UIS BUSINESS SCHOOL

MASTER'S THESIS

STUDY PROGRAM:	THESIS IS WRITTEN IN THE FOLLOWING SPECIALIZATION/SUBJECT:
Business Administration – Master of Science	Applied Finance
	IS THE ASSIGNMENT CONFIDENTIAL?
	The assignment is not confidential
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TITLE: Valuation of Aker BP ASA

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Executive summary

The valuation will determine the fair value of Aker BP's equity as of January 1st, 2020, using a fundamental approach. In addition, relative valuation will be included as a supplement. The valuation is done as of January 1st because of the ongoing COVID-19 pandemic, which has influenced multiple aspects of the global markets, like oil prices, demands and interest rates.

The first part of this thesis consists of an introduction of the company and its surrounding environment. Further follows relevant theory of valuation, and an explanation for choice of method. Next a strategic analysis of the company's internal and external environment is conducted to reveal the company's level of competitiveness.

Further in the thesis the company's financial statements are presented and explained, and a risk analysis is conducted to uncover potential short-term or long-term payment failure. Next, Future cashflows are estimated based on findings from the strategic analysis and presented along with a justification. Based on the future cashflows, and estimated WACC, a fundamental valuation is done to estimate the value of Aker BP ASA. Lastly, the valuation is combined with a value estimated from a comparative valuation approach, and a brief conclusion is given. The conclusion also includes some thoughts about the COVID-19 situation and how the first part of 2020 has affected the valuation.

As of January 2nd, the price of Aker BP's stocks was valued at NOK 209.6 in this master's thesis. Compared to the market value of NOK 289 at the same day, and considering an error margin of ±10%, the findings support a sell strategy.

Foreword

This valuation is written as a conclusion of my 5-year master study in economics and business administration at UIS business school. I understand that the subject of the thesis requires a broad understanding of many different economic theories. To estimate a value for Aker BP ASA I have had to employ knowledge earned through both the bachelor and master study, as well as general interest in the field.

The thesis is based on personal lecture notes, as well as publicly available information like annual reports, quarterly reports, news articles and literature. No confidential information has been used because this conflicts with an anticipated investor-oriented approach.

The process has been both challenging and educational. Through diving deeper into different subjects and acquiring a greater understanding of financial statements, strategy, and valuation, I am finally left with a result that I can be proud of. The added knowledge and experience from this thesis is priceless when entering the labor market in the future.

I would like to utilize this opportunity to thank my family and friends for their support and positive feedback. Also, a big thanks to my supervisor Bernt Arne Ødegaard, for good advice and feedback along the way.

Stavanger, 15.06.2020

X _Andre Ellertsen_

André Ellertsen

1. Introduction

For decades, the Norwegian market has been dominated by oil and gas companies. However, in 2015 the market experienced a drop in global oil prices. High supply and low demands led the oil prices down to critical levels, which in turn led to thousands of people losing their jobs. Now, a couple of years later, the oil and gas companies have finally reclaimed their positions in the market. In this assignment I will valuate Norwegian oil and gas company Aker BP ASA, which from now on will be addressed as only "Aker BP", with exception of the research question.

A recommendation of buying, selling, or holding market position will be given based on the actual estimated price. If this said price exceeds market price by more than 10% a buy rating is given. In the other end, if the actual price is 10% (or more) lower than the market price, a sell rating is given. If the price turns out to be within these two boarders, a hold rating is given. A hold rating implies waiting for further information, while leaving the stock position unchanged. Please see the attached illustration below for a better understanding:
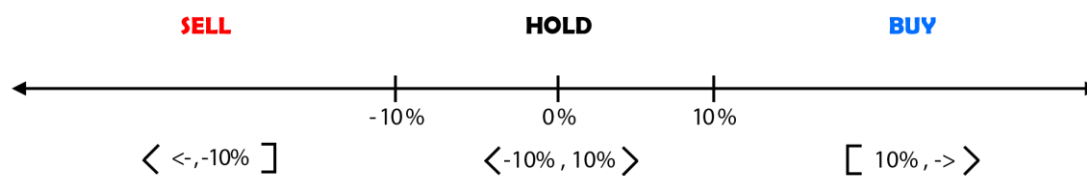
Illustration 1: Sell, Hold, Buy (Own creation)

The illustration shows the percentage difference in estimated price vs market price, and the correct action in each of the three possible outcomes. The market price is always dependent on expectations, so in this thesis I will determine if today's market price, and therefore its expectations, reflects the true value of Aker BP.

1.1 Research question and purpose

"What is the fair value of Aker BP ASA's equity as of January 1st, 2020?"

1.2 Limitations

The Thesis will be based on contemporary literature and relevant theory, and both quantitative and qualitative methods will be used. All information used is publicly accessible and there has been no contact or cooperation with Aker BP, as this is not appropriate for an investor-oriented analysis. The fundamental valuation is based on financial figures from 2017-2020. The sources used is essentially from academic books and the companies own website, but some internet websites are used as supplements. It is assumed that the reader of this master's thesis is familiar with common economical concepts and terms, as these are not defined in this thesis.

1.3 Structure

The master's thesis proceeds as follows. Chapters 2 & 3 introduce the company and the E&P industry. Valuation theory is addressed in chapter 4. In the following chapter a strategic analysis is conducted. Chapter 6 presents the company's financial statements. A risk analysis studies the liquidity- and solvency risk in chapter 7. Choice of budget horizon, prediction of future oil prices and cashflows are presented in chapter 8. Calculation of Beta, Cost of equity, Cost of debt & WACC is part of chapter 9. Chapter 10 consists of a fundamental valuation, a first value estimate and a sensitivity analysis. Chapter 11 supplements the first value estimate with a relative valuation. Lastly, in chapter 12, the first value estimate and the relative value estimate is combined into a final value estimate for the company's stocks. Also, a trading recommendation is given along with a brief conclusion.

2. Presentation of Aker BP ASA

In this chapter I will describe in detail the company, its employees, activities and business model. This is done to get a better understanding of the company, in order to make the price estimate more credible.

2.1 Aker BP today

Aker BP is an independent oil and gas company concerned with finding and extracting oil from the Norwegian continental shelf (Aker BP ASA, 2020g). The company is listed on Oslo stock exchange (OSE) with the ticker "AKERBP". The firm has their headquarters in Fornebu, right outside of Oslo, but also offices in Stavanger, Trondheim, Harstad and Sandnessjøen (Aker BP ASA, 2020d). Aker BP has, as of 01.01.2020, a total portfolio of 141 licenses on the Norwegian continental shelf distributed as follows: 27 licenses in the Barents Sea, 23 in the Norwegian sea and 91 in the North Sea (Aker BP ASA, 2020c). In other words, Aker BP is focusing highly in the north sea, with producing fields such as Valhall, Ula, Johan Sverdrup, Ivar Aasen, Alvheim and Skalv, for mentioning a few of the most important ones (Aker BP ASA, 2018).

Aker BP's vision is "Vi skaper det ledende uavhengige lete- og produksjonsselskapet offshore", which translates to "We create the leading exploration and production company offshore" (Aker BP ASA, 2020j). Aker BP has five main values which spells out "SAFER": Søkende (Enquiring), Ansvarlig (Responsible), Forutsigbar (Predictable), Engasjert (Committed), Respektfull (Respectful).

Illustration 2: SAFER (Aker BP ASA, 2020j)

2.2 History

To understand the full history of the firm we need to dive back in time to early 1970's when Det Norske Oljeselskap (DNO) was established. This firm, which was the first Norwegian national oil company, operated independently in the energy sector with E&P[1] activities. Later, in 2007 DNO merged with Oil and gas company Pertra, which was established back in 2001 by

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[1] Exploration and Production

Petroleum Geo-Services (PGS) ASA (Aker BP ASA, 2020d). The merge formed DNO international which later again merged with Aker exploration ASA in 2009. The company kept its name Det Norske Oljeselskap even though Aker ASA was the biggest shareholder at the time. Finally, in 2016 BP Norge and Det Norske Oljeselskap (DNO) merged to form what is known today as Aker BP ASA through a stock transaction (Aker BP ASA, 2020d). In 2017, Aker acquired oil company Hess Norge, as a further growth attempt (Nilsen & Hopland, 2017). All these mergers and transactions prove that Aker BP constantly look for solutions to grow bigger in the oil and gas industry.

On that note, now in 2020 Aker BP ASA (2020a) brags to be one of the biggest oil companies listed on any stock exchange in all of Europe, measured by production output. At the end of 2018 Aker BP ASA (2018) claimed to have over 1600 employees, which is over 1000% increase since June 2009 when they had only 140.
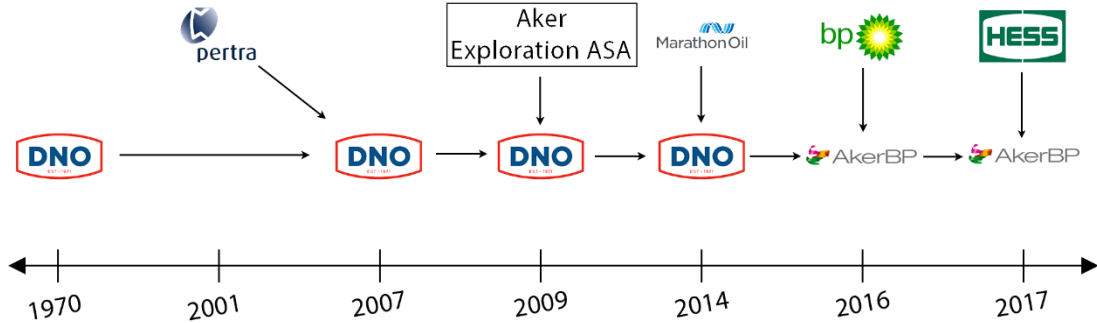
Illustration 3: Merger history (Own creation)

2.3 Ownership structure and historical stock price

Aker BP is a public limited company, meaning that its securities are for sale for the public. The owners with the biggest influence, sorted by size, is: AKER CAPITAL AS (40%), BP EXPLORATION OP CO LTD (30%) and FOLKETRYGD-FONDET (3.54%). The remaining 26.46% is held by other shareholders (Aker BP ASA, 2020h). The Chief executive officer (CEO) is Karl Johnny Hersvik. He is responsible for making the big corporate decisions as well as being the center of communication with the board of directors. His task is to lead the company to reach its goals, using the visions as guidelines. The chairman is Øyvind Eriksen, which is also the CEO of Aker ASA (Aker BP ASA, 2020i).
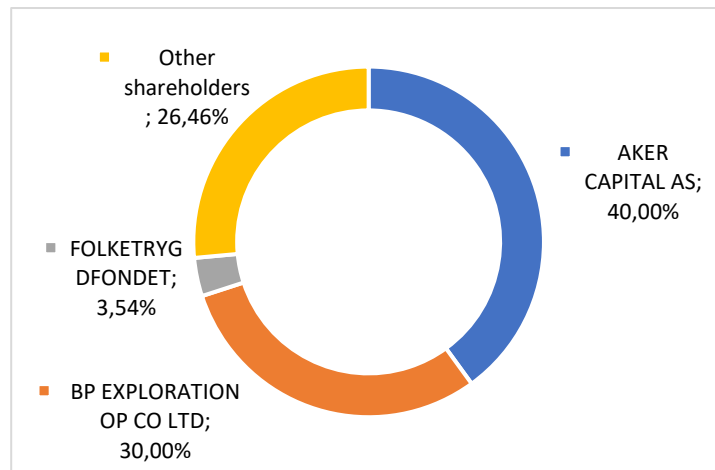
Illustration 4: Shareholders in Aker BP (Aker BP ASA, 2020h)

At the end of 2019 Aker BP was the fifth largest company listed on Oslo Stock exchange with a marked value of 103.7 billion NOK. This was an increase of almost 33% since 31.12.2018. Aker was only smaller than one company in the energy sector on OSE – Equinor (Oslo Børs, 2019).

Investors are all similar in their desire for return. Investors can earn a return on their invested cash in two ways: 1) The volatility of the stock price and 2) the dividend payments. Aker's dividends the last couple of years has had a steady quarterly increase. If Aker's economy continues to be satisfactory, there are no signs or indications that this dividend policy should change.

