risk-free rate has now remained in negative territory since May 2019. Tett (2019) points out that investors, economists, and policymakers are increasingly attributing the drop to structural issues and expecting that interest rates could remain low for the foreseeable future.

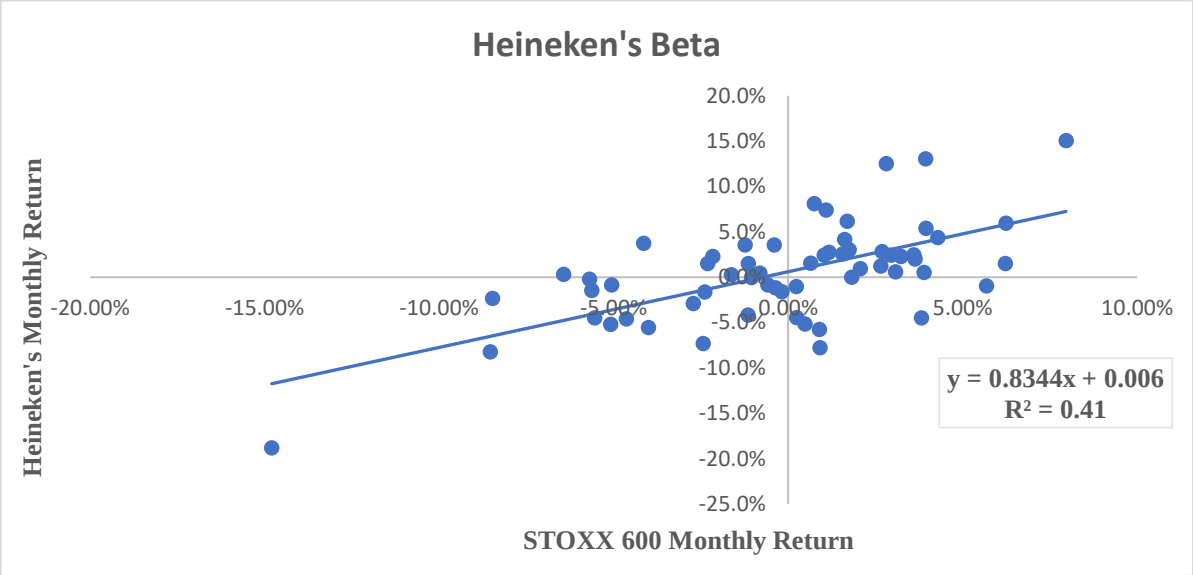
Koller et al. (2015) use a synthetic risk-free rate that brings the risk-free rate close to the historical rate of 4.5%. However, it can be inferred from graph 44 that the risk-free rate is unlikely to reach 4.5% in the foreseeable future. Moreover, the synthetic rate suggested by (Koller et al., 2015) would also be higher than the cost of debt for the company. Therefore, the paper does not adopt the strategy of using synthetic risk-free rates suggested by (Koller et al., 2015). We believe that using the current negative interest rate and the synthetic rate of 4.5% are extreme cases and expect the risk-free rate to be between these two figures.

In 2021, the IMF forecasts the inflation in the EU area to be at 1.5% and real GDP growth rate to be at 4.8%. We expect that the risk-free rate will increase after the economy turn arounds

in 2021 and will be higher than the inflation. Hence the paper uses the risk-free rate of 2% in the estimation of Heineken's cost of equity.

In order to estimate Heineken's levered beta, the monthly return of the company's stock is regressed against the return of the benchmark index (STOXX Europe 600) over a period of five years. The criteria laid down by Koller et al. (2015) state that the measurement period for raw regressions should include at least 60 monthly data points (five years). Moreover, monthly data is preferred because the use of more frequent return periods, such as daily and weekly returns, could lead to systematic biases. Finally, the company's stock returns should be regressed against a value-weighted, well-diversified market portfolio. The levered beta of Heineken as of April 1, 2020, is estimated to be 0.83, as illustrated in graph 45.

Graph 45: Heineken's levered beta estimation as of April 1, 2020



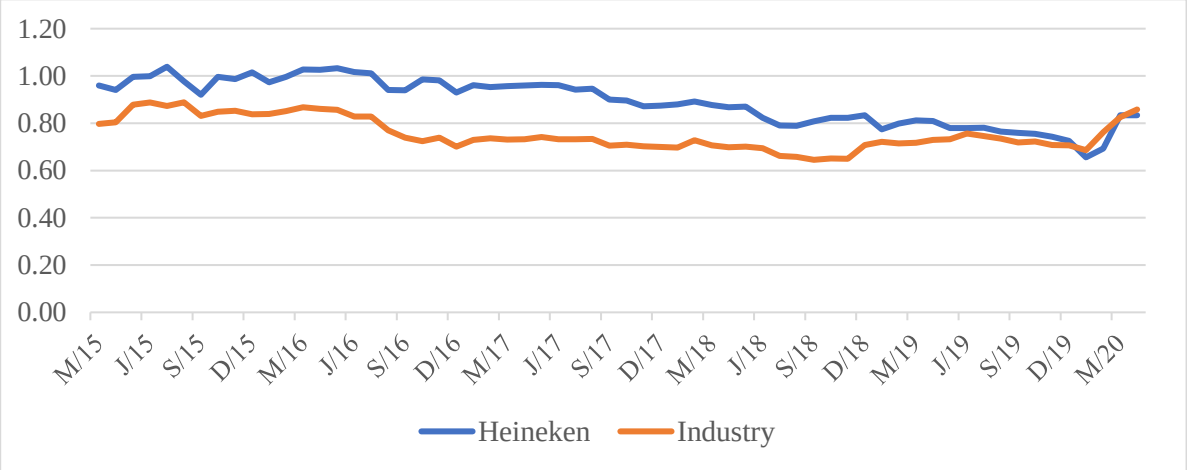
Koller et al. (2015) suggest that long-term estimates can provide better estimates of a future beta than a single point estimate of beta. Moreover, we believe that the COVID-19 situation could have influenced the estimation of beta. To verify the hypothesis, Heineken's levered beta on April 1, 2020, is compared with its five-year average in order to evaluate whether there are major differences between them. As shown in Table 6, the five-year average (0.89) is actually close to the current beta of 0.83. The same method is applied to other peer companies in the industry (Carlsberg, AB InBev, Molson Coors, and Boston Beer).

Table 6: Estimation of levered beta for different companies

Company	Heineken	Carlsberg	AB InBev	Molson Coors	Boston Beer	Industry
Levered Beta (April 1, 2020)	0.83	0.79	1.28	0.82	0.57	0.82
Levered Beta (Five-year average)	0.89	0.99	0.97	0.52	0.41	0.89

It can be seen in graph 46 that Heineken's equity beta has been higher than the average industry equity beta historically. However, it has converged towards the industry beta over the last six months.

Graph 46: Development of Heineken's and industry's historical levered beta



This paper adopts the approach suggested by Koller and uses the five-year average levered beta for the calculation of unlevered betas. Theoretically, the unlevered betas should be lower than the levered betas for firms with debt obligations. This is because debt holders have the priority on the cash flows of the business in case of liquidation. This increases the risk that equity holders face, leading to a higher equity beta. The unlevered betas of Heineken and its peers are determined based on their respective target debt-to-equity ratio and levered betas, as shown in table 6. And the median of these unlevered beta (0.72) is assumed to reflect the unlevered industry beta. The unlevered industry median beta is then relevered based on Heineken's target debt-to-equity ratio of 0.29 to estimate the company's equity beta. The relevered equity beta is 0.88 (almost the same as its five-year historical average).

According to KPMG's Equity Market Premium (2020), the equity market risk premium for Netherland is 6.75% as of April 1, 2020. This market risk premium, which is updated quarterly, is calculated by looking at various global indices (STOXX 600 included) and

performing sensitivity analysis on key variables. The paper considers it to be the most effective method to estimate market premium as it takes into account recent market developments and expectations. Specifically, the equity market risk premium in April has been updated from previous figures to reflect the additional risk premium required by investors due to the COVID-19 crisis and its potential impact on the economy. This estimation of the equity market risk premium will be used in the calculation of Heineken's unlevered and levered cost of equity.

7.3. Cost of debt estimation

Standard & Poor's has given a credit rating of BBB+ and Moody's has given a credit rating of Baa1 which is an investment-grade rating, and as discussed in an earlier section, YTM of an investment-grade bond can be a good proxy of the cost of debt. Hence, the paper uses the YTM for Heineken's long-term bond expiring on 29/03/2047 to calculate the cost of debt for Heineken. We believe that the use of a single bond to approximate the cost of debt as opposed to the weighted average for all bonds outstanding for Heineken is appropriate since this is the longest outstanding bond for the company, and its yield will better reflect the long-term cost of debt of the company. The bond has a coupon rate of 4.35%, with a price of USD 103 as of April 1, 2020 (Boerse Berlin, 2020). The yield to maturity of the bond is 4.16%. Thus, the cost of debt for Heineken would also be 4.16%. As stated in the framework section, this figure might overstate the returns as the YTM considers promised returns instead of expected returns, but the difference is expected to be immaterial as Heineken is rated as an investment-grade.

The method suggested by Damodaran using the interest coverage ratio is not performed in the analysis. The suggested method gives a rating of AAA for Heineken, whereas the rating for the company from Standard and Poor's is only BBB+. Therefore, we refrained from using Damodaran's method for calculating the cost of debt. Instead, we believe that the cost of debt based on the yield to maturity of the Heineken's bond can best reflect the cost of debt for Heineken, and hence, the paper uses 4.16% as the cost of debt for Heineken.

The interest paid on the debt is tax-deductible, and Heineken can benefit from the tax shield on its debt. This value is significant and real to the company. Since it is not reflected in the free cash flow generated by the core operation, it is included in the WACC estimation by reducing the cost of debt by the marginal tax rate facing Heineken. The marginal tax rate of the Netherland is 25%. This leads to an after-tax cost of debt of 3.12%.

7.4. Target capital structure estimation

Exhibit 44 illustrates Heineken's capital structure as of December 31st, 2019. The company uses a mix of both debt and equity in its capital structure. The capital structure is determined based on market values. Koller et al. (2015) suggest that for most companies, the reported book values of debt approximate the market value except when the company is in financial distress. Due to no material changes in the credit risk of the company since the issuance of the long-term debts as indicated by the credit rating from Standard & Poors, we believe that there are no material differences in the book and market values of the debt. By contrast, the market values of post-retirement obligations and provisions are estimated at their after-tax book values. These liabilities are considered as debt equivalents since Heineken will have to settle them and enjoy any tax deductions stemming from such settlements at some point in the future. Finally, the short- and long-term debts, post-retirement obligations, and provisions are added together, while excess cash is subtracted to arrive at total net debt. This results in net debt of €17.454 billion.

Exhibit 44: Heineken's capital structure as of December 31st, 2019

	Book value (in million euros)	Market value (in million euros)	% of total capitalization
Short-term debt *	3,833	3,833	5.0%
Long-term debt	13,366	13,366	17.3%
Post-retirement obligations	1,189	892	1.2%
Provisions	940	705	0.9%
Excess cash	(1,342)	(1,342)	-1.7%
Total net debt	**17,986**	**17,454**	22.6%
Shareholders' equity	16,147	54,674	70.9%
Non-controlling interests	1,164	5,037	6.5%
Total equity	**17,311**	**59,711**	**77.4%**
Total capitalization	**35,297**	**77,165**	**100.0%**

**Including interest payable*

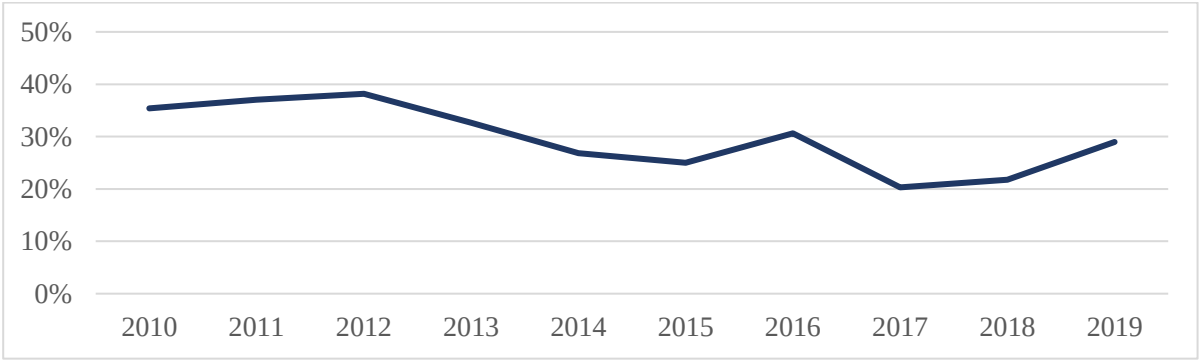
With regard to equity, there are two major components: shareholders' equity and non-controlling interests (NCI). The market value of shareholders' equity is the total value of the number of outstanding shares at any given time. Heineken has approximately 576 million shares outstanding but also maintains some treasury shares that should be excluded when determining the market value of the company's shareholders' equity. In other words, the relevant number of outstanding shares is approximately 573.643 million, with a share price of

€94.92 as of December 31, 2019, leading to the market value of shareholders' equity being about €54.67 billion. By contrast, the market value of NCI is calculated by multiplying an industry's average Price/Earnings ratio (P/E) by the profit attributable to them in that specific financial year. This method is consistent with the approach adopted by Koller et al. (2015). The peer companies discussed above in the calculation of Heineken's levered beta have been taken into consideration for the estimation of the industry's average P/E ratio. The industry's average P/E ratio is 24.22, and the profit attributable to NCI at the end of 2019 was €208 million, resulting in the market value of the non-controlling interest being about €5.037 billion. Consequently, the total market value of equity was €59.711 billion.

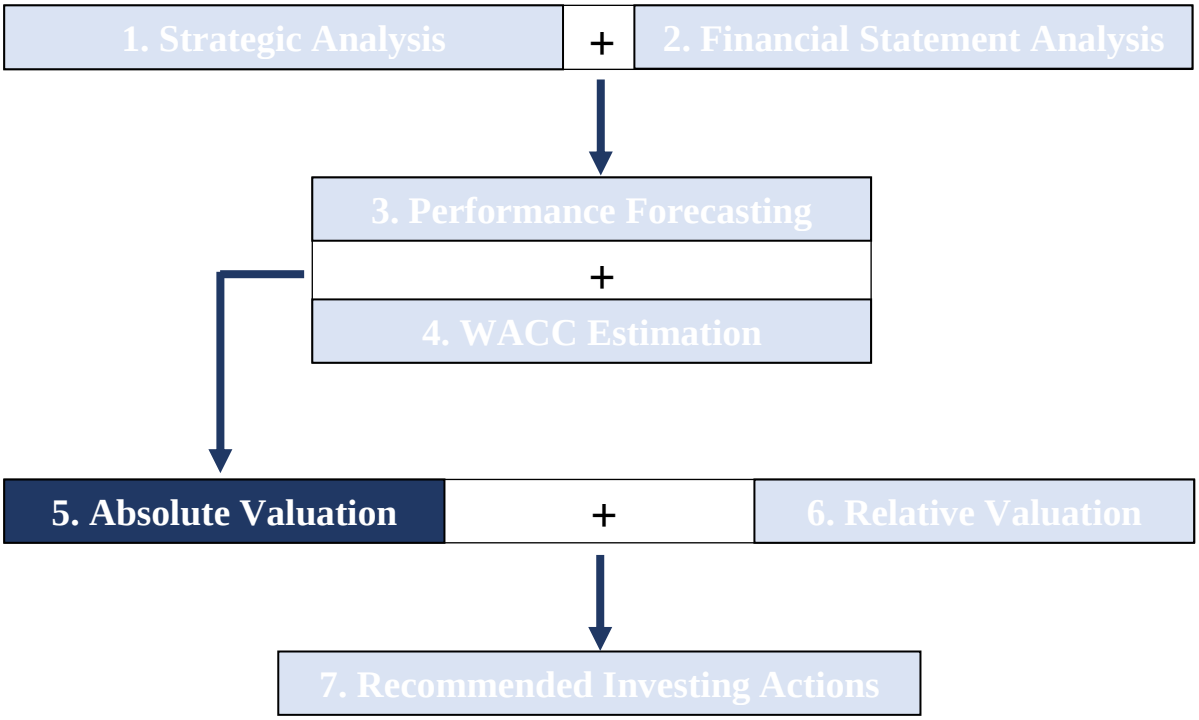
The capital structure has been calculated based on December 31, 2019, rather than on April 1, 2020. This is because the target capital structure would be better reflected in December 2019 than on April 1, 2020, when the market value of both debt and equity would be influenced by the COVID-19 pandemic. Moreover, we also assume that Heineken will keep its current capital structure constant. This leads to a target debt-to-equity ratio of 0.29. It means that for every €1 of equity, Heineken has €0.29 debt in this capital.