In 2019 there were traded, on average, 705 000 stocks of Aker BP every day (Yahoo Finance, 2020). This is equivalent to 0.195% of all the stocks listed at Oslo Stock exchange. The total sale of 2019 ended at 46.4 billion NOK, which is about 0.52% of the total sales on OSE. The ten-year historic stock price development of Aker BP compared to OSE Energy GI is attached below to illustrate the volatility on the company's stocks.
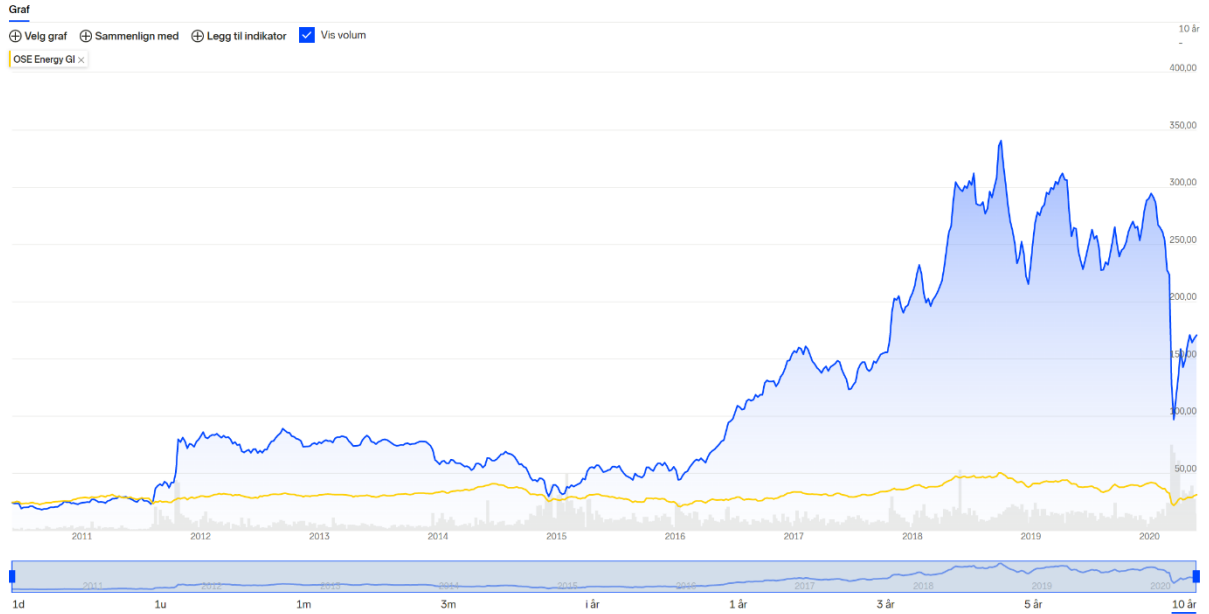
Illustration 5: Ten year historic values for Aker BP' stocks (Nordnet.no, 2020)

2.4 Product

As an exploration and production company, Aker BP earns their profits from producing and selling oil and gas. In their 2018 annual report, figures show that the company sold oil and gas worth approximately 3.7 billion dollars, where $3.1 billion (~85%) comes from oil alone. This is a whopping 47% increase from previous year. The remaining 500 million dollars was generated from gas sales income (Aker BP ASA, 2018). Following in this chapter I will briefly introduce Aker BP's most important production fields.
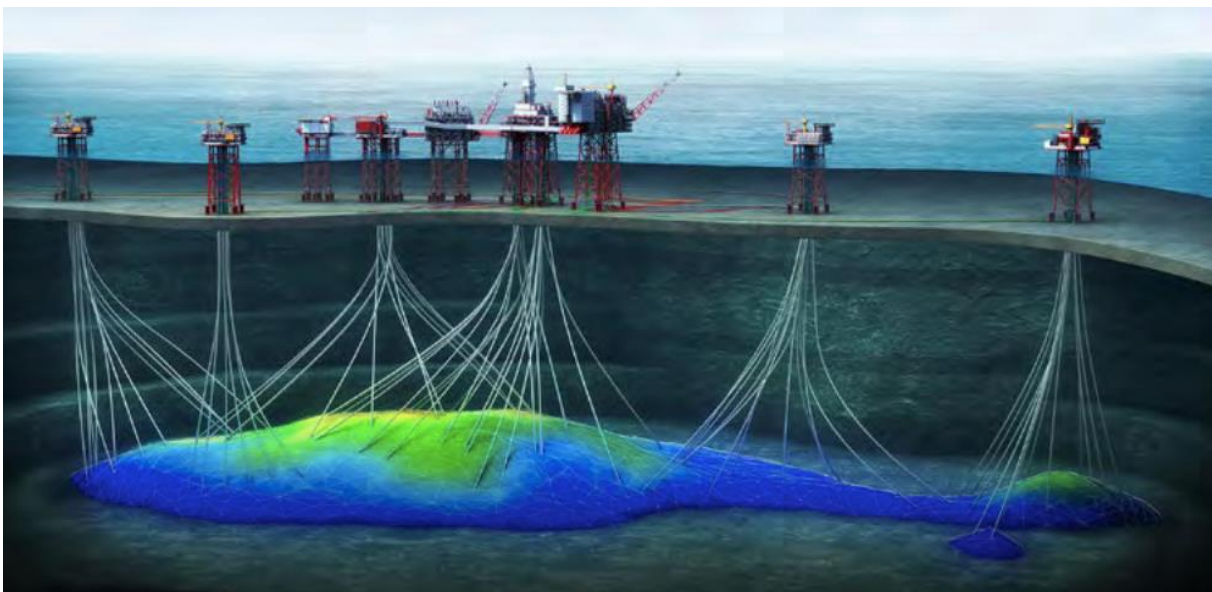
Illustration 6: From Valhall area (Aker BP ASA, 2018)

2.4.1   Valhall Area

The Valhall area started production back in 1982 and is located in the southern area in the Norwegian part of North Sea (Norsk Petroleum, 2020d). Aker BP is the operator in this field and is currently holding 90% of the licenses. The partner in this field is Pandion Energy (10%). The water depth in the area is about 70 meters and the reservoir is located 2.4 kilometers beneath the surface. This field produced a respectful 35,9 MBOEPD[2] in 2018, and through its entire lifespan the area has generated more than 1 billion barrels of oil, and further extraction is estimated to 500 million barrels. Aker BP is continuing to invest in this field in the foreseeable future due to the company's strong faith in its unlocked resource potential (Aker BP ASA, 2018).

2.4.2   Ula Area

Production in the Ula area, which consists of Ula, Tambar, Tambar east and Oda, started in respectively 1986, 2001, 2007 and 2019. The field produced a net value of 9.4 MBOEPD in 2018. Aker BP holds 80% of the licenses in the Ula area and is partnering with DNO (20%). The remaining resources in this area is estimated to be 53 million barrels of oil (Aker BP ASA, 2018).

2.4.3   Ivar Aasen Area

This area is one of Aker BP's newest. Production started in 2016 and is the first onshore controlled manned platform on the Norwegian continental shelf. The water depth here is 110 meters. The net production in 2018 was 23.5 MBOEPD. Aker BP is the operator and holds about 34.8% of the licenses. The remaining resources are estimated to 55 million barrels of oil equivalent (Aker BP ASA, 2018).

2.4.4   Alvheim Area

The Alvheim area is in the middle of the North Sea, just at the boarder of the British sector. The production started in 2008 and is still in operation (Norsk Petroleum, 2020a). The operator in this field is Aker BP holding 65% of the licenses. The partners include ConocoPhillips Skandinavia AS (20%) and Lundin Norway AS (15%). In 2018 Aker BP produced 59.6 MBOEPD (net). It is estimated that approximately 99 million barrels of oil equivalent is remaining in this area (Aker BP ASA, 2018).

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[2] Thousand Barrels of Oil Equivalent Per Day.

2.4.5 Skarv Area

The Skarv area is located in the northern part of the North Sea and is Aker BP's northernmost producing field. The water depth here is ranging from 350-450 meters, and the reservoir is located at approximately 3.5 kilometers below the water surface (Norsk Petroleum, 2020c). The field is operated by Aker BP holding 23.835% of the licenses. Partners include Equinor Energy AS (36.165%), Wintershall Dea Norge AS (28.0825%) and PGNiG Upstream Norway AS (11.9175%). During 2018 Aker BP extracted 25.2 thousand barrels of oil equivalent per day (MBOEPD). The estimated remaining resources are approximately 106 million barrels (Aker BP ASA, 2018).

2.4.6 Johan Sverdrup

This gigantic field started producing its first oil in October 2019 and has an estimated lifespan of 50 years. Its position is 155 kilometers west of Karmøy, and the water depth is measured to be 110-120 meters. The 200 cubic meter reservoirs are located at 1.9 kilometers below the seafloor. The area has an estimated resource potential of 2.7 Billion barrels of oil equivalent (BnBOE[3]), and the maximum production will be 660 MBOEPD. Aker BP has reported that the Johan Sverdrup area will have an estimated break-even price per barrel of $20 (Aker BP ASA, 2020e). The operator in this field is Equinor Energy AS (42.6267%), but Aker holds an interesting 11.5733% of the rights to the area. The other partners include Lundin Norway AS (20%), Petoro AS (17.36%) and Total E&P Norge AS (8.44%) (Norsk Petroleum, 2020b).

2.4.7 Summary table

The table below is a summary of variables from the listed fields above.

Navn	Prod. Start	Operator	Aker BP % licences	Field production	Remaining
Valhall	1982	Aker BP	90 %	35,9 MBOEPD	~500m barrels
Ula	1986	Aker BP	80 %	9,4 MBOEPD	~53m barrels
Ivar Aasen	2016	Aker BP	34,8 %	23,5 MBOEPD	~55m barrels
Alvheim	2008	Aker BP	65 %	59,6 MBOEPD	~99m barrels
Skarv	2012	Aker BP	23,8 %	25,2 MBOEPD	~106m barrels
Johan Sverdrup	2019	Equinor	11,6 %	NA	~2,7B barrels

Illustration 7: Summary table fields

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[3] Billion barrels of oil equivalent

2.5 Competitors

In this last part of chapter 2 I will present some of the biggest competitors for Aker BP. The purpose is twofold: 1) to reveal competing companies to compare characteristics and determine strategic position, and 2) use these companies to determine an industry average for later use in the risk analysis chapter.

2.5.1 Vår energi

Vår energi, formerly Eni Norge, is a large E&P company operating on all three seas on the Norwegian continental shelf. The company produces an impressive 300.000 barrels of oil equivalent per day (average), and has ambitions to reach 350.000 by 2022 (Varenergi.no, 2020). Currently the firm has over 1000 employees working on platforms and offices in Stavanger, Oslo and Hammerfest. As of today, the company operates 4 fields (Ringhorne, Marulk, Balder & Goliat), but in addition has 31 partner-operated fields.

2.5.2 Equinor

Equinor, formerly Statoil, is the largest oil and gas company in Norway and one of the largest offshore operators in the world. Unlike Aker BP, Equinor operates internationally and is a major player in some of the most important oil regions. The company has over 21.000 employees, and a headquarter in Stavanger, Norway. The company is 67% state-owned, and therefor has a responsibility to make sure that most of the value creation accrues to the Norwegian society. The firm had an average production per day of 2.074 million barrels of oil equivalents in 2019 (equinor.com, 2020). According to Norskpetroleum.no (2020b), Equinor currently operates 51 fields and holds 524 licenses. The firm has also started a transition into low carbon value creation. Last year the company produced 1800 Gigawatt hours of electricity.

2.5.3 Lundin

Lundin is a medium to large scale company operating within exploration, production and expansion on the Norwegian continental shelf. The company has over 400 employees, and a headquarter in Oslo. Lundin has a goal of reaching 160.000 barrels of oil equivalent each day in 2020. This is a big increase from 75.000 in 2019. They are going to achieve this using their 82 licenses in key fields like "Edvard Grieg", "Johan Sverdrup", "Ivar Aasen" & "Alvheim" area (lundin-energy-norge.com, 2020).

2.5.4 DNO

DNO is a Norwegian oil company focusing on production in the North Sea and the middle east. It was founded in 1971 and has since then become a very respectful company on the Norwegian continental shelf. The company had an average production of 127.000 barrels of oil equivalents, and almost 1 billion dollars in revenue in 2019 (dno.no, 2020). The firms registered location is in Oslo, Norway, with 318 employees. Currently the company holds 102 licenses, where 87 of which is in Norway (22 operatorships).

3. Presentation of the oil and gas industry

This chapter will discuss the industry which Aker BP operates in. The purpose is to provide the reader with useful information that can help raise the understanding of the company's closest environment. The findings from this chapter will form a foundation that the subsequent financial and strategic analysis can build on, to arrive at an estimated stock price.

3.1 History on the Norwegian continental shelf

The history starts in March of 1965 when the Norwegian government and Great Britain agrees to divide the continental shelf by the centerline principle. Denmark also signed the agreement the same year. Later that year the Norwegian government, for the first time, gave concessions to explore and produce petroleum (snl.no, 2019). After 32 consecutive empty wells, Phillips Petroleum Company finally discovers what will become the "Ekofisk" field December 23rd, 1969. In addition to being a major discovery for the company, it is also an important discovery for Norway. At the time it was the world's biggest field ever discovered under water.

Throughout the 1970s, foreign companies dominated the E&P industry in Norway. To strengthen the Norwegian oil environment, the government established oil and gas company "Det Norske stats oljeselskap", which later was known as Equinor. At the time it was 100% state-owned and got 50% of all new concessions on the Norwegian shelf. The first big discovery for Equinor was the "Statfjord" field. It is located partly in Norwegian and partly in British sector. The production started in late 1979.

In the 1980's the industry experienced a shift in organization. The Norwegian government now expanded their influence by owning multiple of the pipelines, some oil fields and on shore facilities. As one of many players, the government covered their part of investments and costs, and thus received the same share of the revenue from the concessions (Regjeringen.no, 2019). Fields like "Statfjord", "Snorre" and "Gullfaks", which were part of the Tampen area, became especially important in the 80's and 90's. Additionally, in 1986, the Norwegian parliament proposed one of the world's biggest energy projects in the expansion of the "Troll" and "Sleiper Øst" fields.

At the turn of the millennium, the Norwegian continental shelf was opening to a broader specter of different companies, both foreign and domestic. To utilize the resources effectively, the bigger international companies where supplemented with smaller companies who saw other opportunities in the Norwegian market. Today there are over 40 international and Norwegian companies operating on a daily basis on the Norwegian continental shelf (Regjeringen.no,

2019). In recent times there have been several major discoveries, among others the mentioned "Johan Sverdrup" field. Considered the 5th biggest field in Norway ever, Johan Sverdrup is expected to account for approximately 40% of all Norwegian oil production (Aker BP ASA, 2020e).

3.2 The oil and gas industry in Norway

Measured in value creation, investments, export values and government revenue the oil and gas industry is the biggest industry in Norway (Norskpetroleum.no, 2019). Based on national statistical institute of Norway's (SSB) reports, the export value for oil and gas in Norway 2019 was NOK 462.6 billion. That equals 47,5% of all the total export (Norskpetroleum.no, 2020a). SSB also reports that there were approximately 225 thousand directly or indirectly involved in oil and gas production and related services in 2019. This equals to approximately 12% of total employment in Norway. The history of the oil business, which was described earlier, is an important reason why Norway has become the wealthy welfare state that we know today. There is no doubt that oil and natural gas will continue to be important for Norway in the years to come.

Norway's NOK 462.6 billion in export of oil is small compared to other countries. In fact, it only covers about 2% of the world's total demand. The export of natural gas however is very significant. Norway is the 3rd biggest exporter of liquid natural gas (LNG), just behind Russia and Qatar, and exported about 121 million standard cubic meters in 2018. That equals to 22% of the total demand of natural gas in the EU (Norskpetroleum.no, 2020a).

The petroleum tax act ensures that most of the wealth creation from petroleum business accrues to the government so that it benefits the whole Norwegian economy (13.06.1975 no. 35 about taxation of subsea petroleum deposits). At the time of writing the ordinary tax rate of all businesses in Norway is 22%. At the same time, there is an industry-specific tax for all companies working with exploration and production of subsea petroleum deposits. This also includes pipeline transportation and shore bringing of extracted petroleum. Currently this tax rate is set to 56% (Regjeringen.no, 2020), which makes the total tax burden from operations on the Norwegian continental shelf 78%. By taxing only net profit and allowing deficit to carry interest, the system ensures neutrality at company level.

The Norwegian Petroleum Directorate defines production licenses as "… a concession which grants exclusive rights to conduct exploration drilling and production of oil and gas within a delimited area on the Shelf" (Oljedirektoratet.no, 2020b). All companies that want to operate

on the Norwegian continental shelf must participate on licensing rounds where the licenses are handed out. These rounds are usually divided into two: numbered and allocations in predefined areas (TFO). The first is considered the ordinary and is held every other year. The latter includes mature and well-known fields where the infrastructure is good and is held once per year. After the license round the announcement is finally promulgated by the Ministry of Petroleum and Energy. This system ensures increased value creation and resource utilization and efficiency. It enables new players to establish themselves on the shelf. The only requirement is that they contribute to the value creation and has knowledge in health, environment and safety (Oljedirektoratet.no, 2020a).

3.3 Environmental challenges

Environmental challenges may include uncertainties that can have an impact on the business and its profitability. All oil and gas companies have concerns for environment, climate change and greenhouse gases, and the concerns are only getting bigger in the future. The E&P industry is the single biggest source of emissions. Exploration and production have resulted in emissions to the atmosphere and our seabed. The emissions originate from different parts of the value chain, with transport being responsible for the most. In 2018, companies on the Norwegian continental shelf released approximately 13.4 million tons of CO_2 equivalents, which is a steady yearly decrease from 2015 when it was 14.2 million. Despite this slight decline the carbon footprint is still huge, and thus great challenges follows.

The environmental challenges have a direct impact on the future profitability in the business. Aker BP reports consider the climate regulations as one of the biggest risk factors in the E&P industry (Aker BP ASA, 2018). The adoption of various regulations and guidelines such as the Paris Agreement of 2015 is a result of the concerns for climate change and emissions of environmentally harmful substances. Participation of all countries is required to ensure a reduction in carbon emission. The Norwegian parliament has also adopted various regulations to assure a decrease in our carbon footprint, from companies in the oil and gas.

3.4 Value chain

Normally we divide the oil and gas industry into three subsections: Upstream, midstream, and downstream. Aker BP operates in the first, which is exploring and production of petroleum (E&P). Other companies in the same subsection includes Vår energi, Equinor, ConocoPhillips, Total, etc. The midstream sections include storing and transportation of unfinished crude oil and natural gas, and acts like a link between the up and down segment. Pipelines and

infrastructure, like tank trucks, needed to transport is included in this segment. An example of a company operating in the midstream segment is tanker company Frontline. Lastly, the downstream segment includes the process of turning the crude oil into thousands of different finished products, with the more obvious being fuel and asphalt. But the crude oil is also used in products like plastic and synthetic rubbers. (ENERGYHQ, 2020)
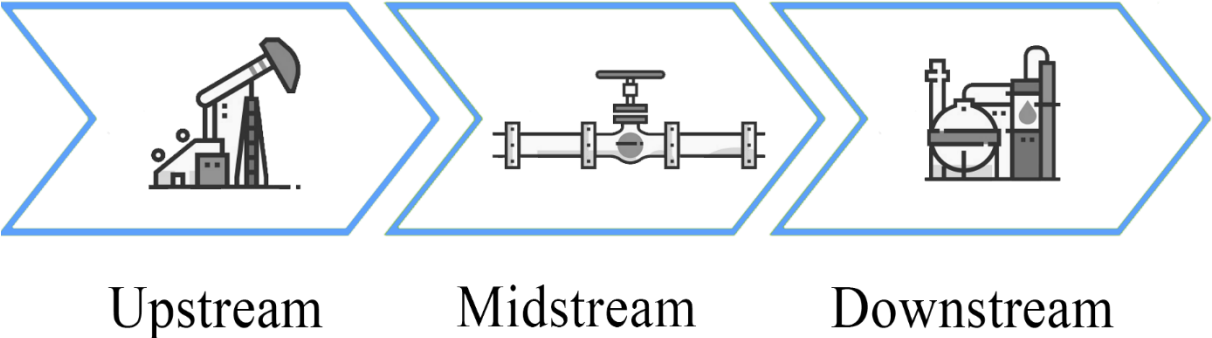
Illustration 8: Up- mid- and downstream (Own creation)

The segments described and illustrated above divides the oil and gas industry into three. However, this does not mean that a company can only operate in one. In fact, some companies have activities in two or even all three segments. When a company operates in multiple segments, they are vertically integrated, or have vertical relations. For example, Aker BP and Equinor both have vertical relations. The goal when entering a vertical relationship is for both parties to gain greater competitive advantage and profitability. This is done by reducing costs, e.g. transportation, or increasing the efficiency, for example lowering readjustment time.

4. Valuation theory

This chapter will introduce different relevant valuation techniques that will be used to compute a value estimate for Aker BP's equity. Strengths and weaknesses for each technique and how they are used as compliments to each other will be discussed. This chapter will also argue for the choice of method used later in the thesis.

4.1 Valuation methods

Valuation methods are normally divided into three subsections: Fundamental valuation, Relative (Comparative) valuation and option-based valuation. These three valuations methods can give three different estimates, and therefore it is important to choose one that fits the asset to be valued. Also, these techniques are not mutually exclusive to each other, and therefore it can be helpful to use them as supplements to one another. When selecting valuation method, factors like size of company, lifecycle, growth pattern, industry, time horizon and the level of access to key information can be important to consider.

In fundamental valuation, a company's financial characteristics are related to its real value. Risk and future cashflows can be considered by analyzing both internal and external factors within a company. In relative valuation, also known as comparative, the value estimate is computed by taking real, observed, market values for earnings, book value, sales etc. and transferring these to the company that are being valued (Damodaran, 2012). For option-based valuation, the source of option value comes from value of contingencies. A visual illustration is included below to summarize the different techniques. The valuation methodology will be reviewed in depth during the next chapters.

Fundamental valuation	• Equity method • Total capital method
Comparative (Relative) valuation	• Multiple based valuation
Option-based valuation	• binomial model • Black & Scholes
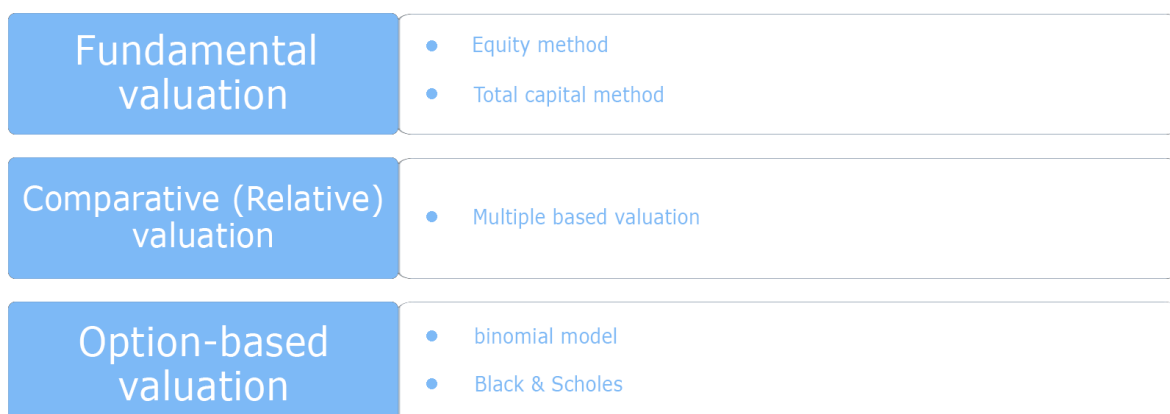
Illustration 9: Valuation methodology (Own creation)

4.2 Fundamental valuation

Damodaran (2012) describes the fundamental approach as a valuation method based on underlying fundamental conditions including strategic analysis of the company's internal and external factors and historical accounting figures to find an intrinsic value. This is the foundation for predicting future revenues and expenses. The forecast is discounted to find present value, which is an essential part of this technique. An important assumption is that the theoretical value of an asset is equal to the value of all future cashflows in its lifetime, discounted to present value. The required rate of return used to discount the cashflows will depend on the risk of the project/cashflow. A higher rate is set to justify a higher risk, and vice versa (Damodaran, 2012). Normally we divide fundamental valuation into two sections: total capital and equity method. These two share the core principles but differ in the cashflows and discounting factors. The former uses free cashflows to firm and the latter uses free cash flow to equity holders. Both methods should be consistent and give the same result assuming it is done right.

4.2.1   Equity method

This method values the equity directly by discounting the future cashflows to equity using the required rate of return for the equity. This is the return required by the investors and the company's shareholders. Normally, the required rate of return for this method is calculated using CAPM (Capital asset pricing model). Some core assumptions in this model is the absence of transaction costs, all assets are traded publicly and no inside information giving some investors the opportunity to identify under- or overpriced assets in the market (Damodaran, 2012). An important element of the model is beta, which adjusts the required return based on company-specific risk.

4.2.2   Total capital method

This method values the equity indirectly by first discounting the future cashflows to the firm using the appropriate rate of return, and then subtracting the debt at the end. The relevant discounting factor is WACC (Weighted average cost of capital). This factor builds on the CAPM and includes the ratio of equity to debt, and therefore gives a weighted cost of capital for the entire company.