The paper also examines the Heineken's historical debt-to-equity ratio over the last ten years, as illustrated in graph 47. The ratio was higher in the 2010- 2015 period, with the ratio starting at 35% in 2010 and settling at 27% in 2015. The average ratio for that period was 32.5%. However, the ratio has declined since then, and the average for the 2015 – 2018 period was 24.4%, with its peak of 31% in 2016. However, Heineken has sharply decreased its debt-to-equity ratio since then, with the figure in 2017 and 2018 being 20% and 22%, respectively. The average debt-to-equity ratio for the period 2010- 2018 was 29.8%, which is slightly higher the current debt to equity ratio for the company. From the observation, we believe that the current debt-to-equity ratio can well reflect the target capital structure of the company and that this ratio will be maintained in the future.

Graph 47: Historical debt-to-equity ratio of Heineken's



8. Valuation of Heineken

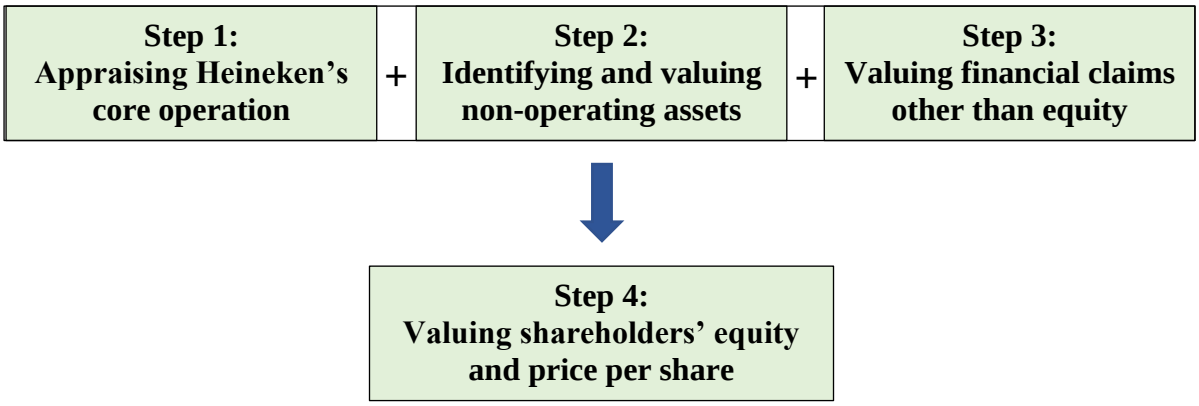


In chapter 2, 4 and 5, thorough analyses of Heineken, its peers, and the beer industry are carried out, and, based on these analyses, chapter 6 sheds light on the forecasts of free cash flows and economic profits that can be generated by the company's core operation. These free cash flows and economic profits, along with the estimation of Heineken's weighted cost of capital (WACC) outlined in chapter 7, are the foundation for the work in this chapter, which is to ultimately determine the fair price of Heineken's shares in the stock market. As shown in chapter 3, the two valuation approaches that are believed to be the most suitable for Heineken are discounted cash flow to enterprise (DCF) and discounted economic profit (or economic value added (EVA)). The chapter will go through the details of how the two valuation methods apply to Heineken, and, subsequently, interpretation of the results. In the end, the chapter will investigate the effects of the key value drivers on the company's price per share through a sensitivity analysis.

As outlined in chapter 3, both the discounted cash flow to the enterprise and economic-profit models are carried out in 4 separate steps, as illustrated in exhibit 45. Firstly, the company's core operation will be valued. Secondly, the values of non-operating assets will be added to the core operation's value in order to derive the gross enterprise value. In the third step, all non-equity claims will be subtracted from the gross enterprise value to derive the value of

shareholders' equity. Finally, this value will be divided by the number of outstanding shares to come to the fair value of the company's shares traded in the stock market. These steps will be shed light on in the following sections.

Exhibit 45: The 4-step approach to valuing Heineken's shareholders' equity



8.1. Discounted Cash Flow to Enterprise approach

8.1.1. Valuation of Heineken's core operation

Using the weighted average cost of capital (WACC) of 6.84%, Exhibit 46 illustrates the forecasts of the free cash flows generated by Heineken's core operation and their present values. The forecasts up to the year 2037 are taken directly from the results presented in chapter 6. By contrast, the continuing value is determined by the expected level of free cash flow in 2038 (4,799 million euros) and its forecasted constant growth rate of 2.6% in the future. Both of them are also displayed in chapter 6.

The total present value of the free cash flows generated by Heineken's core operation is 66.035 billion euros. It is then adjusted with a mid-year adjustment factor to account for the fact that the cash flows by no means occur at the end of each year, but instead, take place throughout the year. Mathematically, this mid-year adjustment factor is equal to $(1+6.84\%)^{1/2}$, since the cash flows are assumed to take place in the middle of the year, as pointed out in chapter 3. This results in the total value of the core operation being 68.257 billion as of January 1, 2020. Since the valuation is performed to calculate the intrinsic value as of May 15, 2020, the future value of the core operation's January-value is calculated using WACC as the rate of return. Therefore, the value of the core operations as of May 15, 2020, is estimated to be 69.971 billion euros.

Exhibit 46: Valuation of Heineken's core operation based on DCF approach

Future period	Free cash flow	Discount factor	Present value
2020	81	0.9360	75
2021	2,877	0.8761	2,520
2022	3,934	0.8200	3,226
2023	2,127	0.7675	1,632
2024	2,797	0.7183	2,009
2025	2,960	0.6724	1,990
2026	3,133	0.6293	1,971
2027	3,316	0.5890	1,953
2028	3,381	0.5513	1,864
2029	3,509	0.5160	1,811
2030	3,622	0.4830	1,749
2031	3,738	0.4521	1,690
2032	3,916	0.4231	1,657
2033	4,037	0.3960	1,599
2034	4,161	0.3707	1,542
2035	4,289	0.3469	1,488
2036	4,422	0.3247	1,436
2037	4,677	0.3039	1,422
Continuing value	113,180	0.3039	34,400
Total present value of the cash flows			**66,035**
Mid-year adjustment factor			1.0336
Value of core operation (as of January 1, 2020)			**68,257**
Value of core operation (as of May 15, 2020)			**69,971**

8.1.2. Valuation of the entire enterprise

The next step is to calculate Heineken's gross enterprise value by adding back the value of all non-operating assets to the value of the core operation, as illustrated in Exhibit 47. The total market value for these non-operating assets is estimated at 6.9751 billion euros, leading to the total gross enterprise value being 76,922 billion euros. Since most of the non-operating assets shown in the exhibit, in adherence to accounting rules, have already been marked to market, their market values are estimated to be the same as their book values at the end of 2019. One exception is investments in associates and joint ventures. Instead, the market value of this asset is estimated by applying the industry's average P/E ratio outlined in chapter 7 to Heineken's share of profits earned from these investments in 2019, which was €164 million. Since the industry's average P/E multiple is 24.22, the market value of non-consolidated investments is estimated to be €3.972 billion.

Exhibit 47: Valuation of the entire enterprise based on DCF approach

Item	Estimated value (in million euros)
Value of the core operations (May 15, 2020)	69,971
Excess cash	1,342
Investments in associates and joint ventures	3,972
Other financial assets	819
Minority interest in other entities	408
Tax loss carryforwards	410
Gross Enterprise Value	**76,922**

8.1.3. Fair Value Per Share

Exhibit 48: Heineken's value per share calculation based on DCF approach

in million euros	
Gross enterprise value	76,922
Debt	(17,199)
Post-retirement obligations	(892)
Provisions	(705)
Non-controlling interest	(5,037)
Shareholders' equity value	53,089
Number of shares outstanding (millions)	573.64
Value per share (€)	**92.55**

After the gross enterprise value has been determined, debt and non-equity claims are then subtracted in order to derive the value of shareholders' equity, as illustrated in exhibit 48. The determination of the market values of debt and non-equity claims are explained in detail in chapter 7. Specifically, the total borrowing costs for Heineken amounted to €17.199 billion. By contrast, post-retirement obligations and provisions together are estimated to be €1.597 billion, which is equal to their book values in 2019 net of tax (25%). This is due to the fact that Heineken is expected to be entitled to proportionate amounts of tax deductibility when these obligations are settled. Moreover, the market value of non-controlling interest is estimated to be €5.037 billion, based on the income attributable to the non-controlling shareholders in 2019 (€208 million) and the industry's average price-to-earnings (P/E) ratio of 24.22. Putting all the inputs together, the value of shareholders' equity and the value per share are estimated to be €53.089 billion and €92.55, respectively. It is worth noting that although the total number of shares issued as of December 31, 2019, is approximately 576 million, it also contains treasury shares that are held by Heineken. Therefore, for the

calculation of the equity value per common share outstanding, the treasury shares should be excluded in the calculation, leading to the total number of outstanding shares in the market being approximately 573.643 million.

The price of Heineken as of 15 May 2020 is €72.50. This represents that the stock is undervalued as of May 15, 2020, and represents an upside potential of approximately 27.66%.

8.2. Economic Value Added (EVA) approach

EVA is a measure of surplus value created on an investment. It is essentially a measure of a firm's economic profit that considers the opportunity cost of invested capital. EVA approach ultimately measures whether the organizational value is created or lost. The idea is that value is created when the return on capital invested exceeds the cost of that capital, and this can be useful to evaluate businesses or investments, particularly ones that are capital intensive. The economic profit for a company highlights how its financial performance is expected to change over time. The valuation using this concept is gaining in popularity due to its close links to economic theory and competitive strategy. The economic value-based measure would provide a different way of looking at the company and approach to its valuation. Koller et al., 2015 mentions three common pitfalls when calculating the economic profits:

- It is important to use the beginning of the year's invested capital value to base the forecasts on rather than average or middle-year value.
- Invested capital for ROIC and economic profits are to be defined by the same metric (either with goodwill or without goodwill). This consistency will then lead to identical results, as concluded in the enterprise DCF valuation method.
- The use of the same discount rate (WACC) for all projections. This is also in line with the method adopted in the enterprise DCF valuation.

8.2.1. Valuation of Heineken's core operation

Exhibit 49 illustrates the calculation of the value of Heineken's core operation based on the economic value-added approach. Mathematically, this result should be the same as that derived from the DCF approach, as outlined in chapter 3.

The EVA models present ROIC as the primary driver for future value creation. The present value greatly exceeds the book value by approximately €40 billion. This is due to the attractive ROIC that Heineken is expected to enjoy in the forecast period (almost 3-4 times the cost of capital). Moreover, the continuing value constitutes more than half of the total present value of economic profits (52.3% to be exact), implying that a large chunk of value is created in the continuing period.

Exhibit 49: Valuation of Heineken's core operation based on EVA approach

Future period	Economic profit	Discount factor	Present value
2020	855	0.9360	801
2021	1,302	0.8761	1,141
2022	1,978	0.8200	1,622
2023	2,267	0.7675	1,740
2024	2,302	0.7183	1,653
2025	2,445	0.6724	1,644
2026	2,597	0.6293	1,634
2027	2,759	0.5890	1,625
2028	2,852	0.5513	1,572
2029	2,945	0.5160	1,520
2030	3,043	0.4830	1,470
2031	3,146	0.4521	1,422
2032	3,253	0.4231	1,376
2033	3,354	0.3960	1,328
2034	3,459	0.3707	1,282
2035	3,567	0.3469	1,238
2036	3,679	0.3247	1,195
2037	3,796	0.3039	1,154
Continuing value	91,845	0.3039	27,916
Total present value of economic profits			53,331
Invested capital as of January 1, 2020 (excldluding goodwill and acquired intangibles)			12,704
Value of core operation, unadjusted			66,035
Mid-year adjustment factor			1.0336
Value of core operation (as of January 1, 2020)			**68,257**
Value of core operation (as of May 15, 2020)			**69,971**

8.2.2. Valuation of the entire enterprise

The gross enterprise value for Heineken using EVA method is same as that when using discounted cash flow method and it is €76.922 billion, as illustrated in exhibit 50.

Exhibit 50: Valuation of the entire enterprise based on EVA approach

Item	Estimated value (in million euros)
Value of the core operations (May 15, 2020)	69,971
Excess cash	1,342
Non-consolidated investments	3,972
Other financial assets	819
Minority interest in other entities	408
Tax loss carryforwards	410
Gross Enterprise Value	**76,922**

8.2.3. Fair value per share

Similarly, Heineken's value per share using EVA method is estimated to be also €92.55, as shown in exhibit 51.

Exhibit 51: Heineken's value per share calculation based on DCF approach

in million euros	
Gross enterprise value	77,330
Debt	(17,199)
Post-retirement obligations	(892)
Provisions	(705)
Non-controlling interest	(5,037)
Shareholders' equity value	53,635
Number of shares outstanding (millions)	573.64
Value per share (€)	**92.55**

8.3. Sensitivity analysis

The estimation of Heineken's intrinsic value requires several assumptions about both the industry and the company's future performance and development, as outlined in chapter 6. To assess the magnitude of the impacts these assumptions have on the company's estimated share price, a sensitivity analysis is necessary. Specifically, the impact of a given assumption is measured by examining the change in the estimated stock price in response to a given change in the assumption. This section will shed light on the impacts of the key-value drives for Heineken, namely its weighted average cost of capital (WACC), revenue growth rates, return on invested capital (ROIC), and profit margin (EBITA/Revenue).

❖ **Heineken's weighted average cost of capital (WACC)**

Analyzing the impact of the cost of capital is interesting, considering that there are aspects in both the market and the company, which could affect the future cost of capital. WACC can change because of four main reasons:

- Cost of equity: It has its own components with their own underlying workings and implications (risk-free, beta, market premium). Usually, the proportion of equity in the capital structure is high and, thus, a given change in the cost of equity is likely to have a significant impact on the WACC.
- Cost of debt: All else being equal, an increase in the cost of debt leads to an increase in the WACC, and vice-versa. Furthermore, a given change in the cost of debt is likely to lead to a change in its market value, which in turn impacts both the debt-to-equity ratio used for the WACC calculation and the derivation of shareholder's equity value from the enterprise value.
- Target capital structure: A change in the debt-to-equity ratio will change the WACC. As the cost of equity is higher than the cost of debt, a given change in the target weight of equity will have a greater impact on the WACC than a given change in the target weight of debt.

Exhibit 52: Sensitivity of share price to WACC

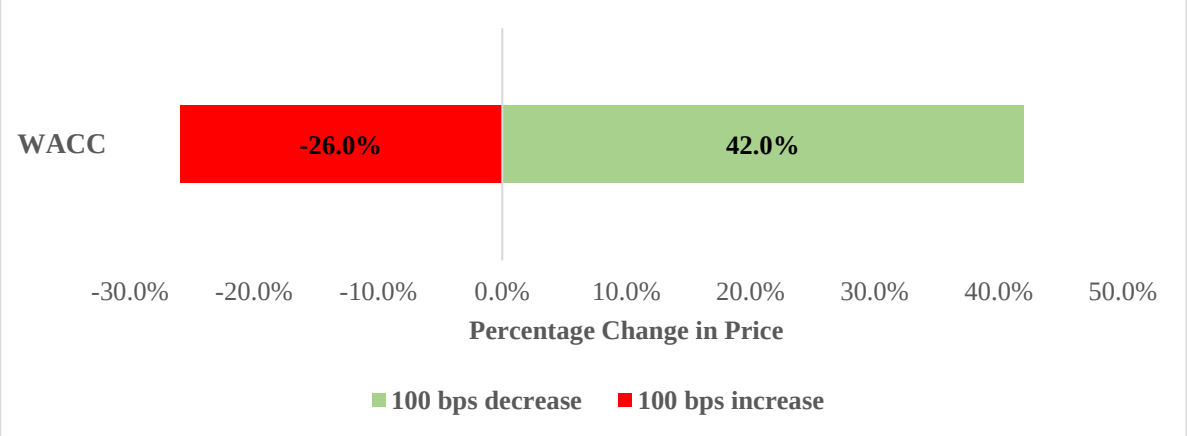


Exhibit 52 illustrates that the share price is considerably sensitive to the discount rate used, and a 100 basis points increase in WACC from 6.84% to 7.84% decreases the stock price by approximately 26% from €92.55 to €68.58. By contrast, a 100 basis points decrease in WACC from 6.84% to 5.84% increases the share price by 42% to €131.46. This calculation assumes that the changes in WACC come from the risk-free rate component of the cost of equity, while all other elements of the WACC, including the cost of debt, marginal tax rate, and the target

capital structure are assumed to be constant. Furthermore, an increase in the estimated WACC of 81 basis points to 7.65% will move the estimated stock price to €72.40, which is less than the prevailing market price of €72.5 observed on May 15, 2020.

- **Revenue growth**

The estimated revenue growth rate has been estimated to be 2.6% for the continuing-value period. A 100 basis points increase in the revenue growth from 2.6% to 3.6% will increase the share price by 17.9% to €109.12. On the other hand, if the growth rate decreases by 100 basis points to 1.6%, the share price will reduce to €82.30, a decrease of 11%. The analysis shows that the share price is quite sensitive to a small change in this key driver and estimation.

Furthermore, the revenue growth rate must go below zero to lower the estimated share price below the market price on May 15, 2020.