4.3 Comparative valuation

As opposed to fundamental valuation, where the goal is to value a company given their assets, cashflows etc., comparative (relative) valuation estimates a value based on how other, similar

assets, are priced in the market using multiples (Bodie et al., 2014). A multiple, in the world of finance, is a ratio with a market specified value indicator in the numerator and a predetermined financial statement value, such as earnings, in the denominator. Relative valuation is built on two core principles: Prices needs to be standardized in order to compare. Normally, this is done by converting the price into multiples with earnings, book value or sales in the denominator. Secondly, the firms in which the company will be compared against needs to be similar in their structure, risk seeking and size. This is the hardest part of the relative valuation because no company is equal, and companies in the same sector can differ in risk, growth potential and cashflows (Damodaran, 2002). The value of the company can be estimated by using a multiple from a comparable company or an average of comparable firms, and then multiplying with the denominator to find what the price of the company should have been based on its predetermined financial statements value.

4.4 Option-based valuation

An option is a financial instrument that gives the holder the right, but not the obligation to, buy (call) or sell (put) the underlying asset at a predetermined price. The fundamental principle in this method is that the asset can be valued as an option if its return is a function of the underlying asset. For example, if the value of the asset is bigger than a predetermined value the asset can be valued using a call option. The value is then the difference between the assets value and the predetermined value. If the value is less than the predetermined value a put option is used to predict the value of the asset. There are many different methods, but the two most common are the binomial model and Black & Scholes model. Both works by replicating a portfolio consisting of (1) the underlying asset and (2) a risk-free loan. There are six values affecting the price of the option: The risk-free rate, time to expiration, strike price, dividends, variance in value and current value (Damodaran, 2002).

4.5 Choice of method

In this master thesis I have chosen to use the fundamental approach as the main method, but I will also use relative (comparative) valuation as a compliment. This is because a combination of methods will minimize the weaknesses and uncertainty of the analyzes, and therefore give a better foundation for the value estimate.

The reason for choosing fundamental valuation as the primary method is because it takes in to account all essential factors of the firm. The analysis is very deep, and time consuming, but in return gives a broad understanding and perception of the company. The method also has

weaknesses, like the amount of information necessary to conduct the valuation. This information is not always available for the public, which leads to many assumptions that can cause the estimate to imprecise if not done carefully. The information introduced in chapter 2 & 3 as well as future chapter will be used as guidelines for determining values and making said assumptions, so that the estimates can be as precise as possible.

5. Strategic analysis

In this chapter a strategic analysis will be conducted for the company, and its external environment. The goal is to get a better and more precise understanding of the company's strategic position in the market. This will in turn lead to a more accurate price estimate. Since the company have all operations on the Norwegian continental shelf I will only focus on this area in this macroeconomic analysis. Factors addressed in this chapter are all relevant for the estimation of future cash flow for the company. Four qualitative analyses will be conducted: Porter's "Five Forces", VRIO-framework, PEST-model and finally a SWOT analysis.

5.1 Porters Five Forces

The five forces framework developed by Michael Porter in 1979 helps identify industry attractiveness in terms of five competitive forces (Johnson et al., 2014): (i) Threat of entry, (ii) Threat of substitutes, (iii) Power of buyers, (iv) Power of suppliers and (v) extent of rivalry between competitors. Porter argued that an attractive industry was one that offers good profit potential. An industry where all these forces are weak, is considered an attractive industry to compete in.

5.1.1 The threat of entry

Intruders and entry barriers influence the degree of competition. A great threat of new intruders results in a weakened industry attractiveness. Barriers to entry is defined as the resistance new entrants are facing when trying to enter and compete in the industry. Listed below is five important entry barriers:

- **Economics of scale/ experience.** High economies of scale imply that fixed costs can be distributed over a large amount, or use a more effective technology, giving a lower per unit cost. New entrants must therefore enter the industry in a big scale or be willing to accept high costs.

- **Access to distribution channels or supply.** Having control over supply channels can be a good way to control the threat of entry.

- **Retaliation expectation.** New entrants may reconsider if incumbents are big and deterrent.

- **Government action or legislation.** Legislation, regulations, and patents etc. can act as barriers to entry.

- **Differentiation.** Having a product with higher perceived value than competitors can be an effective barrier for new entrants.

The Norwegian continental shelf is known for being a demanding area to operate in. The incumbents have been in the industry a long time and have economies of scale and the experience that make it hard for newcomers to establish operation in this industry. Considering this the estimated force is set to low in the illustration below.
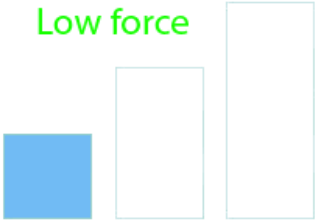
Illustration 10: Summary threat of entry (Own creation)

5.1.2 The threat of substitutes

Substitute products can be defined as products that have similar properties but of different nature. In the oil industry, electricity can be a substitute energy product. Porter claims that especially two factors are important to bear in mind:

- **The price to performance ratio.** Critical factor for determining threat potential. Even though a substitute product is more expensive, it can be a threat if it outperforms the original product by more than the price difference.
- **Extra-industry effects.** External substitutes must not be mistaken with internal threats from competitors. Managers must look outside the box to identify constraints and threats from outside the industry. High external substitute threats can make an industry less attractive.

The balance of energy consumption is believed to change in the future due to the desire for an environmentally friendly world. Despite this, forecasts show that fossil energy will remain important for many more years to come. This reconstruction is inevitable but since it will take a very long time the force is set to moderate.
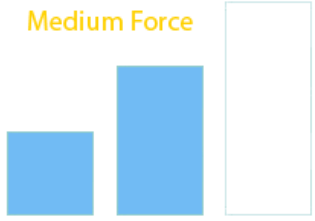
Illustration 11: Summary threat of substitutes (Own creation)

5.1.3   The power of buyers

The customer/buyer have power if he can demand lower prices, and therefore reduce potential profits for the company. Three conditions influence the buyer's power:

- **Concentrated buyers.** If there are few but big customers, the industry is likely to be controlled by the buyers. They can shop around and push the price downwards due to competition among the suppliers.
- **Low switching costs.** Price negotiations are more powerful if the costs for switching supplier is low.
- **Buyer competition threat.** If buyers can threaten to do a backward vertical integration, that means doing the supplying themselves, then they have high negotiation power.

Since there is little to no differentiation possibility and very low switching costs the force is estimated to be high:
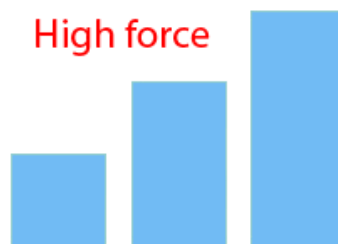
Illustration 12: Summary power of buyers (Own creation)

5.1.4   The power of suppliers

Suppliers are defined as the person or organizations that provide equipment, tools, materials, services etc. needed for the firm to produce its products or services. Opposite to buyer power, supplier power is likely to be high if these factors are true:

- **Concentrated suppliers.** Suppliers tend to have more power if the industry is dominated by large but few suppliers.
- **High switching costs.** If switching between suppliers involves either a high price or a great effort/time, the firm is likely to be very dependent on the supplier(s).
- **Supplier competition threat.** If firms compete over the same industry supplier(s), they have the power to cut out buyers.

Both low switching costs and low concentration of suppliers speaks for low supplier power. Homogenous products delivered to the industry is also an argument for low power. Overall power estimation for suppliers is set to low in illustration 13:
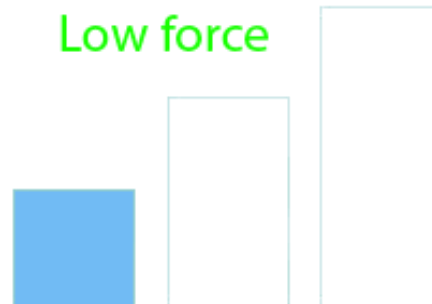
Illustration 13: Summary power of suppliers (Own creation)

5.1.5   The extent of rivalry

The most important and central factor in the five forces analysis is that of competition between existing players in an industry. Organizations with equal or similar products or services, that compete for the same costumers, are often called competitive rivals. High industry rivalry is synonym with an unattractive industry. Five factors to consider determining the extent of rivalry is:

- **Low differentiation.** If products and services are fairly similar, and nothing stops costumers from switching to a competitor, then rivalry is high. In this circumstance price is the only way to compete.
- **High exit barriers.** Rivalry tend to be higher in industries where exist barriers exist and is significant.
- **High fixed costs.** High fixed costs due to initial investments and research leads to companies trying to spread cost by increasing their volumes. This will again lead to price wars and increased rivalry between incumbents.
- **Industry growth rate.** In times of low industry growth, any firm specific growth is mostly at a rival's expense. Therefore, it tends to be high rivalry in low growth industries because of low profitability and price competition.
- **Competitor balance.** Rivalrous behavior is expected in industries where two or more competitors are roughly the same size because the competitors seek to gain superiority.

The absence of differentiation in the oil and gas industry argues for high rivalry. So does high fixed costs and low industry growth expectations in the future. But since the business is

dominated by Equinor it is concluded that the rivalry between other competitors is moderate in illustration 14 below.
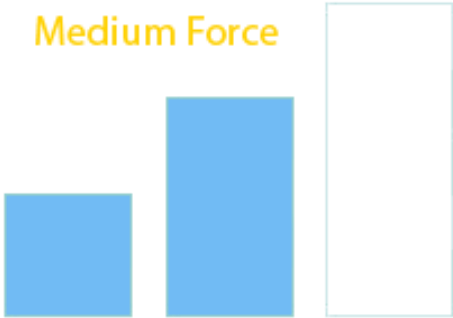
Illustration 14: Summary extent of rivalry (Own creation)

5.1.6   Summary Porters five forces

Porters framework and the analysis revealed that the threat of entry is low, threat of substitutes is medium, the buyer's power is high, the power of suppliers is low, and the extent of rivalry is medium. The analysis concludes that the petroleum industry has a significant industry advantage at the time, but it is expected to decrease in the future as renewable energy becomes more widespread. Also, the extent of rivalry is likely to increase as found in the 5th force, due to the falling growth expectations in the industry. This will make the industry less attractive on long term. The results from the analysis is organized in the illustration below.

Porters Five Forces	Low	Medium	High
Threat of entry	X		
Threat of substitutes		X	
The power of buyers			X
The power of suppliers	X		
The extent of rivalry		X	

Illustration 15: Summary five forces (Own Creation)

5.2 VRIO

The VRIO framework is an asset-based analysis that examines capabilities that can provide competitive advantage based on four criteria: Value, Rarity, Inimitability & Organizational support (Johnson et al., 2014). The competitive advantage is dependent on both the company's resources and the ability to utilize the situation. In this framework assets are differentiated between physical, financial, human, and organizational assets. Physical assets are defined as construction equipment, machines, buildings etc. Financial assets are cash and cash investments

or other assets that does not affect the daily operations in the firm. Human assets can be experience, employees' knowledge and insight and organizational assets is defined as systems, infrastructure and relations between individuals and groups.

Johnson et al (2014) defines a strategic capability as "…the capabilities of an organization that contribute to its long-term survival or competitive advantage.". If a capability is to be valuable it needs to give a cost-wise advantage over competitors and increase the customer's willingness to pay. A capability is considered rare if the competitors lacks either the capability's quality, quantity, or both. A strategic capability is inimitable if competitors cannot acquire or copy it. An asset has organizational support if the firm can exploit the advantage of the capability. Following I will list some of the company's strategic capabilities and analyze according to the VRIO-framework.

5.2.1 Production licenses

Producing oil and gas on the Norwegian continental socket requires licenses. These licenses are directly linked to the company's value making and therefore the value criteria are met. The only way to get these is to send an application to the Ministry of Petroleum and Energy in the licensing rounds. Since everybody can submit applications it is not considered rare, and it is not inimitable. Since Equinor is owned by the Norwegian government it is obvious that they have an advantage in these license rounds. For everybody else it is argued to be an imperfect arrangement that does not support the criteria for organizational support. All this speaks for competition parity. This capability does not provide sustainable competitive advantage.

5.2.2 Adaptability and high technological competence

The industry is expected to change in the future. The high technological competence acquired from DNO's establishment in 1971, as mentioned in chapter two, is expected to be a valuable resource in this uncertain and volatile industry. The experience they possess can help the adaptability and secure future profitability for the firm. Additionally, this capability is considered rare in this industry. Even though it is hard to match this capability it is not considered inimitable. Lastly, the capability is considered to have high organizational support because the firm will be able to utilize this asset to gain competitive advantage. Overall, this capability is believed to give a short-term advantage over competitors.

5.2.3 Vertical integration

As discussed in chapter two, the parent company of Aker Bp is Aker ASA. The latter has ownerships in multiple supplier companies, giving Aker BP a valuable strategic capability,

because of increased profitability and efficiency. Even though it is considered valuable it is not considered rare as most big companies in the industry possess this capability. The capability is not inimitable, but hard to match as it often requires restructuring of the organization. The asset has high organizational support because it gives better maneuverability and coordination in one of the biggest risk elements in the industry: supplier risk. The vertical integration provides reduced supplier risk and the capability is therefore considered a temporary competitive advantage.

5.2.4   Digitization

Digitizing the operation is becoming more and more important in the E&P industry. Aker BP has revealed that they currently have 60+ employees working on digitizing to cut cost bound to production in the long run, and they are therefore considered the industry leader in digitalization. Costs related to digitization for Aker BP are over NOK 100 million, yearly. This digitization capability is considered an asset with value for the company. But in recent years other competitors have started digitizing as well, and the capability is therefore not considered rare or inimitable anymore. The extent of human- and financial resources put into sustaining the advantage for Aker BP argues for an organizational support that makes the capability competitively advantageous on a temporary basis.

5.2.5   Summary VRIO analysis

Throughout this analysis I have considered four of Aker BP's strategic capabilities. The results are organized in the table below. At the time of writing there are currently no capabilities that stand the chance of sustained competitive advantage. Simultaneously, Aker BP's high technological competence, the vertical integration and the digitization process argues for a temporary competitive advantage. Lastly, the company's production licenses argue for competition parity with competitors. The implication of the analysis is that Aker BP currently has competition parity, relative to the E&P industry.

Capabilities	Value?	Rare?	Inimitability?	Organizational support?	Advantage?
Production licenses	YES	NO	NO	NO	Parity
Adaptability and high technological competence	YES	YES	NO	YES	Temporary
Vertical integration	YES	NO	NO	YES	Temporary
Digitization	YES	NO	NO	YES	Temporary

Illustration 16: Capabilities

5.3 PEST-model

The PEST framework, developed by Harvard professor Francis Aguilar, is used to map the firm's macro environment based on four specific environmental factors: Political, economic, social, and technological. All these factors are considered important today or is expected to become important in the future. The results from the PEST model will form a foundation used later in the thesis to identify opportunities and threats in the SWOT analysis.

5.3.1   Political factors

Political factors address the government or other political forces' role and the degree of state intervention in the firm's economy. The state is often a very important participant in the macroeconomic environment as owners of businesses, suppliers, customers etc. This is especially true in Norway, and therefore the Norwegian continental socket, as many businesses are run by the government, and the degree of government intervention is relatively high. Additionally, political movements, concerned media and campaign groups also influence the macroeconomic environment that the company faces (Johnson et al., 2014).

The Exploration and production sector, which Aker BP operates in, is relatively highly influenced by political and legal factors. Important laws like The Petroleum Tax Act (Petroleumsskatteloven) and the Petroleum Act (Petroleumsloven) gives the government exclusive rights to distribute licenses for petroleum extraction. Additionally, it prevents actors without licenses to recover petroleum from the Norwegian continental socket, which in turn alters the competitive situation, the profitability and growth opportunities. Taxes like the CO2-fee and the NOx-fee is regulating the emissions from the petroleum activities. In the yearly report to shareholders in 2018, Aker BP admits expecting more focus on lower emissions and renewable energy sources (Aker BP ASA, 2018). In the long run cost associated with emissions will rise, leading to more actors producing more renewable green energy. These anticipated regulations will affect the profitability of all the actors in the E&P industry.

The Industry will most likely be affected by the circumstances discussed above. Furthermore, conditions like war, international conflicts and pandemics are all macroeconomic circumstances that the company have no control over which can influence the oil price and industry profitability.

5.3.2   Economic factors

The economic factors in which a company faces includes, but is not limited to, inflation, exchange rates, interest rates, business cycles, unemployment rate and differential economic

growth rates (Johnson et al., 2014). These factors will influence different parts of the company. For example, foreign exchange rates will affect the results due to oil price and financial statements are reported in USD. The interest rates however will influence the capital requirements which affect the growth potential. In this analysis I will focus on the following three conditions: exchange rates, interest rates and oil price development.

As mentioned, oil price and financial statements are reported in US dollars, and additionally natural gas is reported in British Pounds or Euro. Taxes and fees are all paid in Norwegian kroner. This implies a high risk of market fluctuations due to changes in exchange rates. Many companies control exposure using futures or other financial derivatives to minimize the risk of critical liquidity situations.

Like fluctuations in foreign exchange rates, interest rate changes also influence a company's ability to make profit. It is common for companies in the E&P sector to have large amounts of long-term liabilities, often at floating interest rates. This means that the same companies will be significantly exposed to fluctuations in interest rates. Economic conditions like cash flow and operating profit is sensitive to changes and therefore it is common to exchange interest rate swaps (Aker BP ASA, 2018).

The oil and natural gas prices are one of the main factors influencing income for exploration and production companies. Even though high oil prices raise significant opportunities, low oil prices threaten profitability for the companies. Factors affecting oil price includes both local and global demand and supply, OPEC (Organization of the Petroleum Exporting Countries) and government regulations etc.

5.3.3   Social factors

Social factors may include culture and demographic changes. By studying these changes, the company can acquire a better understanding of future customer needs, potential new markets, and the dynamics of the existing market. Currently one of the biggest global challenge is the lack of energy for the world's poorest humans. When the energy demand from these poor countries and communities rise, it is essential that the more prosperous people and communities take greater responsibility in decreasing theirs, by implementing better energy efficiency measures (Aker BP ASA, 2012). The rising population and energy demand can and will affect Aker BP and their competitors. According to Aker BP themselves, the most accessible oil has already been extracted and therefore the increased demand will have to come from

unconventional sources. This will increase production costs, and therefore also the price equilibrium, which in turn will encourage alternative energy sources.

All production of petroleum involves risk at some degree. Examples include seismic shifts, oil spill, explosions, or other geological uncertainties. In addition, production can create major disruptions for the environment and the wildlife, which attracts volunteer- and other environmental organizations. If this pressure gets big enough it can influence the footprint of the petroleum companies, and therefore also the industry profitability (Aker BP ASA, 2018). There is no reason to believe that the focus on environmentally friendly solutions will decrease in the future, and the petroleum companies are therefore forced to adapt.

5.3.4   Technological factors

Technology has never been more important, but at the same time it becomes more important for each passing day. Technological factors which all companies face today includes artificial intelligence, machine learning, robotics, automation and research and development etc. Even though these factors seem obvious today, they may change in the future (Johnson et al., 2014). Consulting and outsourcing company CGI believe that the possibilities are enormous in digitizing business models (CGI, 2020). Marketing, consulting and advertising company EnerWE agrees and even says that companies in the petroleum sector need to digitize if they are to survive (EnerWE, 2017). Digitalization brings new ways of analyzing products, which contribute to increased efficiency and utilization of production. This increased efficiency leads to higher profitability for the industry.

In addition to the need of implementation of digitalization, energy efficiency and lowering of carbon emission gets even more focus these days. The focus implies an increased amount of investment, and therefore lower profitability. However, it is important to consider the positive effect of technology: reduced production costs and or increased revenue. Because of this the technology advancements may even have a positive effect on the industry profitability.

In summary the most accessible oil is produced and the increased demand for energy needs to come from unconventional and hard to access places. Now that energy efficiency and CO_2 emission becomes even more important, companies are forced to adapt to eco-friendly products that may act as substitutes for the outgoing petroleum industry. This may lead to lower oil and gas revenues on the long run, but eventually higher company profitability.

5.4 SWOT-analysis and Conclusion

This section will conclude the strategic analysis chapter based on previous findings and a SWOT-analysis will be conducted. A strengths, weaknesses, opportunities, and threats (SWOT) analysis implies a framework for identifying the competition situation for the company, as well as developing a strategic plan. The SWOT analysis will summarize all three previous analyses: Porters five forces, VRIO and PEST. The image below illustrates the results from the analysis.

Illustration 17: SWOT-Analysis results (adamsmediagroup.com, 2020)

The illustration clearly states that Aker BP is in possession of some advantageous strengths. The future is likely to include change in either structure or production, and Aker BP's technological competence is going to help the company be better prepared when it happens. Additionally, as found in the VRIO analysis, Aker BP is considered industry leading in technology and digitization. This strengthens the efficiency in production, hence lower production costs. Lastly, compared to other oil and gas companies, except Equinor, Aker BP holds a high amount of production licenses, giving them a temporary competitive advantage.

However, to understand the company's full situation, it is important to consider its weaknesses as well. The E&P industry which the company operates in requires large investments. In addition, the Norwegian continental socket is highly taxed compared to other countries. The five forces framework analysis showed a weakness in the industry future growth potential,

leading to increased intern rivalry. It is worth noticing that some of the weaknesses are present for all the companies in the industry or the Norwegian continental socket.

The company has many competitive enhancing opportunities, like expected increase in demand for energy, discussed in the PEST analysis. Also, further digitization can help the firm save money on costs, by increasing efficiency and developing better analytics programs. Additionally, as discussed earlier, the world energy balance is currently undergoing change. The digitization helps the company stay ahead of the change and can therefore develop new products or even new value chains.

The company's threats include renewable energy as a substitute, leading to lower oil prices and lower profit. In addition, fluctuations in currency, interest and oil equivalents can also affect the company's profits. Also, as mentioned earlier, macroeconomic effects from events like pandemics, war or other conflicts is posing a threat to the company. Lastly, threats from intern rivalry is likely to increase in the future as growth potential is decreasing.

In conclusion, the company has a small strategic advantage due to findings in the strategic analysis. The advantage however is decreasing and is expected to disappear over time as the energy balance changes and renewable energy becomes the new standard. The illustration below shows the findings summed up in a table.

Aker BP Strategic Position	Present(2020)	Future
Advantage or Disadvantage	Advantage	Parity
Scope	Small	-

Illustration 18: Aker BP strategic position summary table

6. Presentation of financial statements

In this chapter the firm's financial statements will be explained to get a better understanding of the company's earlier performance and achievements. Also, Aker BP's financial underlying relationships will be mapped. This way I can say something about the company's economic progress the last couple of years, thus giving grounds to project future development of the firm.

There are many advantages with analyzing the reported financial statements. Firstly, the analysis helps see the assets the company possesses and how deeply they are invested in them. Secondly, it uncovers the historic values. Thirdly, the analysis maps relationships between investments and activity. Lastly, it reveals historic changes in cashflow and current payables. The analysis will be based on Aker BP's quarterly and annual reports to shareholders from years 2018 and 2019. Understanding the company's earlier performance is key when trying to foresee the future. The findings from this statement analysis will be used with the strategic analysis from chapter 5 to predict future performance.

6.1 Income statement

In the table below the financial results for the last three years are presented in millions of American dollars. For a more detailed table see Appendix E.

Financial results ($1.000.000)	2017	2018	2019
Operating revenues	2 576	3 711	3 339
+ Other operating income	- 13	39	8
- Exploring costs	- 226	- 296	- 306
- Production costs	- 523	- 689	- 720
- Other operational costs	- 28	- 17	- 35
= EBITDA	1 786	2 748	2 286
- Depreciation	- 779	- 773	- 959
= EBIT	1 007	1 975	1 327
+ Interest income	8	26	16
+ Other financial income	76	142	35
- Interest expenses	- 104	- 120	- 77
- Other financial expenses	- 176	- 218	- 218
Profit before taxes	811	1 805	1 084
+/-Taxes	- 536	- 1 328	- 943
Net profit	275	476	141

Illustration 19: Financial results Aker BP

During the year 2017 the company had over $2.5 billion in operating revenues. This number increased dramatically to $3.7 billion dollars during 2018, which is 44% increase. 2019 had a

minor decrease to $3.3 billion. The exploring and production costs had a price tag of respectively $749 million & $985 million dollars in 2017 and 2018. In 2019 the same expenses had a price tag of $1 billion. The depreciation in the first two years stayed approximately the same at about $775 million, but then in 2019 depreciation and amortization increased to $959 million. This is a 24% increase from previous year. After interest income and expenses, the profit before taxes came in at $811 million in 2017, $1.8 billion in 2018 and $1.08 billion in 2019. When taking away the tax expenses the company's net profits show $275 million in 2017, $476 million in 2018 and finally $141 million in 2019.