- **Return on invested capital (ROIC)**

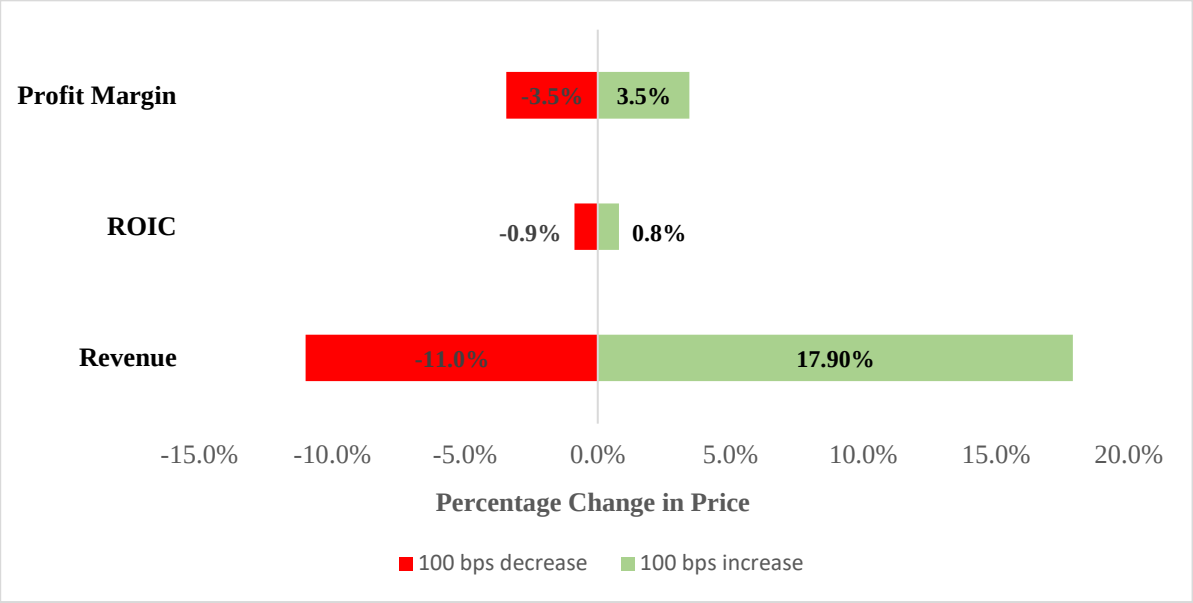
The return on invest capital (ROIC) for the long-term and continuing value periods has been estimated to be 25.1%. A 100 basis points increase in the ROIC for the long-term and continuing value periods will increase the share price by 1.15% to €93.61 while a 100 basis points decrease will reduce the share price by 1.24% to €91.40. However, 100 basis points increase in the ROIC for only the continuing value period will increase the share price by 0.8% to €93.29, and a 100 basis points decrease will decrease the share price by 0.9% to €91.74. The analysis shows that the estimated value per share is more susceptible to changes in the ROIC for the continuing-value period than for the long-term period.

- **Profit margin**

The profit margin for the long-term and continuing-value periods has been estimated to be 16.1%. A 100 basis points change in the profit margin for both long-term and continuing-value periods will shift the estimated stock price by 5.2%. However, a 1% change in the profit margins for the continuing-value period only results in a change of 3.5%. Specifically, the estimated stock price will decrease to €89.35 if the profit margin for the continuing-value is decreased to 15.1% while the share price will increase to €95.74 if the margin is increased to 17.1%.

Similar to the pattern found for ROIC, the analysis also suggests that the estimated value per share is more susceptible to changes in the profit margin for the continuing-value than for the long-term period.

Exhibit 53: Sensitivity of share price to key value drivers in the continuing-value period

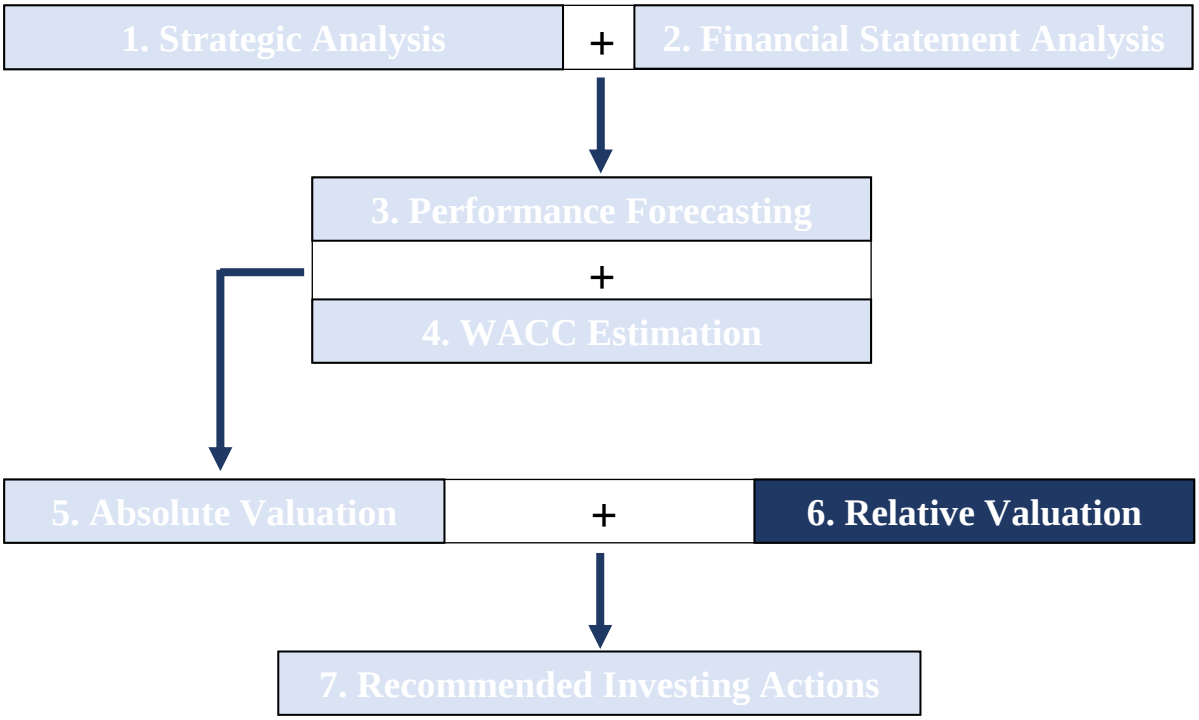


8.4. Conclusion

Based on the discounted cash flow to the enterprise and economic-profit model, the intrinsic value of one Heineken share has been estimated to be €92.55. This estimation is higher than what was observed in the market as of May 15, 2020, which represents an upside potential of approximately 27.66%.

It is also noteworthy to mention that the valuation models are based on many key estimations and that any deviations from them can lead to a different outcome. The sensitivity analysis showed that the estimated value per share is most susceptible to changes in the weighted average cost of capital (WACC) and revenue growth rate. Although it is also susceptible to changes in the estimations of the company's return on invested capital (ROIC) and profit margin for the continuing-value period, the volatility stemming from these two value drivers are much lower.

9. Multiple Valuation



A multiple is an expression of the market value relative to a key statistic that one assumes relates to the value (Suozzo, Cooper, Gillian, & Deng, 2001). Discounted cash flow analysis is by far the most accurate and flexible method for valuation purposes of companies or projects (Koller, Goedhart, & Wessels, 2010). However, a discounted cash flow analysis requires a lot of assumptions to be made, while multiples can be calculated with fewer assumptions. It is, however, important to bear in mind the simplicity and all assumptions behind multiple valuations. The multiple uses a lot of information in one single number that represents average assumptions about the future state. In addition, the multiple is a static number, which only represents one point of time (Suozzo et al., 2001). Another weakness is that the model focuses on market prices, and thus indirectly assumes that the market is efficient.

Under this approach, the object of valuation is priced against the price of its comparative companies. The idea is that similar assets should sell for similar prices (Koller et al., 2015). To complement the findings and analysis conducted in the absolute valuation section, the paper now compares the results found using the discounted cash flow and economic-profit models with that of the relative valuation technique. In relative valuation, the company's asset is valued on how similar assets are priced in the market. (Damodaran, 2006). The target company's performance is compared with respect to its competitors and whether it would be

beneficial to invest in the target company within that industry or not. However, this also leads to the most common mistake as the ability to find a perfectly comparable company is basically non-existent. All multiples consist of a numerator and a denominator. It is normal to separate multiples into two different groups, enterprise (EV) and equity multiples. This is the value of the numerator in the multiple. While enterprise multiples aim to value the company as a whole before moving to the equity value, equity multiples directly appraise the value of shareholder's equity. Hence, it is important to use a statistic that corresponds to the numerator.

Relative valuation involves calculating multiples or ratios. There are various types of multipliers that can be used based on different usage purposes such as price to free cash flow, net enterprise value (EV) to sales, price to sales, price-to-earnings (P/E), etc. While P/E ratio is more popular because of its ease in both calculation and explanation, EV to earnings before interest, taxes, and amortization (EBITA) ratio is recommended because of its focus on operating items. These multipliers are discussed below in the following sections.

9.1. Selection of comparable companies

In chapter 3, the paper discusses the steps involved in finding the right comparative companies. It involves looking into the companies that are operating in the same industry with similar size of operations, historical growth rates, measures of profitability and cash flows, capital structure, among other things. The weakness in multiple valuations is that the freedom to choose peers affects the valuation value, causing the reliability of the model to be impaired (Damodaran, 2012). So, careful consideration must be given while selecting peer companies. However, because of the diversity in product lines, size, profitability, etc., finding the right peer companies for relative valuation can be challenging.

At first glance, AB InBev, Carlsberg, and Molson Coors are considered as comparable companies for Heineken due to their similarities in size of operations and the markets in which they operate. There are other players in the industry, including China Resources Beer, Asahi Breweries, Kirin, and Diageo. However, these companies operate in different geographical boundaries. Moreover, they also offer many product lines that are different from beer, and beer sales only constitute a part of their total revenues. Therefore, these companies are not considered as potential peers for multiple valuation analysis.

Among the potential comparable companies, AB InBev, being the largest player in the industry, enjoys the highest market share, and has a much bigger scale of operations. Moreover, its return on invest capital (ROIC) has consistently outperformed that of Heineken to a large extent. Specifically, Heineken's average ROIC in the past decade has been around 20%, while the figure for AB InBev is around 70% over the same period. Moreover, AB InBev's profit margin has been consistently nearly double that of Heineken over the period 2010-2019. Therefore, the company should not be viewed as Heineken's comparable company for the relative valuation.

By contrast, Heineken, Carlsberg, and Molson Coors operate in similar markets and offer the same product categories (beer and non-beer). Moreover, their profit margins have been quite similar over the last ten years. Although the ROICs of all three companies were comparable from 2011 to 2014, Heineken's ROIC has stayed relatively at the same level while the ROIC has increased for the other two. Specifically, Carlsberg's ROIC had sharply risen to about 59% in 2019. Similarly, Molson Coors has been able to increase its ROIC to about 30% in the last two years. This inferiority in ROIC may be compensated for by Heineken's stronger revenue growth over the last ten years compared to the other companies. Furthermore, based on the capital structure, Heineken's and Carlsberg's are quite close to each other. Overall, there will be differences, but after taking everything into consideration, we believe that Carlsberg and Molson Coors are the most suitable peers for Heineken to undertake the relative valuation.

9.2. Selection of multiples

The relative value of the target company's equity is derived from the market value of its comparable peers, using multiples and then adjusting for differences in fundamental relationships between the companies (Koller et al., 2015). In the case of the share of stock, there are various types of multiples that are examined below.

9.2.1. Introduction of widely-used multiples

- **Price-to-Earnings (P/E) ratio**

P/E ratio is defined as the ratio of the market price per share to the earnings per share. The formula is given as follows:

P/E Ratio = Price per Share / Earning per Share

Damodaran (2012) argues that it is the most widely used multiple, but at the same time also the most misused one. According to (Koller et al. 2015), the P/E multiple has two major flaws. First, for companies with an unlevered P/E, which is greater than one over the cost of debt, the P/E ratio will rise with increased leverage and vice-versa. Therefore, companies with a relatively high P/E and a low debt ratio can further increase its P/E by choosing debt financing over equity. Secondly, since the P/E ratio is based on earnings, which includes many nonoperating items that could be just one-off events, the P/E multiple could be misleading and not be comparable among companies.

- **Price-to-Book (P/B) ratio**

P/B multiple measures the ratio between the stock price observed in the stock exchange with that of the book value of the share. This ratio compares a firm's market to book value by dividing price per share by book value per share or by dividing the total market capitalization by the total book value of equity. The formula for the P/B ratio is:

P/B ratio = Market Capitalization/ Total Book Value

The ratio gives a good indication of the stock price to its book value of equity (Kaldestad & Møller, 2016). It is also a good indicator of whether a company is under- or overvalued compared to other companies in the same industry that apply the same accounting standards (Damodaran, 2012).

The P/B ratio and the return of equity usually correlate well. When the price to book ratio is higher than 1.0, investors are willing to pay more than what their net assets are worth. This could indicate that the company has healthy future profit projections and are able to deliver a return of equity above the cost of equity. Traditionally, any value below 1.0, which implies that the book value is higher than market value, has been considered a good P/B ratio for value investors. These types of investors would argue that the company is undervalued and that the share price should not fall to a price level that reflects that the company is destroying value. As mentioned, the multiple is dependent on peer groups using the same accounting standards. Therefore, the biggest limitation is that the multiple is not applicable if the companies apply different accounting standards (Damodaran, 2012). This will be a concern in this paper as Molson Coors, one of the peer companies, uses US GAAP while Carlsberg and Heineken, the other peer and the target company, use IFRS accounting standards.

❖ **Net Enterprise Value (Net EV)/Revenue ratio**

The net EV/Revenue multiple is calculated by taking the ratio between the net enterprise value and revenue. The formula for the ratio is as follows:

Net EV/Revenue Multiple = Net EV/Net Revenues

The ratio shows the amount of net EV by per unit of revenue generated. Net EV refers to the market value of a company's operating assets deemed as core to the company's underlying business. In short, net EV is the market value of the company's invested capital. By contrast, gross enterprise value includes the value of both invested capital and non-operating assets. The net EV/Revenue will not be affected by different accounting standards and depreciation methods, which makes them less exposed to biases (Damodaran, 2012). The net EV/Revenue should only be a supplement to other multiples, as it implicitly assumes that the comparable companies have the same profit margins (Kaldestad & Møller, 2016). Another benefit with the net EV/Revenue ratio is that revenues are seldom as volatile as the net incomes (the bottom line), making it more likely to get an analysis consisting of stable historical numbers.

❖ **Net EV/EBITA ratio**

Net EV/EBITA shows the company's earnings before interest, taxes, and amortization relative to the net EV. Damodaran (2012) states that this is favorable, as the multiple is unaffected by differences in companies' capital structures and amortization plans. Furthermore, the multiple is unaffected by taxes. Since companies may operate under different tax regimes, this multiple helps eliminate the distortions created by taxation. This allows for comparisons across the target company and its peers to draw conclusions regarding the relative value of the target company. The formula for the ratio is given as follows:

Enterprise Multiple = Net EV/EBITA

The net EV/EBITDA is also commonly used instead of the net EV/EBITA multiple as depreciation is a non-cash expense, and these expenses are not used in EBITDA multiple. Koller et al. (2015) suggest that for a capital-intensive industry, depreciation can be viewed as an accounting alternative of future capital expenditure that will be undertaken to replace the assets. Since the brewing industry is capital-intensive, Heineken and other peers incur massive capital expenditure to maintain their operations and advantages as well as lead innovation in

the industry. This will lead to depreciation expenses that will have an impact on future cash flows.

The net EV/EBIT is not considered in our analysis either because, unlike EBITA, EBIT includes the amortization of intangible assets. It is noncash, and, unlike the depreciation of physical assets, the replacement expenses of intangible assets are already incorporated in EBITA through line items such as marketing and selling expenses (Koller et al., 2015).

9.2.2. Choice of multiples

The paper uses the net EV/EBITA multiple as the best tool for calculating the relative value of Heineken. It is because Koller et al. (2015) suggest that the use of EBITA multiple eliminates the distorting effect of differences in capital structures, non-operating assets, non-operating income statement items and, hence, provides a better indication of company's future cash flow generation. However, the other multiples outlined above will also be calculated and explained for comparative analysis.

To determine a company's net EV, all the market values of equity and equity equivalent items, such as non-controlling interests, along with debt and debt equivalent items, such as pension liabilities and provisions, are first added together to derive the gross enterprise value. Since this gross enterprise value encompasses both invested capital and other non-operating assets, net EV can be determined by taking the difference between the company's gross enterprise value and the market values of its non-operating assets. Heineken and its comparable peers have many non-operating assets on their balance sheets that need to be adjusted before proper analyses could be undertaken. Some of the non-operating assets that all three companies have in common are excess cash, financial assets, and tax loss/carryforwards. Moreover, Heineken and Carlsberg have also invested in associates and joint ventures.