6.2 Balance sheet

In the illustration below Aker BP's asset side of the balance sheet at the end of 17', 18' and 2019 is displayed. For more details see Appendix E.

Balance Sheet Assets ($1.000.000)	31.12.2017	31.12.2018	31.12.2019
Goodwill	1 860	1 860	1 713
Capitalized exploration expenditures	365	427	621
Other intangible assets	1 617	2 006	1 916
Totalt intangible assets	**3 843**	**4 293**	**4 250**
Property, plant and equipment	5 582	5 746	7 023
Right-of-use assets	0	0	194
Total tangible fixed assets	**5 582**	**5 746**	**7 218**
Long-term receivables	40	38	27
Long-term derivatives	13	0	3
Other non-current assets	8	10	10
Financial assets	**61**	**48**	**40**
Total non-current assets	**9 486**	**10 088**	**11 508**
Inventories	**76**	**93**	**88**
Accounts recievable	100	163	193
Tax recievables	1 586	11	0
Other short-term receivables	536	360	331
Short term derivatives	3	17	0
Recievables	**2 224**	**551**	**524**
Cash and cash equivalents	**233**	**45**	**107**
Total current assets	**2 532**	**689**	**719**
Total assets	**12 019**	**10 777**	**12 227**

Illustration 20: Aker BP assets (Aker BP ASA, 2020b)

First looking at det ratio between current and non-current assets we see that in 2017, 79% of the firm's assets was categorized as non-current. In 2018 and 2019 respectively, the same ratios were almost 94%. Because of this relatively high ratio of long term non-current assets the firm could potentially find themselves with short term liquidity problems. This is because current

assets tend to take considerably longer than 12 months to convert into cash or cash equivalents (Ross, 2020). The total assets of the company in 2017 was $12019 million but decreased to $10777 million in 2018. This was due to a large decrease in the tax receivables account, as well as a small decrease in cash and cash equivalents. In end of 2019, the total asset count had reached $12227 million because of an increase in the "property, plant and equipment" account. Illustrated below is the equity and liabilities side of the balance sheet for Aker BP from 2017-2019. See Appendix E for more details.

Balance Sheet Equity and liabilities ($1.000.000)	31.12.2017	31.12.2018	31.12.2019
Share capital	57	57	57
Share premium	3 637	3 637	3 637
Other equity	-706	-704	-1 327
Total Equity	**2 989**	**2 990**	**2 368**
Deffered taxes	1 307	1 800	2 235
Long-term abandonment provision	2 776	2 448	2 645
Provisions for other liabilities	152	108	0
Long-term bonds	622	1 110	1 631
Long-term derivatives	14	26	0
Long-term lease debt	0	0	203
Other interest-bearing debt	1 271	908	1 429
Non-current liabilities	**6 141**	**6 400**	**8 144**
Trade creditors	33	106	145
Short-term bonds	0	0	227
Accrued public charges and indirect taxes	28	25	26
Tax payable	351	552	361
Short-term derivatives	8	9	43
Short-term abandonment provision	268	105	143
Short-term interest-bearing debt	1 496	0	111
other current liabilities	704	591	660
Current liabilities	**2 888**	**1 387**	**1 715**
Total liabilities	**9 030**	**7 787**	**9 859**
Total Equity and liabilities	**12 019**	**10 777**	**12 227**

Illustration 21: Aker BP equity and liabilities

The first thing to notice is the equity, which remained approximately the same in 2017 and 2018. Then in 2019, Aker BP's equity took a small hit and decreased to $2368 million (2990). This was due to a large decrease in the account "other equity". This could be available for sale (AFS) stocks or other ownership representing securities. The reason for the decrease could be change in market value for these AFS stocks (Roychowdhury, 2004). Next, notice long term and short-term bonds which respectively increased by $1009 and $227 from 2017-2019. This may be the financing for the large increase in the account "property, plant and equipment"

described earlier. Lastly, short-term interest-bearing debt decreased from $1496 million in 2017 to $111 million in 2019. This is expected considering that normally short-term debt is not bearing interest like long term debt usually does.

7. Risk analysis

The risk analysis is done by studying the relationship between two accounting figures, giving a good insight in profitability and underlying risk. The risk analysis is divided into two sections: Short-term liquidity risk and Long-term solvency risk. The results are then compared against an industry average to help determine risk associated with the company. The risk result is a measurement for probability that Aker BP will be able to pay their debt to creditors and can later be used as a guide to find the company's credit risk premium.

7.1 Risk

The concept of risk is often divided into two: Systematic and unsystematic risk (Damodaran, 2012). The first affects the whole market and is often called undiversifiable risk. As the name suggests there are no way to diversify a portfolio to avoid it, and it is often highly unpredictable. Unsystematic risk, or diversifiable risk, is the risk associated with a company or industry. Diversifying your portfolio in multiple stocks/industries can dramatically reduce or even completely avoid this type of risk. From the standpoint of an investor the most relevant risk is the systematic risk since a perfect diversified investor does not experience unsystematic risk. However, the market is not perfect. Imperfections like asymmetric information and transaction costs can and will cause problems with full diversification. Because of this, the analysis will also include a part on unsystematic risk.

7.2 Analysis of short-term liquidity risk

In this first part of the analysis we are going to examine whether Aker BP has enough funds to pay incoming claims. Any short-term payment problem resulting in bankruptcy will also be visible in this analysis. The analysis models included is: Current ratio, Acid-Test Ratio & Interest Coverage Ratio.

Current Ratio

This ratio tests the ability to make payments on short-term obligations. The duration may be up to one year in the future. The formula consists of the most liquid assets divided by short term debt (Kenton, 2020a):

$$Current\ Ratio = \frac{Current\ assets}{Current\ liabilities}$$

The ratio indicates financial situation in terms of short-term debt. A number between 0 and 1 indicates high debt compared to liquid assets. Damodaran (2012) suggests that such a result

will involve liquidity risk. He also suggests a rule of thumb that ratios above 2, and generally above the industry average, is satisfactory. However, too high ratio indicates a company with too much working capital, which also indicates unused potential.

Acid-Test Ratio

The acid-test ratio analyzes balance sheet data to uncover any lack of short-term assets for its payables. This test may be more useful than the current ratio as it ignores illiquid assets like the inventory (Hayes, 2020a). The formula for acid-test ratio is as follows:

$$Acid\ Test = \frac{Cash + AR + Marketable\ Securities}{Current\ Liabilities}$$

Where,

$$AR = Accounts\ receivable$$

There is also a rule of thumb here, which states that the ratio should be 1 or above, meaning that the most liquid assets can cover for the short-term debt if needed.

Interest Coverage Ratio

This final ratio measures ability to pay interest expenses with operating profit as the numerator. The lower the number, the harder it is to pay interest expenses. The equation is formulated below (Hayes, 2020b):

$$Interest\ Coverage\ Ratio = \frac{Earnings\ before\ interest\ and\ taxes}{Interest\ expenses}$$

The satisfactory ratio is normally 2 or higher, but in some cases beating the industry average is sufficient. Other financial expenses are not included in the denominator, only pure interest expenses.

Aker BP short-term liquidity risk results

The findings are illustrated in the table below. All industry average ratios are gathered from (readyratios.com, 2020).

Model:	Aker BP	Satisfactory ratio	Industry average
Current Ratio	0.42	>2	1.54
Acid-Test Ratio	0.37	>=1	1.08
Interest Coverage Ratio	17.33	>2	19.90

Illustration 22: Short-term risk analysis results

Firstly, the current ratio for Aker BP is very low at 0.42. It is under the satisfactory ratio, and in addition far below the industry average of 1.54. This indicates possible liquidity problems on short term, because Aker BP has more liabilities than convertible liquid assets on short terms. Secondly, the acid-test ratio for Aker BP resulted in 0.37. Since this is far below the satisfactory ratio, and also below the industry average, thus confirming the result from current ratio: Aker BP's short-term liquidity is considered very weak. There could be many reasons for this, and among others the purchase of Hess Norge in 2017. In conclusion, Aker BP does not have enough means to take care of liabilities. Lastly, the interest coverage ratio for Aker BP was measured at 17.33. This is well above satisfactory levels, but lower than the industry average. This high ratio could be due to rising oil prices during 2019, resulting in higher operating profits. Even though Aker BP is below industry average, which may be due to Equinor lifting the average, the coverage ratio is considered good.

7.3 Analysis of long-term solvency risk

The purpose of this analysis is to determine if the business has capacity in terms of funds to cope with Any future loss. The solvency risk of a company refers to the risk of not being able to meet maturing obligations. The robustness of a company depends heavily on the ratio between equity and assets since the equity is the firm's buffer when losing money. The analysis will include the following two measurements: equity ratio & return on capital employed.

Equity ratio

This ratio measures the relationship between total capital and equity. The main purpose of this analysis is to determine the company's degree of resilience against future loss. Equity works as a safe buffer for loss and therefor a higher equity ratio means greater robustness. The equity ratio is calculated as follows:

$$Equity\ ratio = \frac{Equity}{Total\ capital}$$

There exists no standard satisfactory ratio between equity and total capital. However, comparing the results with the industry average here as well seems reasonable, with the assumption that "bigger is better". In addition, the ratio is also advantageous if it is big enough to handle predicted future losses, given its risk profile.

Return on capital employed

As the name suggests, this measurement explains the return on employed capital, and is an important consideration for the company's financial strength. In its core, it measures the profitability of the company, and when compared with the industry, the results show how good Aker BP is as an investment object. The formula for return on capital employed (ROCE) is (Kenton, 2020b):

$$ROCE = \frac{EBIT}{Capital\ Employed}$$

Where,

$EBIT = Earnings\ Before\ Interests\ and\ Taxes$

$Capital\ Employed = Total\ assets - Current\ liabilities$

Like in the equity ratio, there exists no magic satisfactory number. But on the other hand, it should always be higher than any interest rate one could have achieved by putting the money in the bank. Therefore, the only way to conclude whether the result is good or bad is by comparing with the rest of the industry.

Aker BP long-term solvency risk results

The findings are illustrated below. The industry average is estimated using data from the four competitors mentioned in chapter 2: Lundin, DNO, Equinor & Vår energi.

Model	Aker BP	Industry average
Equity ratio	19,4 %	28,8 %
Return on capital employed	12,6 %	15,7 %

Illustration 23: long-term solvency risk results

From the illustration we observe that Aker BP has a lower equity ratio than the industry on average. The implies that Aker BP has a weaker resilience against future loss than its competitors. This lower equity ratio could potentially be explained by the enormous bond that Aker BP issued in 2019. Further, the return on capital employed is also a bit short of the industry average, with a difference of 31 basis points. In conclusion, both Equity ratio and ROCE is not adequate. Aker BP's financial position is considered to be unbeneficial.

8. Future cashflows

In this chapter an estimation of Aker BP's future cashflow will be presented. The findings from the balance sheet and financial results in last chapter is interesting but estimating the future numbers from these is inexpedient. Instead the estimation will be based on predictions for future oil price fluctuations as well as production volumes for Aker BP, because both these factors directly impact the profitability of the company.

Aker BP's operating income can be divided into oil price and production volume. Low oil prices will negatively impact the firm's income. Historically the oil price and the price of natural gas has been proven to correlate, which is assumed that it does in the future as well.

The future cashflow projections will be based on information gathered through the financial statement- and strategic analysis from previous chapters. These analyses have presented details of how the firm probably will perform in the future.

8.1 Choice of budget horizon

The budget horizon is defined as the time left for the firm to enter steady state (Kaldestad & Møller, 2016). At this point the firm will no longer earn profits that exceeds that of the market. The length of this period is dependent on both the company and the industry. Firstly, the petroleum industry is a cyclical industry which argues for a horizon longer than 5 years. Secondly, in chapter 2 and 3 we found that many fields may have huge undiscovered resource potential, and a big possibility of discovering entirely new fields in the North Sea. This also speaks for a longer budget horizon. Lastly, the strategic analysis showed a possible shift in the energy sector from fossil fuel to renewable energy. This will lower Aker BP's profitability, and argues for a shorter budget horizon. The choice of budget horizon is set to 7 years based on the presented facts.

8.2 Oil price in the future

Earlier it was argued that oil price was one of the biggest factors for operating income variation. Now I will try to estimate future oil price changes, to use in the cashflow forecast. To get the best result I have chosen to use the oil price predictions from the world bank. Short term predictions should be accurate but forecast far into the future is associated with extreme uncertainty. Because of this I will only use oil forecast for 5 years into the future. In light of the ongoing COVID-19 pandemic I acknowledge that the putative oil price movements may shift in a disadvantageous direction. Nevertheless, I will use the anticipated predictions for oil prices

from before corona outbreak, and instead do a summary in the end of chapter 12. The summary will reflect consequences and the effects of first part of 2020 on the valuation result.