The calculation of net enterprise value starts with the determination of market capitalization of the company at any given date (May 15, 2020, in this case). Thereafter, the market values of non-controlling interests and debt and debt equivalents are added back. Finally, the market values for all non-operating assets (current and non-current) are subtracted. The net EV calculations of Carlsberg and Molson Coors are shown in Exhibits 54 and 55.

Exhibit 54: Carlsberg's net enterprise value calculation

In million DKK	**Book Value**	**Market Value**
Stock price (May 15, 2020) (DKK)		804.2
Number of shares outstanding (millions)		152.557
Market capitalization		122,686
Non-controlling interests	2,587	21,916
Debt (current, non-current and interests)	24,991	24,991
Other non-current liabilities	9,056	9,056
Post-retirement obligations	3,299	2,573
Provisions	5,700	4,446
Non-current tax payable	1,795	1,795
Non-consolidated investments	(4,364)	(6,732)
Other financial assets	(6,908)	(6,908)
Tax loss carried forwards	(468)	(468)
Net enterprise value		**173,355**

Exhibit 55: Molson Coors' net enterprise value calculation

In million USD	**Book Value**	**Market Value**
Stock price (May 15, 2020) (USD)		36.35
Number of shares outstanding (millions)		207.3
Market capitalization		7,535
Non-controlling interests	258	109
Debt (current, non-current and interests)	9,145	9,145
Post-retirement obligations	717	566
Other financial assets	101	101
Tax loss carried forwards	234	234
Net enterprise value		**17,020**

The calculations of debts and non-controlling interests have been discussed in detail in chapter 7. By contrast, all non-operating assets have been estimated to have the same market values as their book values, except that of non-consolidated investments.

The share of profits earned attributable to non-controlling interests in 2019 was DKK 905 million for Carlsberg and USD 4.5 million for Molson Coors. These were then multiplied by the industry's average P/E ratio, calculated in chapter 7, to estimate the market values of their non-controlling interests. The P/E multiple is 24.22, which results in the market values of non-controlling interests being DKK 21.916 billion for Carlsberg and USD 109 million for Molson Coors. It is worth noting that the market value of non-controlling interests is lower than the book value for Molson Coors. This could be indicative of the underperformance of the company. Furthermore, the P/E multiple is also used to calculate the market value of

Carlsberg's non-consolidated investments, based on the share of profit the company received in 2019 (DKK 278 million). With respect to post-retirement obligations and provisions, these liabilities will be settled after tax in the future and, therefore, their market values are estimated to be equal to their after-tax book values. As of 2019, the marginal tax rates for Carlsberg and Molson Coors are 22% and 21%, respectively.

It is also important to calculate the market values of Heineken's non-operating assets for the final calculation of its relative stock price (Exhibit 56). It is worth noting that most of the non-operating assets have already been marked to market. Thus, the market values of all of them are estimated to be equal to their book values, except the company's non-consolidated investments. Instead, the market value of the non-consolidated investments is calculated through the share of profits earned from those investments in 2019, which was €164 million. This figure was then multiplied by the average P/E ratio, which results in the market value of non-consolidated investments being €3.972 billion. It is important to note that the market value is lower than the book value (€4.868 billion). This could be indicative of the underperformance of these investments.

Exhibit 56: Market values of Heineken's non-operating assets

In million €	**Book Value**	**Market Value**
Non-consolidated investments	4,868	3,972
Minority interest in other entities	408	408
Other financial assets	708	708
Tax loss carried forwards	410	410
Excess cash	1,342	1,342
Assets classified as held for sale, net of liabilities	111	111
Total market value		**6,951**

9.3. Forward multiples

One of the important considerations in relative valuation is whether to base it on historical statistics or on future estimates. According to Koller et al. (2015), forward multiples are better forecasts of future operations, when normalized for unusual items. It is also consistent with the principles of valuation in the sense that the company is valued based on the present values of its future cash flows rather than historical figures.

9.3.1. Inputs

The paper uses the companies' performance forecasts for 2022 to estimate the forward multiples of Heineken. Generally, one-year-ahead forecasts are used for calculating forward-looking multiples. However, because of the COVID-19 pandemic, we believe that the projections for the next two years will be distorted. In chapter 6, it is forecasted that the operations and sales of Heineken and its competitors will normalize from 2022 onwards. Hence, we believe that the forecasts of 2022 will better reflect the long-term prospects of the companies.

Table 7 summarizes the inputs used for calculating the forward-looking multiples. The estimates of Heineken (net EV, revenues, etc.) are also included in the table and will be used to directly calculate its multiple. However, only estimates from Carlsberg and Molson Coors will be used to perform the relative valuation. The estimates of Heineken are included in order to observe the difference between its direct and indirect multiples (based on peer multiples) and, consequently, the difference between its stock price derived from the relative valuation and the stock price observed in the market as of May 15, 2020.

The stock prices for Heineken and the peer companies are based on May 15, 2020. Since these companies are listed on different exchanges in different countries, their stock prices are quoted in different currencies – Heineken in Euro, Carlsberg in Danish Kroner, and Molson Coors in USD. However, since their financial statement items are in the same currency as their stock prices, the differences in currency get canceled out and, hence, do not affect the calculation of multiples.

Table 7: Important inputs for forward multiple valuation, based on the year 2022

Companies	Net EV	Market Capitalization	Revenues	EBITA	Stock Price	EPS
Heineken	58,473	41,760	24,883	4,053	72.5	4.7
Carlsberg	173,355	122,686	69,033	10,424	804.2	50.2
Molson Coors	17,020	7,535	9,999	1,650	36.4	3.8

(Source: Analysts' consensus estimates, 2020)

9.3.2. Analyses

Based on the inputs in table 7, Heineken's stock price will be valued using different ratios outlined previously.

❖ **Net EV/EBITA ratio**

Table 8: Net EV/EBITA forward multiple for different companies

	Heineken	Carlsberg	Molson Coors	Peer Average
Net EV/EBITA	14.47	16.63	10.32	13.47

Table 8 illustrates the forward-looking multiples based on 2022 estimates. Carlsberg has the highest multiples among peer companies.

The peer average multiple, using the multiples of Carlsberg and Molson Coors, is 13.47, which is lower than Heineken's direct multiple (14.47). This peer average multiple is then multiplied by Heineken's forecasted EBITA for 2022 (€4.053 billion) in order to estimate the company's net enterprise value (net EV) (€54.605 billion). For the calculation of the company's stock price, the non-operating assets must be added back into the net EV. Moreover, the debt obligations must be subtracted in order to obtain the value of shareholders' equity. This equity value is then divided by the total number of outstanding shares (573.644 million as of 2019) to derive the company's stock price. Heineken's stock price is estimated to be equal to €65.76, as illustrated in exhibit 57.

Exhibit 57: Heineken's estimated share price, by net EV/EBITA forward multiple

Forward net EV/EBITA	
Peer average multiple	13.47
	Amount in millions (€)
EBITA	4,053
Net enterprise value	54,605
Non-operating assets	6,950
Debt	(18,796)
Non-controlling interests	(5,037)
Equity value	37,723
Shares outstanding (millions)	573.644
Stock price of Heineken (€)	**65.76**

❖ **Net EV/Revenue ratio**

Table 9: Net EV/Revenue forward multiple for different companies

	Heineken	Carlsberg	Molson Coors	Peer Average
Net EV/EBITA	2.36	2.51	1.70	2.1

With regard to the net EV/Revenue ratio, Carlsberg also has the highest ratio (2.51) while Heineken is just behind, with a ratio of 2.36, and is creating an additional 0.76 unit of EV per unit of revenue when compared with Molson Coors.

The peer average multiple, using Carlsberg and Molson Coors, is 2.1. Based on this multiple and the estimated revenue of €24.883 billion, the net enterprise value of Heineken is estimated to be €52.421 billion. After adding back the non-operating assets and adjusting for debt obligations, the share price is estimated to be €61.95, as illustrated in exhibit 58.

Exhibit 58: Heineken's estimated share price, by net EV/Revenue forward multiple

Forward net EV/Revenue	
Peer average multiple	2.1
	Amount in millions (€)
Revenue	24,883
Net enterprise value	52,421
Non-operating assets	6,950
Debt	(18,796)
Non-controlling interests	(5,037)
Equity value	35,538
Shares outstanding (millions)	573.644
Stock price of Heineken (€)	**61.95**

- **Price-to-Earnings ratio**

Table 10: P/E forward multiple for different companies

	Heineken	**Carlsberg**	**Molson Coors**	**Peer Average**
P/E	15.30	16.02	9.54	12.8

Regarding the price-to-earnings ratio, the trend that was seen in the other multiples is also evident here. Led by Carlsberg at 16.02, Heineken has a P/E ratio of 15.3, followed by 9.54 for Molson Coors.

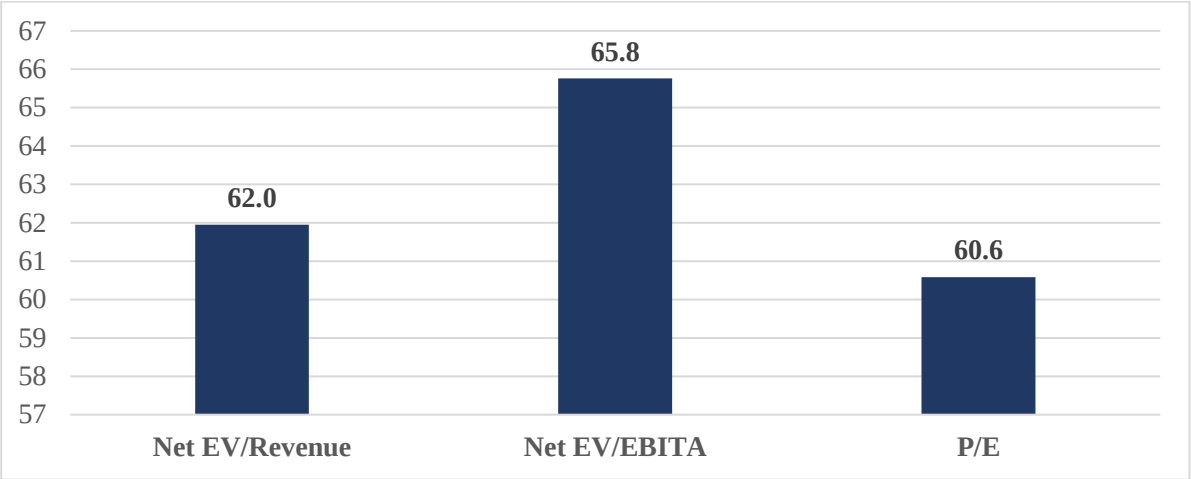
The peer average multiple is 12.8. Heineken's share price is estimated by multiplying this multiple by the company's forecasted EPS for 2022 (€4.74). The resulted share price is €60.58.

Exhibit 59: Heineken's estimated share price, by P/E forward multiple

Forward P/E	
Peer average multiple	12.8
Forward EPS	4.74
Stock price of Heineken (€)	**60.58**

❖ **Summary**

Graph 48: Heineken's estimated share price (in €) by different forward multiples

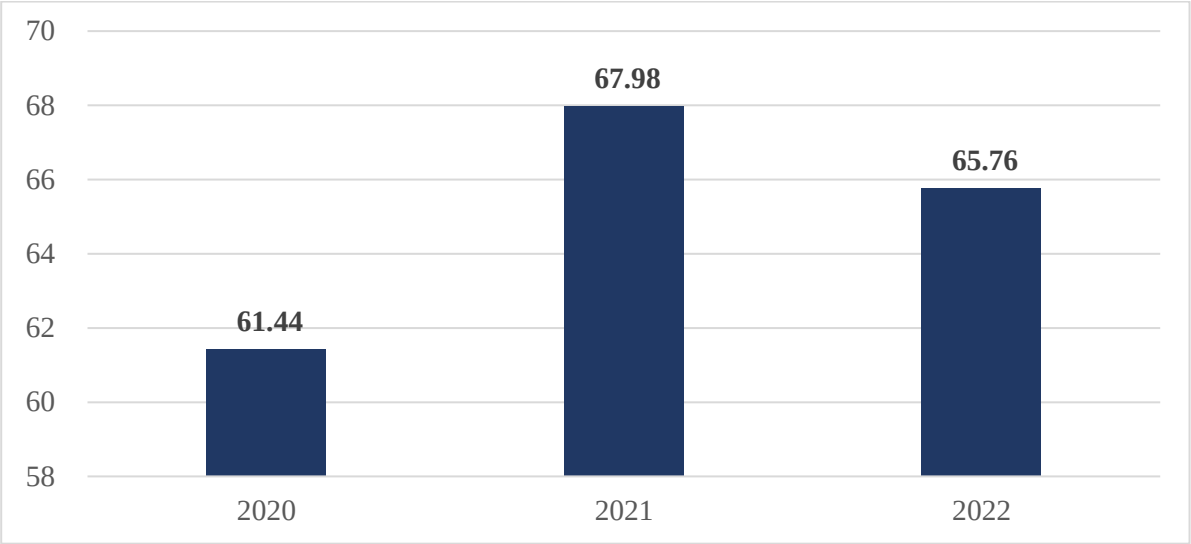


Graph 48 summarizes the results from the forward multiple valuation and shows that the stock price for Heineken based on the net EV/Revenue, net EV/EBITA P/E multiples. As discussed earlier, the net EV/EBITA ratio is superior compared to other multiples. Heineken's stock price based on this multiple is estimated to be €65.8. By contrast, the stock price based on the net EV/Revenue and P/E ratio is €62 and €60.6, respectively.

As discussed before, relative valuation based on forward multiple better reflects the future earning potential of the company and is preferred to the valuation based on trailing multiple, and as the net EV/EBITA multiple is superior to other multiple methods, the conclusion of the estimation of Heineken's share price is based on the net EV/EBITA forward multiple (€65.8). The lower relative price, as compared to its market price, can indicate that Heineken is overpriced compared to its peers. However, it can also indicate that the peers have underperforming multiples that are causing the average multiple to decrease, and, eventually, leading to a lower stock price for Heineken. It is evident from the analyses above that Heineken's direct multiples, derived by using its own estimates, were higher than the relative multiples, calculated as the average of Carlsberg's and Molson Coors' multiples.

In chapter 6, we assumed that the brewing industry would attain normalcy in 2022, making the forecasts for 2022 more appropriate for the relative valuation than those for 2020 and 2021. However, we have also investigated the resulted share prices when the net EV/EBITA ratio is based on forecasts for 2020 and 2021. Graph 49 illustrates these results together with the share price based on the forecasts for 2022.

Graph 49: Heineken's estimated share price (in €) by forward net EV/EBITA ratio based on different years



The graph shows the fact that 2020 is not a suitable year to base the forward multiple valuation as the numbers for EBITA are highly affected by the crisis. The use of forecasts of EBITA for 2020 would have resulted in a downward bias in the valuation. By contrast, the share price based on the forecasts for 2021 is higher than that based on the forecasts for 2022. However, is it still less than the market price observed on May 15, 2020. This observation might be attributable to the outlier result seen from one of the two peers selected, namely Molson Coors. Its ratios are far below Heineken's and Carlsberg's. Since the number of peers is only two, the impact of outliers on the results could be considerable. Therefore, it cannot be definitively concluded based on the results of the valuation of Heineken.

9.4. Trailling multiples

We stated in the previous section that forward multiples are preferred to trailing multiples because the prospects of the companies are of concern, and future forecasts can best reflect the performances of these companies in the future. However, as outlined in chapter 5, the performances of the companies in question have been quite stable over the last ten years before the pandemic erupted. Moreover, the forecasts used in the forward multiples in the previous section are subject to a great deal of uncertainty due to the pandemic. Thus, it could be the case that the companies' historical performances may better reflect the fundamentals of the businesses as compared to future estimates. This prompted us to also examine the trailing multiples.

To calculate the trailing multiples, the paper uses the historical information from the financial statements of Heineken and its peer companies.

9.4.1. Inputs

Table 11 summarizes the inputs used for calculating the trailing multiples. The stock price is based on May 15, 2020, and other items come from the companies' financial statements for 2019. As outlined previously, the actual figures of Heineken will be used to directly calculate the multiples for Heineken, while the relative valuation will use the figures of Carlsberg and Molson Coors to calculate the peer averages. These numbers are then compared and analyzed in the next section.

Table 11: Important inputs for trailing multiple valuation, based on the year 2019

Companies	Net EV	Market Capitalization	Revenues	EBITA	Stock Price	EPS
Heineken	58,473	41,760	24,883	4,053	72.5	4.7
Carlsberg	173,355	122,686	69,033	10,424	804.2	50.2
Molson Coors	17,020	7,535	9,999	1,650	36.4	3.8

9.4.2. Analyses

Based on the inputs in table 11, Heineken's stock price will be valued using different ratios outlined previously.

- **Net EV/EBITA ratio**

Table 12: Net EV/EBITA trailing multiple for different companies

	Heineken	Carlsberg	Molson Coors	Peer Average
Net EV/EBITA	10.2	11.6	7.20	9.38

Table 12 illustrates the trailing multiple based on financial statements for 2019. Carlsberg has the highest ratio, suggesting that the market has higher earnings expectations for Carlsberg compared to that of the other two companies. By contrast, Heineken has the second-largest ratio (10.2), while Molson Coors lags the other two companies and increases only 7.2 units of net enterprise value per unit of EBITA.

The peer average multiple, coming from Carlsberg and Molson Coors, is 9.38. Moreover, Heineken's EBITA for 2019 was €5.756 billion, leading to the estimation of the company's net enterprise value being €53.966 billion. The net equity value after adding back the non-

operating assets and adjusting for debt obligations is €30.134 billion. Consequently, the relative share price is estimated to be €52.53 (exhibit 60). The indicative stock price is lower than the stock price observed on May 15, 2020, by approximately 28%.

Exhibit 60: Heineken's estimated share price, by net EV/EBITA trailing multiple

Trailing net EV/EBITA	
Peer average multiple	9.38
	Amount in millions (€)
EBITA	5,756
Net enterprise value	53,966
Non-operating assets	6,950
Debt	(18,796)
Non-controlling interests	(5,037)
Equity value	30,134
Shares outstanding (millions)	573.644
Stock price of Heineken (€)	**52.53**

❖ **Net EV/Revenue ratio**

Table 13: Net EV/Revenue trailing multiple for different companies

	Heineken	**Carlsberg**	**Molson Coors**	**Peer Average**
Net EV/Revenue	2.4	2.6	1.6	2.1

The net EV/Revenue multiple, similar to the net EV/EBITA multiple, is higher for Carlsberg compared to its peers (Table 13). By contrast, Heineken is second to Carlsberg by increasing its net EV by 2.4 units per unit of revenue, while Molson Coors is far behind and manages to increase its net EV by only 1.6 units per unit of revenue.

Exhibit 61: Heineken's estimated share price, by net EV/Revenue trailing multiple

Traling net EV/Revenue	
Peer average multiple	2.1
	Amount in millions (€)
Revenue	23,969
Net enterprise value	50,806
Non-operating assets	6,950
Debt	(18,796)
Non-controlling interests	(5,037)
Equity value	33,923
Shares outstanding (millions)	573.644
Stock price of Heineken (€)	**59.14**

The peer average multiple is 2.1. Based on these multiple and Heineken's revenues of €23.969 billion in 2019, its net enterprise value is estimated to be €50.806 billion. The equity value after adjustments of non-operating assets and debt obligations is €33.923 billion. And the share price should be €59.14 (exhibit 61). This is lower than the stock price observed on May 15, 2020, by approximately 18%.

- **Price-to-Earnings ratio**

Table 14: P/E trailing multiple for different companies

	Heineken	Carlsberg	Molson Coors	Peer Average
P/E	19.2	18.4	8.0	13.2

Unlike the other multiples, Heineken has the highest P/E ratio among its peers instead of Carlsberg. The P/E ratio for Heineken is 19.2, while the average for its peer is 13.2. Molson Coors P/E ratio is more than 50% less than that of Heineken and Carlsberg. One explanation of a high P/E ratio could be that the markets believe that the company has the potential to increase its earnings in the future. On the other hand, it could also indicate that the company is overvalued.

With the peer average multiple of 13.2 and its earnings per share (EPS) of €3.78 in 2019, Heineken's share price is estimated to be €49.91 (exhibit 62). This is less than the market stock price observed on May 15, 2020, by approximately 31%.

Exhibit 62: Heineken's estimated share price, by P/E trailing multiple

Trailing P/E	
Peer average multiple	13.2
Trailing EPS (€)	3.78
Stock price of Heineken (€)	**49.91**

- **Price-to-book value ratio**

Table 15: P/B trailing multiple for different companies

	Heineken	Carlsberg	Molson Coors	Peer Average
P/B	2.4	3.0	0.6	1.8

Table 15 illustrates that Carlsberg has the highest ratio among the three companies while Heineken is in the second place. By contrast, Molson Coors' ratio is far below those of the other two companies.

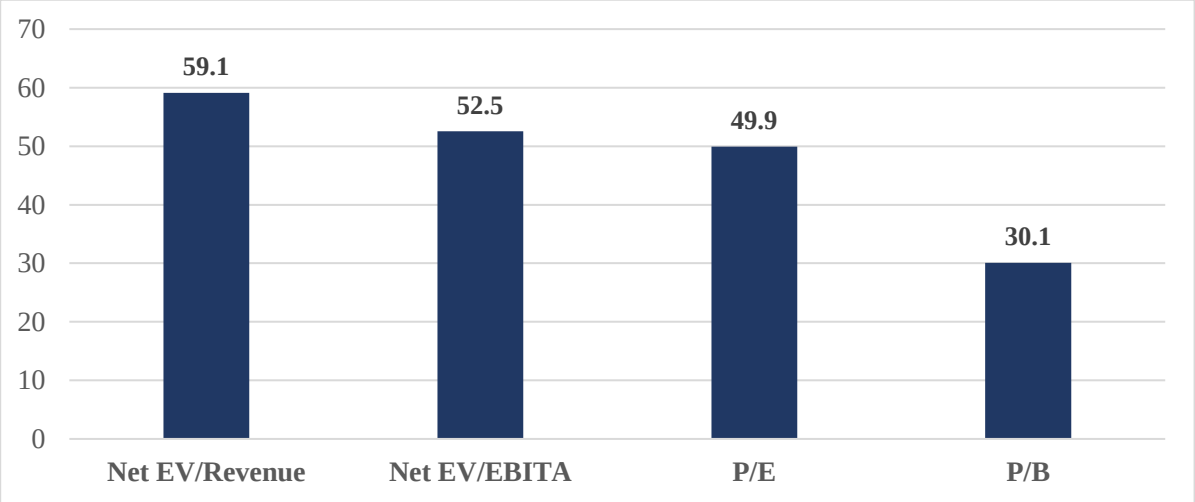
Based on the peer average multiple of 1.8 and the book value of Heineken's equity in 2019 (€17.311 billion), the relative stock price for Heineken is estimated to be €30.05 (exhibit 63). This is less than the market stock price observed on May 15, 2020, by approximately 59%.

Exhibit 63: Heineken's estimated share price by P/B multiple

P/B	
Peer average multiple	1.8
Book value of equity (€ millions)	17,311
Shares outstanding (millions)	576.003
Stock price of Heineken (€)	**30.05**

❖ **Summary**

Graph 50: Heineken's estimated share price (in €) by different trailing multiples



Graph 50 illustrates Heineken's estimated stock price based on the net EV/Revenue, net EV/EBITA, P/E, and P/B ratios. Similar to the case for forward multiples, all the trailing multiples indicate that Heineken is currently overvalued. The share price based on forward net EV/ EBITA multiple of 2022 is €65.76 compared to €52.50 for the trailing multiple. Similarly, valuation based on net EV/Revenue and P/E multiples for forward multiples (2022) is higher than that for their trailing counterparts (2019).

Unlike backward-looking multiples, forward-looking multiples are consistent with the principles of valuation—in particular, that a company's value equals the present value of future cash flows. Furthermore, empirical evidence shows that forward-looking multiples are indeed more accurate predictors of value than historical multiples (Koller et al., 2015).

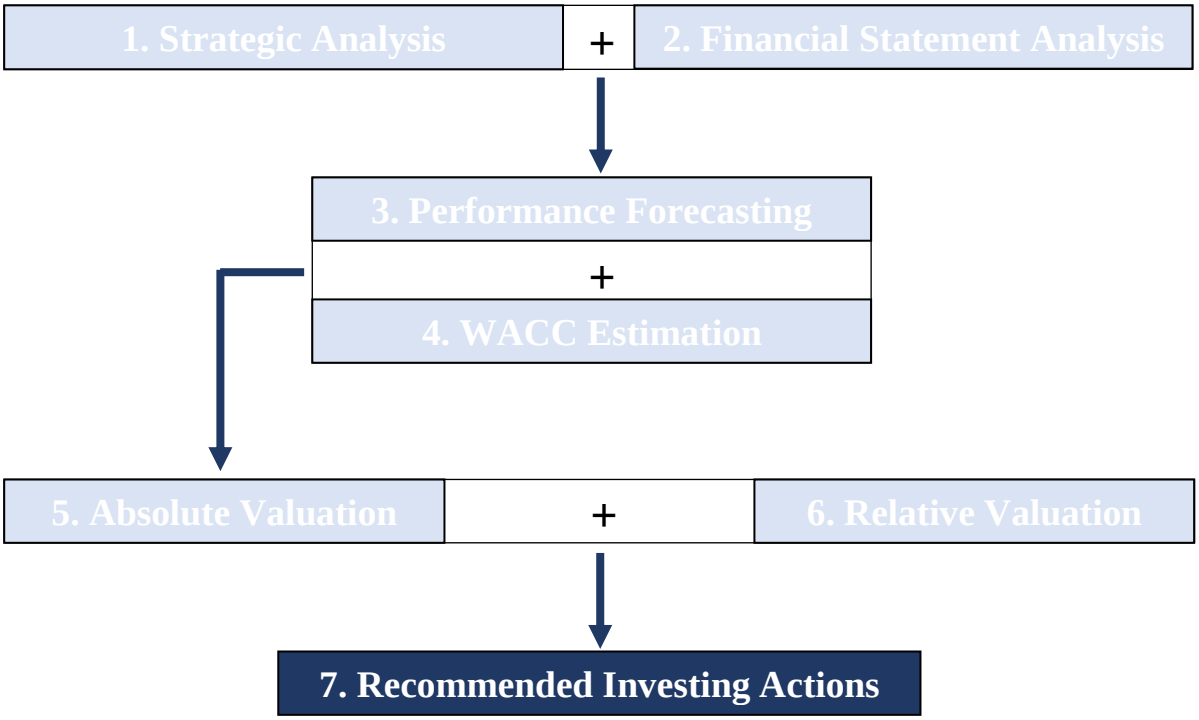
Therefore, we will base our conclusion on the relative valuation of the results stemming from the forward multiple net EV/ EBITA for 2022.

9.5. Conclusion

The multiple valuation is used as a complimentary valuation technique to the discounted cash flow analysis to understand the performance of the stock of the target company relative to its comparable peers in the industry. We have observed that the Heineken's multiples (Net EV/EBITA, Net EV/Revenues, and P/E) are below those of Carlsberg but higher than those of Molson. On average, the direct multiples for Heineken are higher than those derived from its peers. As suggested earlier, we analyzed different multiples and analyzed both forward and trailing multiples but concluded that 2022 forward multiple for net EV/ EBITA best provides the relative valuation for Heineken. The result, based on 2022 forward multiple for net EV/ EBITA, indicates that the value of one Heineken share (€65.76) is lower than that of its market value as of May 15, 2020 (€72.50). This suggests that Heineken's may be overvalued compared to its comparable peers. However, it could also mean that the market believes that Heineken has higher profitability potential compared to its peers.

As discussed earlier, in relative valuation, the value of a company is estimated based on the multiples of its peers, and it is a necessary condition that the selected peer companies share the same economic fundamentals, which could be quite challenging in practice. Moreover, the multiple valuations assume the market is efficient and price stocks correctly. Thus, the value of a stock derived from relative valuation can change based on whether the stock market, in general, is trading at higher or lower prices. By contrast, the discounted cash flow to the enterprise and economic-profit models calculate the intrinsic value of the stock using expected future cash flows and is not (less) influenced by the sentiment regarding the stock market. Assuming the analyst has access to the market information, the price of the stock can be derived without making any assumptions required in relative valuation. Koller et al. (2015) also state that the discounted cash flow analysis is by far the most accurate and flexible method for valuation purposes of companies or projects. Moreover, Penman (2013) also warns that one should be critical when using multiples, as the method does not necessarily represent the fundamental values. Thus, we believe that the DCF valuation is superior to multiple valuation techniques and, hence, the result from multiple valuation won't be used to make any conclusions about the value of Heineken but is only used for referencing if the stock is over or undervalued compared to its comparable peers.

10. Conclusion and Recommended Actions



The paper revolves around finding the answer to the research question stated in chapter 1: *"What is the intrinsic value of one Heineken N.V. share as of May 15, 2020?"*. In order to answer this question, different analyses and forecasting were carried out throughout the paper.

Specifically, chapter 4 analyzed the beer industry and Heineken in a qualitative manner, outlining opportunities, and threats facing the company and how it is positioned to respond to them. Such factors as favorable competitive structure of the beer industry, consumer trend towards health and wellness, and consumers' increasing concern about sustainability represent the opportunities for Heineken. By contrast, the coronavirus-made pandemic, adverse economic and political development, increasing competition, stagnant growth of the beer market, and more restrictive government regulations constitute the threats to the company. Furthermore, how Heineken is positioned in the face of these opportunities and threats was reflected by its strengths and weaknesses. While ownership of internationally leading brands, geographically diversified operation, and leader in the ESG field represent Heineken's strengths, its weaknesses are reflected through its weak capital turnover and unlocked potential for more attractive profit margins.

By contrast, in chapter 5, insights into how the company has performed financially were generated through the financial statement analysis. Over the last ten years, its organic revenue

growth has stood at about 4% annually (CAGR), while its profit margin has been quite stable, staying within the range of 15% - 17%. Its return on invested capital (ROIC), on the other hand, has stayed between 23% and 26% over the same period.

The insights generated in chapters 4 and 5 were then used to produce forecasts of the company's performance in the future in chapter 6. Its revenue growth was forecasted to contract by 12% in 2020 due to the pandemic before bouncing back by 6.8% and 8.4% in 2021 and 2022, respectively. For the next 15 years, the company was expected to enjoy relatively attractive revenue growths before reaching a constant growth of 2.6% from 2038 onwards. By contrast, its ROIC was forecasted to gradually increase to the level of 25.1% by 2027 and maintain at this level afterward. Furthermore, the company's weighted average cost of capital (WACC) was forecasted to be 6.84% in chapter 7.

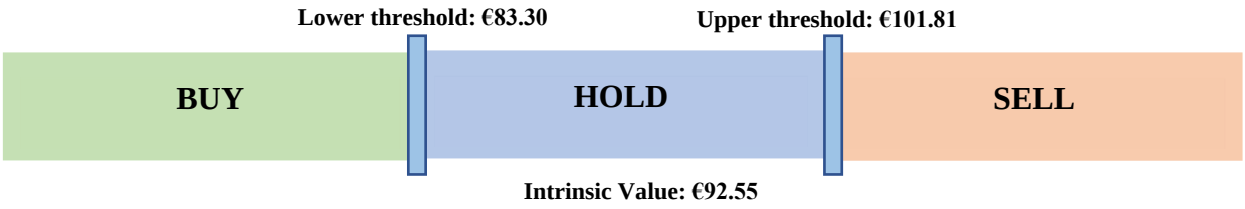
When these inputs were put together, the company's fair share price, based on the DCF method, was estimated to be €92.55, using both the discounted cash flow to the enterprise and economic-profit models. By contrast, when a relative valuation approach was used, the fair share price was estimated to be €65.76. Nevertheless, as discussed in chapter 9, the relative valuation has light economic foundations and is based on many extreme assumptions, including the existence of a perfectly comparable company, and the market's ability to correctly price securities. We, therefore, believe that the result from the DCF approach much better reflects the intrinsic value of Heineken's shares, and make our recommendations based on the estimated share price of €92.55.

We make our recommendation on investment strategy by comparing the market price of Heineken's share against its intrinsic value estimated in this paper, which is €92.55 as of May 15, 2020. Moreover, to account for uncertainties around the estimate, we have added a margin of safety of +/- 10% on the fair value to calculate the upper and lower thresholds. Our recommendation on investment strategy is illustrated in exhibit 64. If the stock is trading at a price lower than the lower threshold, a buy strategy is recommended. By contrast, if the stock is trading at a price higher than the upper threshold, a sell strategy is recommended. Finally, if the stock price is between the lower and the upper thresholds, a hold strategy is recommended.

The market price of one Heineken share as of 15 May 2020 is €72.50. This is lower than the estimated fair value of €92.55 by approximately 21.66%. Furthermore, since the stock price

of €72.50 is lower than the lower threshold of €83.30, we recommend a buy strategy as of May 15, 2020.