The world bank predicts average oil prices for 2020 to be $58 per barrel (World Bank, 2019). This is a $2 decrease from 2019. In 2021 the average Brent oil price is predicted to rise by $1.1 to $59.1. The same increase for 2022 as the average oil price is predicted to hit $60.2. Going in to 2023 the world bank is forecasting a $1.2 increase to $61.4. Lastly, in 2024 the average Brent oil price is predicted to hit $62.5. Detailed graphs are included in Appendix A.

8.3 Future production volume

Including oil price, future production volumes was argued to impact the changes in operating income. Predicting the future production volume for Aker BP is two-sided: Firstly, an estimation of remaining resources in existing fields, and how much they can produce. Secondly, an estimation of successful exploration missions in the future, including size and successful production. It is reasonable to assume that the company will find new reservoirs in the future. As mentioned in chapter two Aker BP was operator in 7 fields in 2018, and it is expected that they continue to operate these fields in the future (Aker BP ASA, 2020f). The following revenue and cash flow predictions are based off of Aker BP's own reports (Aker BP ASA, 2020c).

8.4 Short term income from operation

On short term I consider expected production volumes and the oil price to be the two biggest factors for operational income. This is because there are currently no expectations for mergers or acquisitions in the immediate future. As mentioned, the world bank is forecasting an average Brent oil price of $58 per barrel. This is two dollars per barrel less than 2019 and is driving the revenues down. Despite this anticipated 3.3% decrease in oil price, the firm is assumed to increase its production volume by almost 20% in 2020 due to starting production in the third biggest field in the Norwegian history- Johan Sverdrup. The estimated production of barrels of oil equivalent per day is 220.000 in 2020, up from 165.000 in 2019. This increase will not only mitigate the loss from decreased oil prices but also raise the operational income in 2020 by approximately 16% compared to 2019. Considering this I will use 16% increase in operating revenues in 2020E. The following year the oil price is expected to average $59.1 (World Bank, 2019). This is a 1.9% increase and adding this to the anticipated production decrease by 9%, we get an approximated 11% decrease in operational income in 2021, as seen in illustration 24.

8.5 Medium term income from operation

In the year 2022 the world bank forecasts an average Brent oil price of $60.2. This is again a 1.9% increase. The estimated increase in operating revenues is set to positive 9% in illustration 24 below, due to an anticipated increase in production of 7%. In 2023 Aker BP originally anticipated to start production in a new field called "NOAKA", which is estimated to contain about 80-200 million barrels of oil equivalent. Due to recent problems and arguments with E&P company Equinor this project is delayed until late 2025 (e24, 2020), and therefore the anticipated income growth is also delayed. However, Aker BP is still anticipating a big increase in production from 2022 till 2023. Also, the oil price is estimated to increase by 1.9% in 2023, to an average of $61.4 (World Bank, 2019). Considering this, and the belief that all the previous investment cost will finally pay of, the estimate for increase in operating income is set to 23% in illustration 24. In 2024 the average oil price is estimated to increase to 62.5 (1.8%), and the predicted production increase is anticipated to be around 19%. Therefore, the income from operation is set to increase with 21%. Lastly, year 2025 is estimated to be a big year for the firm. As mentioned above it is set to unveil its newest field "NOAKA". The oil price is hard to estimate so far into the future and is therefore set to be equal to the year before. The income however is believed to come gradually over time, but the production cost however is increasing much.

8.6 Long term income from operation

In 2026 it is expected that the company has entered "Steady State", which means the firm will grow into eternity with the average rate of the economy. No company can outgrow the economy in the long-term perspective. The growth can therefore be no bigger than expected real growth plus inflation. The real growth of the economy has historically been around 3.3% (Regjeringen, 2018). The inflation in Norway is close to two percent each year (Norges Bank, 2018). Based on the mentioned assumption the growth in steady state can therefore not be bigger than 5.3%. Since the Exploration and production industry is getting hard competition from the renewable energy sector a smaller growth is expected. An appropriate growth is measured to be 3.8%.

Financial results ($1.000.000)	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Operating revenues	3 873	3 447	3 757	4 621	5 592	5 592	5 787
+ Other operating income	11	11	12	13	14	15	15
- Exploring costs	- 345	- 304	- 328	- 345	- 372	- 428	- 436
- Production costs	- 922	- 839	- 856	- 907	- 1 016	- 1 219	- 1 256
- Other operational costs	- 40	- 39	- 40	- 41	- 44	- 50	- 51
= EBITDA	2 577	2 276	2 545	3 342	4 174	3 909	4 059
- Depreciation	- 1 150	- 1 357	- 1 439	- 1 309	- 1 453	- 1 497	- 1 572
= EBIT	1 426	919	1 106	2 033	2 720	2 412	2 487
+ Interest income	18	20	21	22	24	27	28
+ Other financial income	39	45	46	49	51	55	56
- Interest expenses	- 88	- 88	- 92	- 94	- 97	- 103	- 106
- Other financial expenses	- 244	- 247	- 252	- 264	- 275	- 286	- 294
Profit before taxes	1 151	648	829	1 745	2 424	2 105	2 171
+/- Taxes	- 897	- 505	- 647	- 1 361	- 1 891	- 1 642	- 1 693
Net profit	253	143	182	384	533	463	478

Illustration 24: Estimation of future financial result

The illustration above shows rough estimates in million dollars. Check the Appendix B for a more detailed table with numbers in 1000 dollars and percentage change included.

8.7 Future cashflow to firm

The forecast for free cashflow to firm is presented in illustration 25 below. It is extremely difficult to predict future changes in working capital and investments, but the numbers included in the table are gathered from Aker BP's own reports and seems to be reasonable considering the company, the business and the market position they currently hold. In 2020 the investments are predicted to be approximately 900 million dollars, due to starting phase of the anticipated "Noaka" field. These investments are slowly raising until 2023 and have a big jump in 2024 before it will drop considerably after launch in 2025 towards 2026 (Aker BP ASA, 2020c).

Cashflow to firm (1.000.000	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Net profit	253	143	182	384	533	463	478
+ Depreciation	1 150	1 357	1 439	1 309	1 453	1 497	1 572
+/- Δ Working capital	150	150	150	100	50	50	20
- Investments	900	1 000	1 100	1 110	1 400	1 150	750
CFF	654	650	671	683	637	860	1 319

Illustration 25: Estimation of future cashflow to firm

Aker BP's report indicate a drop in cashflow from 2020 to 2021, following a growth towards 2023. A new drop from 2023 to 2024 is anticipated before a huge increase from 2024 to 2026. A more detailed illustration of this is included in Appendix B.

9. Required rate of return

The required rate of return reflects the expected rate of return an owner would have on his money in an alternative investment with the same risk. The required return is used to discount future cashflows to present value.

9.1 Estimation of Beta (β).

For publicly traded companies the beta can be estimated using historical data. By running a regression with the return of Aker BP as the dependent variable, and the return of Oslo Børs all share index (OSEAX) as the independent variable, one can estimate the beta of the equity. The slope of the trendline indicates the beta. The analysis, which can be found in Appendix C, contains daily data from March 13, 2018 to February 4th, 2020. This is a total of 467 observations. The reported R-squared (R^2) is 62.2%, which in turn means that 62.2% of the variation in the model is explained by the variation in the independent variable.

The coefficient of the return on OSEAX is **2.02**. This is the unadjusted beta of the company's equity. This implies that if the Oslo Børs All share index goes up (down) by 1%, historically, Aker bp will go up (down) by 2.02%. The Aker BP stock is therefore more exposed to systematic fluctuations than the OSEA index. This is a high beta but considering that it's an oil company listed on OSX its reasonable argue that this estimate is close to the true beta.

Beta estimations tend to vary over time due to estimation error. In addition, Berk and DeMarzo argues that the beta tend to progress towards 1.0 over time (Berk & DeMarzo, 2006). Because of this, many investors use the Blume method to adjust their beta calculations:

$$\beta_a = \frac{2}{3} * \beta_{est} + \frac{1}{3}$$

Where,

$\beta_a = Adjusted\ beta$

$\beta_{est} = Unadjusted\ estimated\ beta$

Using this method gives the following adjusted beta:

Beta	Value
Unadjusted	2,02
Adjusted	1,68
Industry US	1,48
Industry EU	1,53

Illustration 26 shows calculated beta for Aker BP as well as average industry beta for both Europe and the United States (Damodaran, 2020). These numbers where included to give perspective and based on these I am confident that my estimations are close to the true beta.

9.2 Estimation of Cost of Equity

To find the discount rate used to value the company later we first need to estimate the required rate of return on equity. We can do this by using the following CAPM formula (Damodaran, 2012):

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

Where,

$R_e = \text{Cost of equity}$

$R_f = Risk\ free\ rate$

$\beta = Beta\ for\ company's\ stocks$

$R_m = Expected\ return\ in\ the\ market$

The risk-free rate is the theoretical interest expected from a zero-risk investment. I have chosen this to be equal to the 5-year government bond, due to this being a similar horizon to my future predictions and almost zero risk. As of today that bond yields **1.28%** (Norges Bank, 2020).

The market risk premium is defined as the rate of which the market portfolio outperforms the risk-free rate. Considering that Aker BP operates on the Norwegian continental shelf only, I think it is reasonable to use a market risk premium for Norway. PWC and the Norwegian society of Financial Analysts (NFF) has currently conducted research for nine consecutive years to find the yearly market risk premium for the Norwegian market. Based on their long experience I am confident that the estimate is close to the true unobservable risk premium. Contingent on answers from 148 of NFF's members, PWC argue that the risk premium for the Norwegian market is unchanged at 5.0% for 2019 (PWC, 2019). Using these numbers, we find the return on equity to be:

$$1.28\% + 1.68 * (5\%) = \mathbf{9.68}\ \%$$

9.3 Estimation of Cost of Debt

Aker BP's debt is a combination of bank facilities and bonds with different coupons and maturities (Aker BP ASA, 2019). The table below is including these bonds and showing both individual coupon rates as well as a weighted average of all.

Year	Name	Size	Percentage
2013-2020	DETNOR02 (LIBOR +6,81%)	kr 1 900 000 000.00	≈8.69
2017-2022	USD 6% Senior Notes	kr 4 000 000 000.00	6 %
2018-2025	USD 5.875% Senior Notes	kr 5 000 000 000.00	5.875 %
2019-2024	USD 4.75% Senior Notes	kr 7 500 000 000.00	4.75 %
	Total	kr 18 400 000 000.00	
	Average cost of debt	**5.73 %**	

Illustration 27: Aker BP's long-term interest-bearing debt summary table

I do consider this Average to be unrealistically high to use for cost of debt because the newest debt has more predicting power of what the debt would cost if they were to issue new bonds today. Calculating for yield to maturity for the current bond gives **4.63%**. This is arguably a more reasonable cost for their debt considering it is the newest and most traded. This estimate will be used in the following WACC calculation.

9.4 Estimation of Weighted Average Cost of Capital (WACC)

In order to estimate this value, we need the value for both the company's debt and equity. Do keep in mind that for equity this is the market value and not the value reported in the balance. The firm had a stock as of first business day 2020 (02.01.2020) equal to NOK 289. Multiplying this with the company's 360 113 509 outstanding shares gives a market value of equity = **104.072.804.101** NOK. The market value of debt however is calculated as the sum of long term and short-term debt found in the annual report. This gives a market value for debt of **7.787.241.000** NOK. The corporate tax rate for petroleum companies in Norway is 78%, as discussed in chapter 3.

$$WACC = \frac{E}{E + D} * R_e + \frac{D}{E + D} * R_d * (1 - t_c)$$

Where,

$E = Market\ value\ of\ the\ firm's\ equity$

$D = Market\ value\ of\ firm's\ debt$

$R_e = Cost\ of\ equity$

$$R_d = Cost\ of\ debt$$

$$t_c = Corporate\ tax\ rate + special\ petroleum\ tax$$

WACC is calculated to be:

Weighted average cost of capital for AKER BP	
Cost of Equity (Re)	9,68 %
Cost of Debt (Rd)	4,63 %
Market value of Equity (E)	104 072 804 101
Market value of Debt (D)	7 787 241 000
Corporate tax	78 %
WACC	**9,08 %**

Illustration 28: Weighted average cost of capital (WACC)

10.   Fundamental valuation

The fundamental valuation is built on the foundation of the strategic analysis and is fueled by the future cash flow projections from chapter 8. The framework for the valuation was introduced and discussed in chapter 4. The result of the appreciation is built on my assumptions throughout this thesis and can deviate from the current stock price for Aker BP on Oslo Stock Exchange. The discrepancy forms the basis for an action strategy which will be further discussed in the conclusion in chapter 12.