Exhibit 64: Recommended investment strategy



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Appendix A: Financial Statement Analysis of AB InBev

Exhibit 65: AB InBev's detailed balance sheet over the period 2010 – 2019

in million US dollar	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets										
Goodwill	52,498	51,302	51,766	69,927	70,758	65,061	135,864	140,940	133,311	128,114
Acquired intangible assets	22,961	23,344	23,863	28,443	28,941	28,667	43,896	44,895	43,571	41,221
Goodwill and acquired intangibles	75,459	74,646	75,629	98,370	99,699	93,728	179,760	185,835	176,882	169,335
PP&E	15,893	16,022	16,461	20,889	20,263	18,952	26,219	27,184	27,615	27,544
Software and other operating intangibles	398	474	508	895	982	1,010	893	979	1,260	1,231
Investment in associates and joint ventures	7,295	6,696	7,090	187	198	212	4,324	5,263	6,136	5,861
Investment securities	243	244	256	193	30	48	82	100	108	110
Deferred tax assets	744	673	807	1,180	1,058	1,181	1,261	1,216	1,517	1,719
Employee benefits	13	10	12	10	10	2	10	22	16	14
Income tax receivables	-	-	-	-	-	-	6	708	992	1,081
Derivatives	585	613	241	120	507	295	146	25	291	132
Trade and other receivables	1,115	726	987	1,132	1,262	913	868	834	769	807
Total non-current assets	**101,745**	**100,104**	**101,991**	**122,976**	**124,009**	**116,341**	**213,569**	**222,166**	**215,586**	**207,834**
Investment securities	641	103	6,827	123	301	55	5,659	1,304	87	92
Inventories	2,409	2,466	2,500	2,950	2,974	2,862	3,889	4,119	4,234	4,427
Income tax receivables	366	312	195	332	359	687	1,112	908	457	627
Derivatives	1,059	659	398	607	1,737	3,268	971	458	16	230
Trade receivables and accrued income	2,639	2,572	2,736	2,935	3,363	3,241	4,523	4,752	4,412	4,046
Prepaid expenses	451	434	453	616	554	465	316	428	329	563
Other receivables, operating	60	78	77	687	175	314	846	846	1,094	616
Other receivables, non-operating	429	378	359	517	620	431	667	540	540	962
Operating cash	726	781	795	864	941	872	910	1,129	1,061	1,047
Excess cash	3,785	4,539	6,256	8,975	7,416	6,051	7,669	9,343	6,013	6,191
Assets held for sale	32	1	34	84	101	48	16,455	133	39	10,013
Total current assets	**12,597**	**12,323**	**20,630**	**18,690**	**18,541**	**18,294**	**43,017**	**23,960**	**18,282**	**28,814**
Total assets	**114,342**	**112,427**	**122,621**	**141,666**	**142,550**	**134,635**	**256,586**	**246,126**	**233,868**	**236,648**
Liabilities and Equity										
Issued capital	1,733	1,734	1,734	1,735	1,736	1,736	1,736	1,736	1,736	1,736
Share premium	17,535	17,557	17,574	17,608	17,620	17,620	17,620	17,620	17,620	17,620
Reserves	2,335	381	327	18	(4,558)	(13,168)	23,769	24,835	19,061	24,882
Retained earnings	13,656	17,820	21,519	31,004	35,174	35,949	28,214	28,394	26,068	31,484
Shareholders' equity	35,259	37,492	41,154	50,365	49,972	42,137	71,339	72,585	64,485	75,722
Non-controlling interests	3,540	3,552	4,299	4,943	4,285	3,582	10,086	7,635	7,404	8,831
Total equity	**38,799**	**41,044**	**45,453**	**55,308**	**54,257**	**45,719**	**81,425**	**80,220**	**71,889**	**84,553**
Borrowings, non-current	41,961	34,598	38,951	41,274	43,630	43,541	113,941	108,949	106,997	97,564
Employee benefits	2,746	3,440	3,687	2,862	3,050	2,725	3,014	2,993	2,681	2,848
Deferred tax liabilities	11,909	11,279	11,168	12,841	12,701	11,961	14,703	13,107	13,165	12,824
Income tax payables	-	-	-	-	-	-	-	732	576	1,022
Derivatives	1,216	508	273	159	64	315	471	937	766	352
Indirect taxes payable, non-current	535	397	381	369	230	186	159	157	194	174
Trade payables, non-current	395	466	461	381	305	484	465	380	238	237
Other non-operating payables, non-current	149	177	1,198	2,313	471	571	692	925	1,384	1,532
Provisions	912	874	641	532	634	677	1,347	1,515	1,152	701
Total non-current liabilities	**59,823**	**51,739**	**56,760**	**60,731**	**61,085**	**60,460**	**134,792**	**129,695**	**127,153**	**117,254**
Bank overdrafts	14	8	-	6	41	13	184	117	114	68
Borrowings, current	2,919	5,559	5,390	7,846	7,451	5,912	8,618	7,433	4,584	5,410
Income tax payables	478	499	543	1,105	629	669	3,845	1,558	1,220	1,346
Derivatives	1,730	1,427	1,008	630	1,013	3,980	1,263	1,457	5,574	3,799
Trade payables and accrued expenses	6,759	7,794	8,539	10,096	11,307	11,918	14,450	15,513	15,832	16,076
Payroll and social security payables	624	610	883	1,173	1,030	924	1,027	1,284	900	736
Indirect taxes payable	1,323	1,447	1,497	1,689	1,849	1,610	2,750	2,862	2,633	2,708
Interest payable	874	829	870	888	850	817	1,797	1,790	1,616	1,679
Consigned packaging	559	576	639	682	715	680	974	1,111	1,093	1,106
Dividend payable	116	566	765	384	518	239	447	479	331	338
Deferred consideration on acquisitions	86	88	94	932	1,640	1,474	1,641	1,722	163	221
Provisions	238	241	180	196	165	220	1,199	885	766	210
Liabilities associate with assets held for sale	-	-	-	-	-	-	2,174	-	-	1,144
Total current liabilities	**15,720**	**19,644**	**20,408**	**25,627**	**27,208**	**28,456**	**40,369**	**36,211**	**34,826**	**34,841**
Total equity and liabilities	**114,342**	**112,427**	**122,621**	**141,666**	**142,550**	**134,635**	**256,586**	**246,126**	**233,868**	**236,648**

(Source: AB InBev's annual reports)

Exhibit 66: AB InBev's invested capital over the period 2010 – 2019

in million US dollar	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Operating cash	726	781	795	864	941	872	910	1,129	1,061	1,047
Inventories	2,409	2,466	2,500	2,950	2,974	2,862	3,889	4,119	4,234	4,427
Income tax receivables, current	366	312	195	332	359	687	1,112	908	457	627
Trade receivables and accrued income	2,639	2,572	2,736	2,935	3,363	3,241	4,523	4,752	4,412	4,046
Prepaid expenses	451	434	453	616	554	465	316	428	329	563
Other receivables, operating	60	78	77	687	175	314	846	846	1,094	616
Trade payables and accrued expenses	(7,154)	(8,260)	(9,000)	(10,477)	(11,612)	(12,402)	(14,915)	(15,893)	(16,070)	(16,313)
Payroll and social security payables	(624)	(610)	(883)	(1,173)	(1,030)	(924)	(1,027)	(1,284)	(900)	(736)
Indirect taxes payable	(1,858)	(1,844)	(1,878)	(2,058)	(2,079)	(1,796)	(2,909)	(3,019)	(2,827)	(2,882)
Consigned packaging	(559)	(576)	(639)	(682)	(715)	(680)	(974)	(1,111)	(1,093)	(1,106)
Income tax payables	(478)	(499)	(543)	(1,105)	(629)	(669)	(3,845)	(1,558)	(1,220)	(1,346)
Operating working capital	(4,022)	(5,146)	(6,187)	(7,111)	(7,699)	(8,030)	(12,074)	(10,683)	(10,523)	(11,057)
PP&E .	15,893	16,022	16,461	20,889	20,263	18,952	26,219	27,184	27,615	27,544
Software and other operating intangibles	398	474	508	895	982	1,010	893	979	1,260	1,231
Invested capital, excluding goodwill and acquired intangibles	**12,269**	**11,350**	**10,782**	**14,673**	**13,546**	**11,932**	**15,038**	**17,480**	**18,352**	**17,718**
Goodwill	52,498	51,302	51,766	69,927	70,758	65,061	135,864	140,940	133,311	128,114
Acquired intangible assets	22,961	23,344	23,863	28,443	28,941	28,667	43,896	44,895	43,571	41,221
Goodwill and acquired intangibles	75,459	74,646	75,629	98,370	99,699	93,728	179,760	185,835	176,882	169,335
Gross-up tax effects	(8,212)	(8,180)	(8,331)	(9,559)	(9,627)	(9,488)	(14,663)	(11,274)	(10,550)	(10,216)
Adjusted goodwill and acquired intangibles	67,247	66,466	67,298	88,811	90,072	84,240	165,097	174,561	166,332	159,119
Invested capital, including goodwill and acquired intangibles	**79,516**	**77,816**	**78,080**	**103,484**	**103,618**	**96,172**	**180,135**	**192,041**	**184,684**	**176,837**
Investment in associates and joint ventures	7,295	6,696	7,090	187	198	212	4,324	5,263	6,136	5,861
Tax loss carried-forward	297	300	242	394	390	249	1,278	1,130	577	515
Other financial assets	923	524	6,529	(1,258)	1,370	(1,282)	18,613	(1,671)	(5,621)	5,357
Excess cash	3,785	4,539	6,256	8,975	7,416	6,051	7,669	9,343	6,013	6,191
Total capital invested	**91,816**	**89,875**	**98,197**	**111,782**	**112,992**	**101,402**	**212,019**	**206,106**	**191,789**	**194,761**
Reconciliation to total fund invested										
Shareholders' equity	35,259	37,492	41,154	50,365	49,972	42,137	71,339	72,585	64,485	75,722
Deferred tax liabilities, net, PP&E and inventories	2,454	2,155	2,092	2,379	2,270	1,962	3,434	2,211	2,250	2,083
Deferred tax liabilities, net, non-operating assets	796	571	180	117	136	(421)	(3,377)	(464)	(575)	(679)
Dividend payable	116	566	765	384	518	239	447	479	331	338
Total shareholders' equity	38,625	40,784	44,191	53,245	52,896	43,917	71,843	74,811	66,491	77,464
Non-controlling interests	3,540	3,552	4,299	4,943	4,285	3,582	10,086	7,635	7,404	8,831
Borrowings, non-current	41,961	34,598	38,951	41,274	43,630	43,541	113,941	108,949	106,997	97,564
Borrowings, current	2,919	5,559	5,390	7,846	7,451	5,912	8,618	7,433	4,584	5,410
Bank overdrafts	14	8	-	6	41	13	184	117	114	68
Interest payable	874	829	870	888	850	817	1,797	1,790	1,616	1,679
Employee benefits, net	2,733	3,430	3,675	2,852	3,040	2,723	3,004	2,971	2,665	2,834
Provisions	1,150	1,115	821	728	799	897	2,546	2,400	1,918	911
Total capital provided	**91,816**	**89,875**	**98,197**	**111,782**	**112,992**	**101,402**	**212,019**	**206,106**	**191,789**	**194,761**

(Source: AB InBev's annual reports)

Exhibit 67: AB InBev's NOPLAT over the period 2010 – 2019

in million US dollar	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	36,297	39,046	39,758	43,195	47,063	43,604	45,517	56,444	53,041	52,329
Cost of sales	(16,151)	(16,634)	(16,422)	(17,594)	(18,756)	(17,137)	(17,802)	(21,386)	(19,933)	(20,362)
Depreciation, amortization and impairment	1,954	1,987	2,010	2,133	2,270	2,139	2,313	2,857	2,874	2,848
Adjusted cost of sales	(14,197)	(14,647)	(14,412)	(15,461)	(16,486)	(14,998)	(15,489)	(18,529)	(17,059)	(17,514)
Distribution expense	(2,913)	(3,313)	(3,787)	(4,061)	(4,558)	(4,259)	(4,543)	(5,876)	(5,612)	(5,525)
Depreciation, amortization and impairment	127	112	106	118	128	123	144	203	355	350
Adjusted distribution expense	(2,786)	(3,201)	(3,681)	(3,943)	(4,430)	(4,136)	(4,399)	(5,673)	(5,257)	(5,175)
Sales and marketing expenses	(4,712)	(5,143)	(5,254)	(5,958)	(7,036)	(6,913)	(7,745)	(8,382)	(7,774)	(7,348)
Depreciation, amortization and impairment	337	400	393	447	481	458	571	621	732	786
Adjusted sales and marketing expenses	(4,375)	(4,743)	(4,861)	(5,511)	(6,555)	(6,455)	(7,174)	(7,761)	(7,042)	(6,562)
Administrative expenses	(1,960)	(2,043)	(2,200)	(2,539)	(2,791)	(2,560)	(2,883)	(3,841)	(3,421)	(3,548)
Depreciation, amortization and impairment	282	246	238	278	350	347	440	585	655	665
Adjusted administrative expenses	(1,678)	(1,797)	(1,962)	(2,261)	(2,441)	(2,213)	(2,443)	(3,256)	(2,766)	(2,883)
Depreciation of tangible assets	(2,355)	(2,401)	(2,401)	(2,567)	(2,808)	(2,670)	(2,986)	(3,567)	(3,530)	(3,370)
Depreciation of leased assets	-	-	-	-	-	-	-	-	(468)	(489)
Amortisation of softwares and other operating intangibles	(147)	(135)	(114)	(144)	(190)	(192)	(259)	(300)	(282)	(383)
Total depreciation and operating amortisation	(2,502)	(2,536)	(2,515)	(2,711)	(2,998)	(2,862)	(3,245)	(3,867)	(4,280)	(4,242)
EBITA	10,759	12,122	12,327	13,308	14,153	12,940	12,767	17,358	16,637	15,953
Operating cash tax	(2,825)	(3,183)	(3,146)	(3,473)	(3,185)	(2,625)	(3,054)	(3,944)	(3,812)	(3,735)
NOPLAT	**7,934**	**8,939**	**9,181**	**9,835**	**10,968**	**10,315**	**9,713**	**13,414**	**12,825**	**12,218**
Calculation of operating tax										
Weighted nominal tax rate	34.7%	33.7%	32.8%	33.3%	31.6%	30.5%	32.7%	28.5%	26.5%	26.2%
Tax incentives (on taxable basis)	600	600	600	638	701	948	769	982	742	709
Tax at weighted nominal tax rate	3,733	4,085	4,043	4,432	4,472	3,947	4,175	4,947	4,409	4,180
Tax incentives	(208)	(202)	(197)	(212)	(222)	(289)	(251)	(280)	(197)	(186)
Other tax deductions	(700)	(700)	(700)	(746)	(1,066)	(1,033)	(869)	(723)	(400)	(259)
Operating tax	2,825	3,183	3,146	3,473	3,185	2,625	3,054	3,944	3,812	3,735
(Increase) Decrease in operating deferred tax liabilities (net)	-	-	-	-	-	-	-	-	-	-
Operating cash tax	**2,825**	**3,183**	**3,146**	**3,473**	**3,185**	**2,625**	**3,054**	**3,944**	**3,812**	**3,735**
Operating cash tax rate	**26.3%**	**26.3%**	**25.5%**	**26.1%**	**22.5%**	**20.3%**	**23.9%**	**22.7%**	**22.9%**	**23.4%**
Reconciliation to net income										
NOPLAT	7,934	8,939	9,181	9,835	10,968	10,315	9,713	13,414	12,825	12,218
Other operating incomes (expenses)	604	694	684	1,160	1,386	1,033	732	855	806	875
Impairment of tangible assets	(184)	(91)	(62)	(70)	(163)	(48)	(39)	(85)	(91)	(87)
Impairment of intangible assets	(2)	-	-	(10)	(4)	(32)	(3)	-	-	-
Adjustment to depreciation, amortisation and impairment	(12)	(118)	(170)	(185)	(64)	(125)	(181)	(314)	(245)	(320)
Restructuring	(252)	(351)	(36)	(118)	(158)	(171)	(323)	(468)	(363)	(170)
Acquisition costs business combinations	-	(5)	(54)	(82)	(77)	(55)	(448)	(155)	(73)	(23)
Business and asset disposal	(16)	78	58	30	157	524	377	(39)	(27)	(50)
Brazil state tax regularization program	-	-	-	-	-	-	-	-	-	(74)
Cost related to public offering of minority state in Budweiser APAC	-	-	-	-	-	-	-	-	-	(6)
Provision for EU investigation	-	-	-	-	-	-	-	-	(230)	-
Impairment of assets	-	-	-	-	(119)	(82)	-	-	-	-
Judical settlement	-	-	-	-	-	(80)	-	-	-	-
Fair value adjustments	-	-	-	6,410	-	-	-	-	-	-
Finance cost	(3,336)	(3,035)	(2,692)	(3,047)	(2,797)	(2,417)	(5,860)	(6,192)	(7,279)	(4,873)
Finance income	525	438	344	561	969	1,178	652	378	435	518
Non-recurring net finance income (cost)	(925)	(540)	(18)	283	509	(214)	(3,356)	(693)	(1,982)	881
Share of result of associates and joint ventures	521	623	624	294	9	10	16	430	153	152
Non-operating tax	905	1,327	1,466	1,457	686	31	1,441	2,024	1,228	949
Net income	**5,762**	**7,959**	**9,325**	**16,518**	**11,302**	**9,867**	**2,721**	**9,155**	**5,157**	**9,990**

(Source: AB InBev's annual reports)

Exhibit 68: Financial performance analysis of AB InBev

Operating ratios	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Operating EBITA/Revenue	31.0%	31.0%	30.8%	30.1%	29.7%	28.0%	30.8%	31.4%	30.5%
Cost of goods sold/Revenue	37.5%	36.2%	35.8%	35.0%	34.4%	34.0%	32.8%	32.2%	33.5%
Distribution expense/Revenue	8.2%	9.3%	9.1%	9.4%	9.5%	9.7%	10.1%	9.9%	9.9%
Sales and marketing expenses/Revenue	12.1%	12.2%	12.8%	13.9%	14.8%	15.8%	13.7%	13.3%	12.5%
Administrative expenses/Revenue	4.6%	4.9%	5.2%	5.2%	5.1%	5.4%	5.8%	5.2%	5.5%
Depreciation & Amortization/Revenues	6.5%	6.3%	6.3%	6.4%	6.6%	7.1%	6.9%	8.1%	8.1%
Return on invested capital (ROIC)*									
Operating working capital/Revenues	-11.7%	-14.3%	-15.4%	-15.7%	-18.0%	-22.1%	-20.2%	-20.0%	-20.6%
Software, etc./Revenues	1.1%	1.2%	1.6%	2.0%	2.3%	2.1%	1.7%	2.1%	2.4%
PP&E (including leased assets)/Revenues	40.9%	40.9%	43.2%	43.7%	45.0%	49.6%	47.3%	51.7%	52.7%
Invested capital/Revenues	30.2%	27.8%	29.5%	30.0%	29.2%	29.6%	28.8%	33.8%	34.5%
Revenues/Invested capital, times	3.3	3.6	3.4	3.3	3.4	3.4	3.5	3.0	2.9
Pretax ROIC	102.6%	111.4%	104.6%	100.3%	101.6%	94.7%	106.8%	92.9%	88.5%
Operating cash tax rate	26.3%	26.3%	25.5%	26.1%	22.5%	20.3%	23.9%	22.7%	22.9%
After-tax ROIC, without goodwill and acquired intangibles	**75.7%**	**82.1%**	**77.9%**	**74.1%**	**78.7%**	**75.5%**	**81.2%**	**71.8%**	**68.2%**
Average invested capitals are used									
Revenue growth rate analysis									
Volume growth	0.1%	0.8%	-1.1%	2.9%	-0.3%	-0.4%	-0.5%	-7.4%	0.3%
Effect of acquisition/divestment	0.3%	0.5%	0.9%	2.4%	0.3%	1.6%	-0.7%	-7.7%	-0.8%
Organic volume growth	**-0.2%**	**0.3%**	**-2.0%**	**0.6%**	**-0.6%**	**-2.0%**	**0.2%**	**0.3%**	**1.1%**
Revenue per hectolitre	4.8%	6.9%	5.3%	5.3%	6.8%	4.4%	4.8%	4.3%	3.2%
Organic revenue growth rate	**4.6%**	**7.2%**	**3.3%**	**5.9%**	**6.2%**	**2.4%**	**5.0%**	**4.6%**	**4.3%**
Effect of currency movement	3.1%	-6.2%	-3.2%	-5.1%	-12.7%	-6.1%	1.1%	-3.2%	-5.0%
Effect of significant acquisitions	0.0%	0.0%	8.0%	5.5%	0.0%	7.4%	19.4%	0.0%	0.0%
Effect of immaterial acquisitions/divestitures	-0.2%	0.8%	0.5%	2.7%	-0.9%	0.7%	-1.5%	-4.6%	-0.6%
Effect of restatement	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.8%	0.0%
Revenue growth rate	7.6%	1.8%	8.6%	9.0%	-7.4%	4.4%	24.0%	-6.0%	-1.3%

(Source: AB InBev's annual reports)

Appendix B: Financial Statement Analysis of Carlsberg

Exhibit 69: Carlsberg's detailed balance sheet over the period 2010 - 2019

in million DKK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets										
Goodwill	42,613	44,790	53,914	57,166	44,657	50,270	52,864	50,497	50,929	52,908
Acquired intangible assets	32,123	31,294	35,927	34,549	23,108	19,702	21,646	15,690	14,723	15,955
Goodwill & acquired intangible assets	74,736	76,084	89,841	91,715	67,765	69,972	74,510	66,187	65,652	68,863
Softwares and delivery rights	1,828	1,750	1,375	2,521	3,426	2,948	2,226	1,606	1,216	942
Property, plant and equipment (PP&E)	31,286	30,890	31,991	31,738	28,970	26,678	25,810	24,325	25,394	27,886
Investments in associates and joint ventures	4,930	5,113	6,241	3,771	3,779	4,676	4,701	4,266	4,562	4,364
On-trade loans and other receivables[1]	1,747	1,649	2,208	2,049	2,115	1,854	1,071	952	1,097	1,179
Deferred tax assets	1,289	871	1,170	1,130	1,280	1,697	1,610	1,663	1,693	1,938
Total non-current assets	**115,816**	**116,357**	**132,826**	**132,924**	**107,335**	**107,825**	**109,928**	**98,999**	**99,614**	**105,172**
Inventory	4,191	4,350	4,541	4,592	4,293	3,817	3,963	3,834	4,435	4,751
Trade receivables	5,057	7,115	7,117	7,072	6,246	5,196	5,022	4,203	4,605	4,889
On-trade loans and other receivables[1]	2,985	4,005	2,804	2,404	4,292	3,065	2,951	2,546	2,404	2,111
Tax receivables	155	129	60	203	196	324	278	181	213	199
Prepayments	939	867	853	1,501	949	1,074	1,137	1,026	840	776
Operating cash	1,201	1,271	1,329	1,287	1,290	1,307	1,252	1,213	1,250	1,318
Excess cash	1,512	1,861	4,431	2,325	1,128	1,824	2,250	2,249	4,339	3,904
Assets held for sale	284	235	-	-	27	469	125	-	-	-
Total current assets	**16,324**	**19,833**	**21,135**	**19,384**	**18,421**	**17,076**	**16,978**	**15,252**	**18,086**	**17,948**
Total assets	**132,140**	**136,190**	**153,961**	**152,308**	**125,756**	**124,901**	**126,906**	**114,251**	**117,700**	**123,120**
Liabilities and Equity										
Share capital	501	501	3,051	3,051	501	3,051	3,051	3,051	3,051	3,051
Reserves	(6,918)	(8,632)	(6,476)	(13,890)	(30,875)	(35,447)	(29,501)	(33,483)	(36,837)	(33,652)
Retained earnings	58,961	63,703	73,686	78,650	72,199	75,885	77,261	77,362	79,088	74,049
Shareholders' equity	52,544	55,572	70,261	67,811	41,825	43,489	50,811	46,930	45,302	43,448
Non-controlling interests	5,381	5,763	3,389	3,190	3,563	3,742	2,839	2,595	2,587	2,587
Total equity	**57,925**	**61,335**	**73,650**	**71,001**	**45,388**	**47,231**	**53,650**	**49,525**	**47,889**	**46,035**
Borrowings, non-current	31,834	34,137	36,706	30,239	38,480	31,479	21,137	23,340	16,750	20,879
Post-retirement obligations	2,390	3,213	3,957	3,292	4,584	5,235	4,878	3,351	2,908	3,299
Non-current tax payable			-	-	-	-	-	-	1,638	1,795
Deferred tax liabilities	9,197	8,870	9,682	9,215	6,484	5,924	6,250	5,601	4,021	4,708
Provisions	1,471	965	1,230	2,567	2,916	3,374	3,642	3,611	3,827	4,037
Other non-current liabilities	747	1,087	1,201	1,355	1,442	1,899	3,199	3,757	6,186	9,056
Total non-current liabilities	**45,639**	**48,272**	**52,776**	**46,668**	**53,906**	**47,911**	**39,106**	**39,660**	**35,330**	**43,774**
Borrowings, current	5,407	2,591	3,352	9,417	1,820	4,549	9,067	849	7,233	4,112
Trade payables	9,420	11,039	11,862	12,614	12,051	12,260	13,497	13,474	16,199	17,149
Returnable packaging deposits	1,279	1,291	1,381	1,812	2,034	1,819	1,681	1,576	1,583	1,545
Provisions	505	503	619	441	448	648	722	591	1,100	1,663
Current tax liabilities	530	533	537	614	801	601	935	931	878	999
Other liability, operating	7,819	8,611	8,405	9,140	9,074	9,661	7,002	6,544	7,029	7,557
Other liability, non-operating[2]	3,438	1,959	1,379	601	234	133	1,231	1,101	459	286
Liabilities associate with assets held for sale	178	56	-	-	-	88	15	-	-	-
Total current liabilities	**28,576**	**26,583**	**27,535**	**34,639**	**26,462**	**29,759**	**34,150**	**25,066**	**34,481**	**33,311**
Total equity and liabilities	**132,140**	**136,190**	**153,961**	**152,308**	**125,756**	**124,901**	**126,906**	**114,251**	**117,700**	**123,120**

[1] *Other receivables consist of VAT receivables, loans to joint ventures and associates, interest receivables and other financial receivables (E.g. derivatives)*

[2] *Includes derivatives, interest payables and deferred incomes*

(Source: Carlsberg's annual reports)

Exhibit 70: Carlsberg's invested capital over the period 2010 - 2019

in million DKK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating cash	1,201	1,271	1,329	1,287	1,290	1,307	1,252	1,213	1,250	1,318
Inventory	4,191	4,350	4,541	4,592	4,293	3,817	3,963	3,834	4,435	4,751
Trade receivables	5,057	7,115	7,117	7,072	6,246	5,196	5,022	4,203	4,605	4,889
Tax receivables	155	129	60	203	196	324	278	181	213	199
Prepayments	939	867	853	1,501	949	1,074	1,137	1,026	840	776
Trade payables	(9,420)	(11,039)	(11,862)	(12,614)	(12,051)	(12,260)	(13,497)	(13,474)	(16,199)	(17,149)
Returnable packaging deposits	(1,279)	(1,291)	(1,381)	(1,812)	(2,034)	(1,819)	(1,681)	(1,576)	(1,583)	(1,545)
Current tax liabilities	(530)	(533)	(537)	(614)	(801)	(601)	(935)	(931)	(878)	(999)
Other liabilities, operating	(7,819)	(8,611)	(8,405)	(9,140)	(9,074)	(9,661)	(7,002)	(6,544)	(7,029)	(7,557)
Operating working capital	(7,505)	(7,742)	(8,285)	(9,525)	(10,986)	(12,623)	(11,463)	(12,068)	(14,346)	(15,317)
PP&E	31,286	30,890	31,991	31,738	28,970	26,678	25,810	24,325	25,394	27,886
Software, etc.	1,828	1,750	1,375	2,521	3,426	2,948	2,226	1,606	1,216	942
Invested capital, excluding goodwill & acquired intangible assets	**25,609**	**24,898**	**25,081**	**24,734**	**21,410**	**17,003**	**16,573**	**13,863**	**12,264**	**13,511**
Goodwill & acquired intangible assets	74,736	76,084	89,841	91,715	67,765	69,972	74,510	66,187	65,652	68,863
Gross-up tax effect	(6,774)	(6,411)	(7,414)	(6,974)	(4,754)	(4,221)	(4,626)	(3,629)	(3,055)	(3,215)
Adjusted goodwill & acquired intangible assets	67,962	69,673	82,427	84,741	63,011	65,751	69,884	62,558	62,597	65,648
Invested capital, including goodwill & acquired intangible assets	**93,571**	**94,571**	**107,508**	**109,475**	**84,421**	**82,754**	**86,457**	**76,421**	**74,861**	**79,159**
Investments in associates and joint ventures	4,930	5,113	6,241	3,771	3,779	4,676	4,701	4,266	4,562	4,364
Other financial assets	2,912	5,735	8,064	6,177	7,328	6,991	5,151	4,646	7,381	6,908
Tax losses carried forward	1,055	569	462	400	466	409	172	(459)	745	468
Total fund invested	**102,468**	**105,988**	**122,275**	**119,823**	**95,994**	**94,830**	**96,481**	**84,874**	**87,549**	**90,899**
Shareholders' equity	52,544	55,572	70,261	67,811	41,825	43,489	50,811	46,930	45,302	43,448
Deferred tax liabilities, net of assets, PP&E and current assets	2,484	2,396	2,039	1,990	1,434	1,290	1,416	1,053	1,227	1,019
Deferred tax liabilities, net of assets, non operating	(295)	(239)	(479)	(479)	(518)	(875)	(1,230)	(1,203)	(1,209)	(996)
Total shareholders' equity	54,733	57,729	71,821	69,322	42,741	43,904	50,997	46,780	45,320	43,471
Non-controlling interests	5,381	5,763	3,389	3,190	3,563	3,742	2,839	2,595	2,587	2,587
Other non-current liabilities	747	1,087	1,201	1,355	1,442	1,899	3,199	3,757	6,186	9,056
Borrowings, non-current	31,834	34,137	36,706	30,239	38,480	31,479	21,137	23,340	16,750	20,879
Borrowings, current	5,407	2,591	3,352	9,417	1,820	4,549	9,067	849	7,233	4,112
Post-retirement obligations	2,390	3,213	3,957	3,292	4,584	5,235	4,878	3,351	2,908	3,299
Provisions	1,976	1,468	1,849	3,008	3,364	4,022	4,364	4,202	4,927	5,700
Non-current tax payable	-	-	-	-	-	-	-	-	1,638	1,795
Total fund provided	**102,468**	**105,988**	**122,275**	**119,823**	**95,994**	**94,830**	**96,481**	**84,874**	**87,549**	**90,899**

(Source: Carlsberg's annual reports)

Exhibit 71: Carlsberg's NOPLAT over the period 2010 - 2019

in million DKK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	**60,054**	**63,561**	**66,468**	**64,350**	**64,506**	**65,354**	**62,614**	**60,655**	**62,503**	**65,902**
Cost of goods sold	(28,982)	(31,788)	(33,831)	(32,423)	(32,725)	(33,429)	(31,195)	(30,447)	(31,283)	(33,264)
Depreciation, amortiztion and impairment	2675	2605	2815	2763	2,890	3,088	3,267	3,263	2,849	2,637
Adjusted cost of goods sold	**(26,307)**	**(29,183)**	**(31,016)**	**(29,660)**	**(29,835)**	**(30,341)**	**(27,928)**	**(27,184)**	**(28,434)**	**(30,627)**
Sales and distribution expenses	(17,158)	(18,483)	(18,912)	(18,181)	(18,695)	(19,158)	(18,476)	(17,144)	(17,474)	(17,826)
Depreciation, amortiztion and impairment	781	737	867	778	758	868	1,038	980	945	1,476
Adjusted sales and distribution expenses	(16,377)	(17,746)	(18,045)	(17,403)	(17,937)	(18,290)	(17,438)	(16,164)	(16,529)	(16,350)
Administrative expenses	(4,043)	(3,944)	(4,185)	(4,415)	(4,590)	(4,909)	(5,220)	(4,563)	(4,615)	(4,733)
Depreciation, amortiztion and impairment	202	161	337	329	450	800	456	464	297	429
Adjusted administrative expenses	(3,841)	(3,783)	(3,848)	(4,086)	(4,140)	(4,109)	(4,764)	(4,099)	(4,318)	(4,304)
Adjusted sales, distribution and administrative expenses	(20,218)	(21,529)	(21,893)	(21,489)	(22,077)	(22,399)	(22,202)	(20,263)	(20,847)	(20,654)
Pension expenses	94	73	242	247	215	262	310	257	203	32
Current service cost	(150)	(176)	(114)	(221)	(252)	(276)	(310)	(253)	(194)	(199)
Adjusted SD&A expenses	**(20,274)**	**(21,632)**	**(21,765)**	**(21,463)**	**(22,114)**	**(22,413)**	**(22,202)**	**(20,259)**	**(20,838)**	**(20,821)**
Depreciation	(3,658)	(3,499)	(3,752)	(3,615)	(3,774)	(4,037)	(3,920)	(3,816)	(3,527)	(4,086)
Amortization of softwares and other rights	-	-	(214)	(224)	(284)	(607)	(794)	(741)	(516)	(405)
Depreciation and amortization, operating	**(3,658)**	**(3,499)**	**(3,966)**	**(3,839)**	**(4,058)**	**(4,644)**	**(4,714)**	**(4,557)**	**(4,043)**	**(4,491)**
EBITA	**9,815**	**9,247**	**9,721**	**9,388**	**8,499**	**7,956**	**7,770**	**8,655**	**9,188**	**9,963**
Operating cash tax	**(2,454)**	**(2,400)**	**(2,437)**	**(2,020)**	**(2,579)**	**(1,847)**	**(1,560)**	**(2,310)**	**(1,691)**	**(2,380)**
NOPLAT	**7,361**	**6,847**	**7,284**	**7,368**	**5,920**	**6,109**	**6,210**	**6,345**	**7,497**	**7,583**
Operating cash tax calculation										
Nominal weighted tax rate	25%	25%	21%	21%	23.8%	21.4%	21.7%	22.5%	20.3%	21.8%
Operating tax	2,454	2,312	2,080	1,971	2,023	1,703	1,686	1,947	1,865	2,172
(Increase) Decrease in deferred tax liabilities	-	88	357	49	556	144	(126)	363	(174)	208
Operating cash tax	2,454	2,400	2,437	2,020	2,579	1,847	1,560	2,310	1,691	2,380
Operating cash tax rate	25.0%	26.0%	25.1%	21.5%	30.3%	23.2%	20.1%	26.7%	18.4%	23.9%
Reconciliation to net income										
NOPLAT	7,361	6,847	7,284	7,368	5,920	6,109	6,210	6,345	7,497	7,583
Non-operating tax	607	244	576	187	696	998	(832)	852	(695)	(371)
Adjustment to pension cost	56	103	(128)	(26)	37	14	-	(4)	(9)	167
Part of impairment expenses included in operating expense	-	(4)	(28)	(7)	(5)	(82)	(19)	(126)	(27)	(30)
Amortization of brands			(25)	(24)	(35)	(30)	(28)	(24)	(21)	(21)
Other operating activities, net	234	357	145	22	444	235	198	113	68	108
Share of profit after tax of associates and joint ventures	141	174	108	370	405	364	324	262	130	278
Special items, net	(249)	605	85	(435)	(1,245)	(8,659)	251	(4,565)	(88)	501
Financial income	1,055	634	900	717	820	490	919	511	358	360
Financial expenses	(3,192)	(2,542)	(2,672)	(2,223)	(1,989)	(2,021)	(2,166)	(1,299)	(1,080)	(1,098)
Net income	**6,013**	**6,418**	**6,245**	**5,949**	**5,048**	**(2,582)**	**4,857**	**2,065**	**6,133**	**7,477**

(Source: Carlsberg's annual reports)

Exhibit 72: Financial performance analysis of Carlsberg

Operating ratios	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Operating EBITA/Revenues	14.5%	14.6%	14.6%	13.2%	12.2%	12.4%	14.3%	14.7%	15.1%
Cost of goods sold/Revenues	50.0%	50.9%	50.4%	50.7%	51.2%	49.8%	50.2%	50.1%	50.5%
SD&A/Revenues	34.0%	32.7%	33.4%	34.3%	34.3%	35.5%	33.4%	33.3%	31.6%
Depreciation & Amortization/Revenues	5.5%	6.0%	6.0%	6.3%	7.1%	7.5%	7.5%	6.5%	6.8%
Return on invested capital (ROIC)*									
Operating working capital/Revenues	-12.0%	-12.1%	-13.8%	-15.9%	-18.1%	-19.2%	-19.4%	-21.1%	-22.5%
Software, etc./Revenues	2.8%	2.4%	3.0%	4.6%	4.9%	4.1%	3.2%	2.3%	1.6%
PP&E (including leased assets)/Revenues	48.9%	47.3%	49.5%	47.1%	42.6%	41.9%	41.3%	39.8%	40.4%
Invested capital/Revenues	39.7%	37.6%	38.7%	35.8%	29.4%	26.8%	25.1%	20.9%	19.6%
Revenues/Invested capital, times	2.5	2.7	2.6	2.8	3.4	3.7	4.0	4.8	5.1
Pretax ROIC	36.6%	38.9%	37.7%	36.8%	41.4%	46.3%	56.9%	70.3%	77.3%
Operating cash tax rate	26.0%	25.1%	21.5%	30.3%	23.2%	20.1%	26.7%	18.4%	23.9%
After-tax ROIC, without goodwill and acquired intangibles	**27.1%**	**29.1%**	**29.6%**	**25.7%**	**31.8%**	**37.0%**	**41.7%**	**57.4%**	**58.8%**

** Average invested capitals are used*

Revenue growth rate analysis									
Volume growth	4.0%	1.0%	0.0%	3.0%	-1.0%	-2.0%	-4.0%	5.3%	1.4%
Effect of acquisition/divestment	2.0%	3.0%	1.0%	5.0%	2.0%	0.0%	-2.0%	0.5%	1.3%
Organic volume growth	**2.0%**	**-2.0%**	**-1.0%**	**-2.0%**	**-3.0%**	**-2.0%**	**-2.0%**	**4.8%**	**0.1%**
Revenue per hectolitre	3.8%	5.0%	2.0%	4.2%	5.3%	3.8%	3.0%	1.7%	3.1%
Organic revenue growth rate	**5.8%**	**3.0%**	**1.0%**	**2.2%**	**2.3%**	**1.8%**	**1.0%**	**6.5%**	**3.2%**
Effect of currency movement	-1.0%	1.9%	-2.9%	-6.0%	-1.0%	-5.0%	-0.3%	-3.6%	1.2%
Effect of acquisition/divestment	1.0%	0.9%	2.0%	4.0%	0.0%	-1.0%	-2.0%	0.1%	1.0%
Effect of change in accounting policy	0.0%	-1%	-3.3%	0.0%	0.0%	0.0%	-1.8%	0.0%	0.0%
Revenue growth rate	5.8%	4.6%	-3.2%	0.2%	1.3%	-4.2%	-3.1%	3.0%	5.4%

(Source: Carlsberg's annual reports)

Appendix C: Financial Statement Analysis of Molson Coors

Exhibit 73: Molson Coors' detailed balance sheet over the period 2010 - 2019

in million US $	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets										
Operating cash	65	70	78	84	83	71	98	220	215	212
Excess cash	1,153	1,009	546	358	542	360	463	199	843	312
Trade receivables	504	530	608	573	489	408	654	728	736	706
Affiliate receivables	67	59	52	31	39	17	15	6	8	9
Other receivables[1]	159	137	93	124	94	101	136	168	127	106
Inventories	195	207	214	205	202	179	593	592	592	616
Other current assets, net[2]	74	106	155	150	109	94	187	206	226	215
Derivatives	5	0	2	12	20	29	24	71	20	9
Total current assets	**2,221**	**2,118**	**1,748**	**1,538**	**1,577**	**1,259**	**2,170**	**2,190**	**2,766**	**2,184**
PP&E [3]	1,389	1,430	1,996	1,970	1,798	1,591	4,507	4,674	4,608	4,547
Goodwill	1,489	1,453	2,453	2,419	2,192	1,983	8,250	8,406	8,261	7,631
Other intangibles	4,655	4,586	7,235	6,825	5,756	4,746	14,032	14,297	13,776	13,656
Investment in MillerCoors	2,574	2,488	2,432	2,507	2,389	2,441	-	-	-	-
Tax loss/credit carried forward	-	-	111	62	68	75	116	160	216	234
Deferred tax assets	-	-	225	161	172	123	111	114	262	263
Other assets	370	349	13	100	29	59	155	408	219	345
Total assets	**12,698**	**12,424**	**16,212**	**15,580**	**13,980**	**12,276**	**29,342**	**30,247**	**30,110**	**28,860**
Liabilities and equity										
Trade payables and other operating payables	1,073	948	1,017	1,135	1,027	1,014	2,148	2,362	2,369	2,396
Accrued interest	-	-	37	29	149	21	120	116	113	107
Other current non-operating liabilities	26	108	139	265	129	149	200	207	225	264
Deferred tax liabitlites	220	161	152	138	165	-	-	-	-	-
Current portion of long-term debt and short-term borrowings	1	47	1,246	587	849	29	685	715	1,595	928
Discontinued operation	14	13	8	7	6	4	5	-	-	-
Total current liabilities	1,334	1,277	2,599	2,161	2,325	1,217	3,158	3,399	4,301	3,696
Long-term debt	1,960	1,915	3,423	3,213	2,321	2,909	11,388	10,599	8,894	8,110
Pension and post-retirement benefits	459	698	833	463	543	202	1,196	849	727	717
Derivatives	405	213	222	-	-	-	-	-	-	-
Deferred tax liabilities	467	456	949	911	784	800	1,699	1,896	2,129	2,259
Unrecognized tax benefits	81	76	82	107	25	-	-	-	-	-
Other liabitlities	126	78	94	77	80	75	267	317	324	407
Discontinued operation	24	22	20	17	16	10	13	-	-	-
Total liabilities	**4,855**	**4,734**	**8,221**	**6,950**	**6,094**	**5,213**	**17,720**	**17,060**	**16,374**	**15,187**
Share capital	838	837	836	824	772	713	681	663	663	662
Paid-in capital	3,548	3,572	3,624	3,748	3,871	4,000	6,635	6,689	6,773	6,774
Retained earnings	3,242	3,690	3,901	4,200	4,440	4,496	6,145	6,958	7,693	7,617
Accumulated other comprehensive income (loss)	171	(130)	(72)	155	(898)	(1,695)	(1,572)	(860)	(1,150)	(1,162)
Shares hold in treasury	-	(321)	(321)	(321)	(321)	(471)	(471)	(471)	(471)	(471)
Total shareholder's equity	7,799	7,648	7,967	8,605	7,863	7,043	11,419	12,978	13,507	13,419
Non-controlling interests	44	42	25	25	23	20	203	209	228	254
Total equity	**7,843**	**7,690**	**7,992**	**8,630**	**7,886**	**7,063**	**11,622**	**13,187**	**13,736**	**13,673**
Total liabilities and equity	**12,698**	**12,424**	**16,212**	**15,580**	**13,980**	**12,276**	**29,342**	**30,247**	**30,110**	**28,860**

[1] *Includes note receivables and other receivables*

[2] *Includes prepaid assets, maintenance and operating supplies, promotion materials and current deferred tax in 2011-2014*

[3] *Includes software*

(Source: Molson Coors' annual reports)

Exhibit 74: Molson Coors' invested capital over the period 2010 - 2019

in million US $	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating cash	65	70	78	84	83	71	98	220	215	212
Trade receivables	504	530	608	573	489	408	654	728	736	706
Affiliate receivables	67	59	52	31	39	17	15	6	8	9
Inventories	195	207	214	205	202	179	593	592	592	616
Other current assets, net	74	106	155	150	109	94	187	206	226	215
Trade payables and other operating payables	(1,073)	(948)	(1,017)	(1,135)	(1,027)	(1,014)	(2,148)	(2,362)	(2,369)	(2,396)
Operating working capital	(168)	24	90	(92)	(105)	(245)	(601)	(610)	(591)	(638)
PP&E	1,389	1,430	1,996	1,970	1,798	1,591	4,507	4,674	4,608	4,547
Invested Capital without goodwill and acquired intangibles	**1,221**	**1,454**	**2,086**	**1,878**	**1,693**	**1,346**	**3,906**	**4,064**	**4,017**	**3,908**
Goodwill	1,489	1,453	2,453	2,419	2,192	1,983	8,250	8,406	8,261	7,631
Other intangibles	4,655	4,586	7,235	6,825	5,756	4,746	14,032	14,297	13,776	13,656
Invested Capital without goodwill and acquired intangibles	**7,365**	**7,493**	**11,774**	**11,122**	**9,640**	**8,075**	**26,188**	**26,766**	**26,055**	**25,195**
Other financial assets	3,364	3,312	2,368	2,489	2,653	2,751	293	322	659	101
Tax loss/credit carried forward	-	-	111	62	68	75	116	160	216	234
Total fund invested	**10,729**	**10,805**	**14,253**	**13,673**	**12,361**	**10,901**	**26,597**	**27,248**	**26,930**	**25,530**
Reconciliation to total fund provided										
Shareholder's equity	7,799	7,648	7,967	8,605	7,863	7,043	11,419	12,978	13,507	13,419
Deferred tax liabilities, net of assets	467	456	724	751	612	677	1,588	1,783	1,867	1,996
Total shareholders' equity	8,266	8,104	8,691	9,356	8,476	7,720	13,006	14,761	15,374	15,415
Non-controlling interests	44	42	25	25	23	20	203	209	228	254
Long-term debt	1,960	1,915	3,423	3,213	2,321	2,909	11,388	10,599	8,894	8,110
Current portion of long-term debt and short-term borrowings	1	47	1,246	587	849	29	685	715	1,595	928
Accrued interest	-	-	37	29	149	21	120	116	113	107
Pension and post-retirement benefits	459	698	833	463	543	202	1,196	849	727	717
Total fund provided	**10,729**	**10,805**	**14,253**	**13,673**	**12,361**	**10,901**	**26,597**	**27,248**	**26,930**	**25,530**

(Source: Molson Coors' annual reports)

Exhibit 75: Molson Coors' NOPLAT over the period 2010 - 2019

in million US $	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net sales	3,254	3,516	3,917	4,206	4,146	3,568	4,885	11,003	10,770	10,579
Cost of goods sold [1]	(1,812)	(2,049)	(2,353)	(2,546)	(2,493)	(2,132)	(2,999)	(6,237)	(6,585)	(6,378)
Derivatives	3	14	16	0	2	(1)	(27)	(154)	111	24
Integration costs	-	-	(12)	(12)	(1)	-	82	11	5	-
Adjusted cost of goods sold	(1,809)	(2,035)	(2,349)	(2,557)	(2,492)	(2,133)	(2,944)	(6,380)	(6,469)	(6,355)
Marketing, general and administrative expenses	(1,013)	(1,019)	(1,126)	(1,194)	(1,164)	(1,038)	(1,597)	(3,052)	(2,803)	(2,728)
Integration costs	-	-	41	11	-	7	108	71	39	25
Amortisation	43	40	42	48	45	30	82	222	224	221
Adjusted marketing, general and administrative expenses	(970)	(979)	(1,043)	(1,135)	(1,119)	(1,002)	(1,407)	(2,759)	(2,540)	(2,482)
EBITA	476	502	525	514	535	433	535	1,864	1,761	1,743
Operating tax	(13)	(18)	(46)	(7)	(58)	(59)	(148)	(465)	(284)	(324)
NOPLAT	**463**	**484**	**479**	**507**	**477**	**375**	**387**	**1,399**	**1,476**	**1,420**
Calculation of operating tax										
Federal tax rate	35%	35%	35%	35%	35%	35%	35%	35%	21%	21%
State tax rate	2%	2%	1%	1%	3%	1%	4%	2%	1%	3%
Effective statutory tax rate	37%	37%	36%	36%	38%	36%	39%	37%	22%	24%
Foregin tax rate difference effect	-20%	-21%	-25%	-27%	-24%	-22%	-2%	-17%	-8%	-21%
Income tax at effective statutory tax rate	176	184	191	187	201	158	206	693	394	425
Foregin tax rate difference effect	(163)	(166)	(145)	(179)	(142)	(99)	(58)	(228)	(110)	(102)
Operating tax	**13**	**18**	**46**	**7**	**58**	**59**	**148**	**465**	**284**	**324**
Operating tax rate	3%	4%	9%	1%	11%	14%	28%	25%	16%	19%
Reconciliation to Net income										
NOPLAT	463	484	479	507	477	375	387	1,399	1,476	1,420
Special items, net	(21)	(12)	(81)	(200)	(324)	(347)	2,533	(36)	250	(709)
Integration costs	-	-	(29)	1	1	(7)	(190)	(81)	(44)	(25)
Amortisation	(43)	(40)	(42)	(48)	(45)	(30)	(82)	(222)	(224)	(221)
Derivatives	(3)	(14)	(16)	(0)	(2)	1	27	154	(111)	(24)
Equity income in MillerCoors	456	458	511	539	562	516	501	-	-	-
Interest expense	(110)	(119)	(196)	(184)	(145)	(120)	(272)	(349)	(306)	(281)
Interest income	11	11	11	14	11	8	27	6	8	8
Other pension and post-retirement benefits, net	-	-	-	-	-	-	8	47	38	3
Other income (expense), net	44	(11)	(90)	19	(7)	1	(33)	1	(12)	(15)
Non-operating tax	(126)	(81)	(108)	(77)	(11)	(3)	(1,307)	670	59	90
Net income	**670**	**675**	**438**	**571**	**517**	**395**	**1,600**	**1,588**	**1,135**	**246**

[1] *Includes depreciation*

(Source: Molson Coors' annual reports)

Exhibit 76: Financial performance analysis of Molson Coors

Operating ratios	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating EBITA/Revenues	14.3%	13.4%	12.2%	12.9%	12.1%	10.9%	16.9%	16.3%	16.5%
Cost of goods sold/Revenues	55.6%	57.9%	60.0%	60.8%	60.1%	59.8%	60.3%	58.0%	60.1%
Marketing, general and administrative expenses/Revenues	27.8%	26.6%	27.0%	27.0%	28.1%	28.8%	25.1%	23.6%	23.5%
Return on invested capital (ROIC)*									
Operating working capital/Revenues	-2.0%	1.5%	0.0%	-2.4%	-4.9%	-8.7%	-5.5%	-5.6%	-5.8%
PP&E/Revenues	40.1%	43.7%	47.1%	45.4%	47.5%	62.4%	41.7%	43.1%	43.3%
Invested capital/Revenues	38.0%	45.2%	47.1%	43.1%	42.6%	53.8%	36.2%	37.5%	37.5%
Revenues/Invested capital, times	2.6	2.2	2.1	2.3	2.3	1.9	2.8	2.7	2.7
Pretax ROIC	37.5%	29.7%	25.9%	30.0%	28.5%	20.4%	46.8%	43.6%	44.0%
Operating tax rate	3.6%	8.8%	1.4%	10.9%	13.6%	27.6%	25.0%	16.1%	18.6%
After-tax ROIC, without goodwill and acquired intangibles	**36.2%**	**27.1%**	**25.6%**	**26.7%**	**24.7%**	**14.7%**	**35.1%**	**36.5%**	**35.8%**

* *Average invested capitals are used*