10.1   Terminal value

"Terminal value (TV) is the value of a business or project beyond the forecast period when future cash flows can be estimated. Terminal value assumes a business will grow at a set growth rate forever after the forecast period." - (Akhilesh, 2019). The terminal value is calculated using the following formula:

$$Terminal\ Value = \frac{FCF_{n+1}}{WACC - g}$$

Where,

$FCF_{n+1} = Free\ cashflow\ to\ firm\ in\ next\ period$

$WACC = Weighted\ average\ cost\ of\ capital$

$g = Terminal\ growth\ rate$

When entering our results from previous calculations the terminal value is estimated to be:

Terminal value ($1.000)	
FCF $_{n+1}$	1 369 638
WACC	9,08 %
Terminal Growth Rate	3,8 %
Terminal Value	25 954 718

Illustration 29: Terminal Value (TV)

10.2   First value estimate of Aker BP

When using the free cashflow method the value of the equity is measured by discounting future cashflows with the required rate of return to the power of time. In the illustration below the future cashflows are included and divided by the discount factor. The terminal value from earlier is also discounted and summed with the present value of all the cashflows. This

"Enterprise value" includes all the debt and must therefore be subtracted to find the value of equity. The value is simplified to $1000 and must be converted to NOK. The Dollar NOK conversion as of 02.01.2020 was 8.7919. This gives a value per share (NOK) of **kr 219.7**.

Value of firm ($1.000)	2019	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Cashflow		653 541	650 046	671 429	683 426	636 756	860 242	1 319 497
Discount factor		1,091	1,190	1,298	1,416	1,544	1,684	1,837
Present value		599 156	546 358	517 368	482 790	412 389	510 765	718 249
Terminal value	25 954 718							
PV of TV	12 952 391							
PV of FCF	3 787 076							
Enterprise value	16 739 466							
Net interest bearing debt	7 742 297							
Value of Equity	8 997 169	($1.000)						
(*) 1000$	8 997 169 190							
Shares outstanding	360 113 509							
Value per Share ($)	$25,0							
Dollar to NOK conversion (02.01.2020)	8,7919							
Value per share (NOK)	kr 219,7							

Illustration 30: Value of Aker BP's Stocks

The results from the first valuation show an estimated fair price for Aker BP of NOK 219.7 as of 01.01.2020. The stock price at first trading day, 02.01.2020 was NOK 289,-. This could indicate that the stock is being overvalued by the market. But before we can conclude with this statement, we need to supplement with relative valuation to support the findings of the fundamental valuation as well as a sensitivity analysis.

10.3   Sensitivity analysis

The fundamental valuation involves a great deal of uncertainty. In essence, the value estimate is a point estimate based on the expected trend in all budget drivers. The purpose of analyzing sensitivities is to examine the effect of changes in central parameters in the fundamental valuation. In addition, the estimated value is based on all publicly accessible information. If any new information arrives, the value estimate will change accordingly. The procedure of analyzing sensitivities involves tweaking key budget- and value drivers, to identify the extent of changes in the value estimate. It is important to note that while tweaking a variable, all other variables are kept constant.

Changes in revenues

The first variable to tweak is expected revenues generated. This variable is affected by both the ability to produce and sell oil equivalents, and the demand, and there for the price of the oil equivalents. By making four new scenarios, each altering the revenues by respectively 7.5%,

5%, -5% & -7.5%, I can observe the effect on estimated share price. The results from the analysis is illustrated below. A more detailed table and explanation is included in Appendix D.
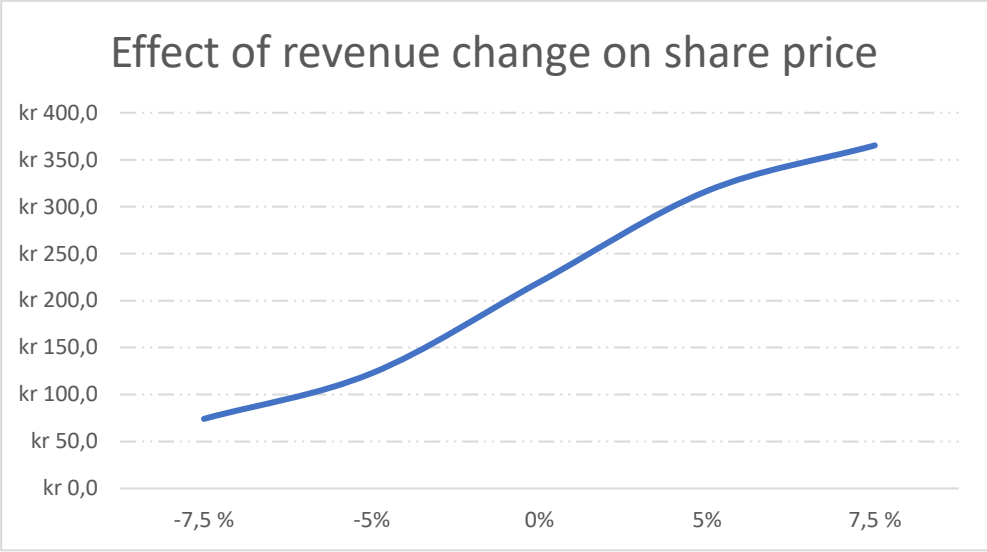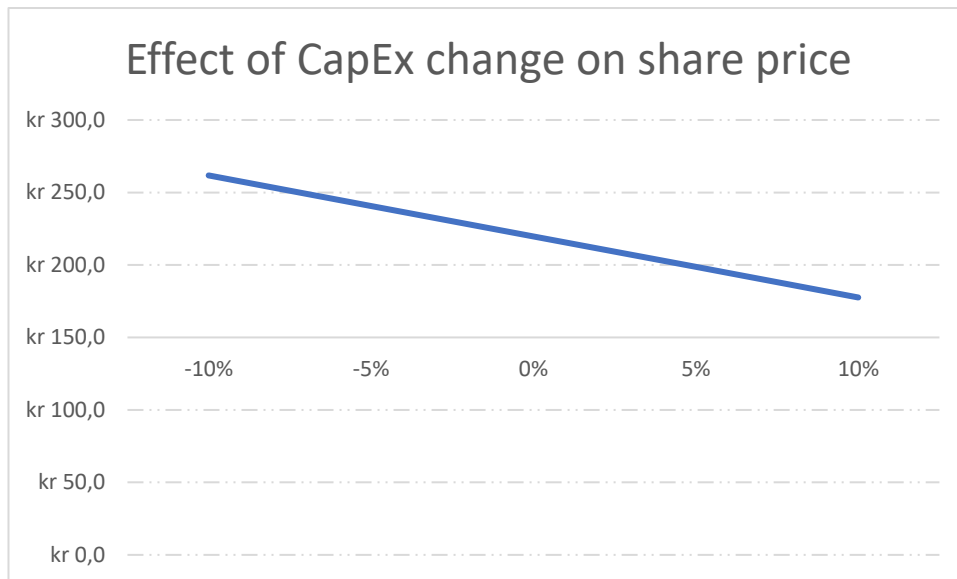

Illustration 31: Effect of revenue change on share price (Own creation)

The results show that a decrease in future revenue will influence the estimated share price very strongly. For a decrease of 75 basis points the estimated share price falls by 66.3%, from 219,7 to NOK 74.1. Likewise, for a 75 basis point increase the estimated share price rises 66.3%, to NOK 365.2,-. Similarly, for a 5% increase and decrease in revenues the expected share price rise and fall respectively 44.2%. In conclusion, the volatile oil prices, which influences the revenues, is considered to be a significant risk element for the company. Future revenues have a strong and positive relationship with the estimated share price.

Changes in capital expenditures

The second variable to tweak is cost of production. Once again, I will synthetically make four extra scenarios with respectively 10%, 5%, -5% & -10% change in capital expenditures. Then I will observe and plot the effect on estimated share price. The results are illustrated below. A detailed table will be included in Appendix D.
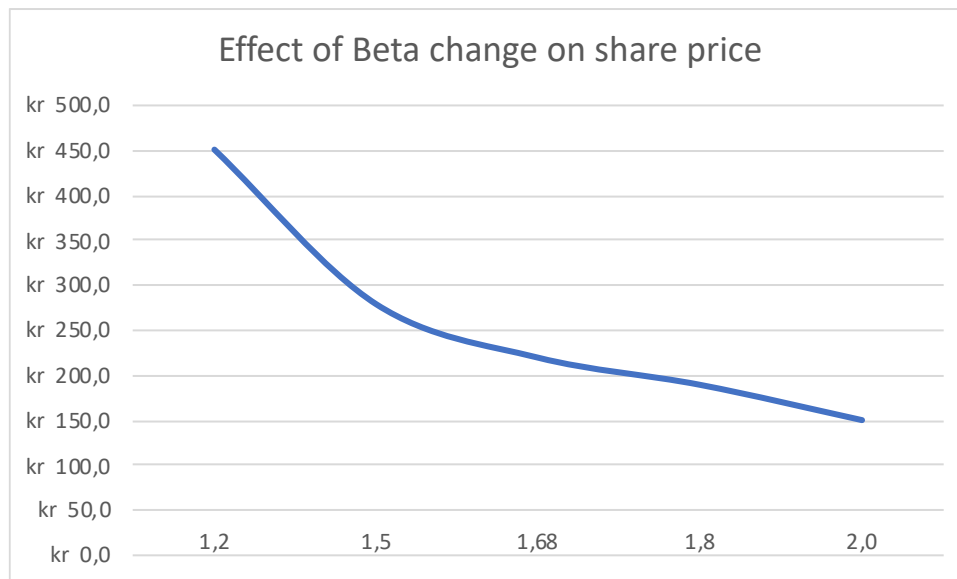
Illustration 32: Effect of CapEx change on share price (Own creation)

The illustration shows that changes in capital expenditures have a negative impact on the estimated share price of the company. We can observe that a 10% increase will result in a price of the company's stocks of 177.6. In the opposite end, a 10% decrease in expenditures will result in a share price of NOK 261.8 The difference between these two extreme scenarios is 84.2 Norwegian kroner. Because of this, the future capital expenditure is assumed to be very important for the company, and a critical risk element. Nevertheless, when comparing with revenues, capex is still less influential.

Changes in Beta estimation

The beta estimate was used in the process of finding the cost of equity for Aker BP. Now I will study the effects on the share price when altering the beta estimation. The beta I found to be reasonable in chapter 9, after adjusting, was 1.68. In this analysis I will include the following beta values: 1.2, 1.5, 1.8 & 2. The results are included in the table below. For a more detailed table see Appendix D.
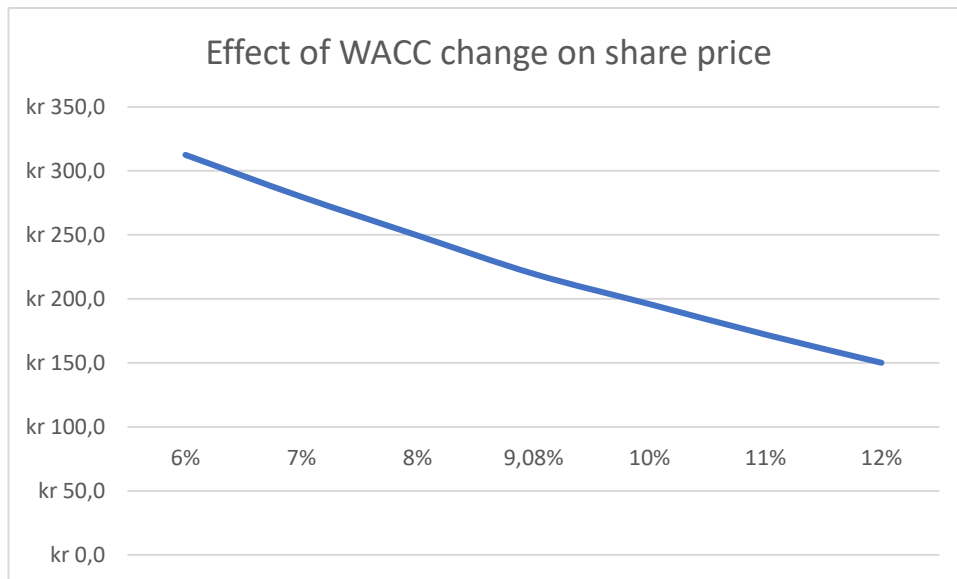
Illustration 33: Effect of Beta change on share price (Own creation)

As can be seen on the graph above the beta estimate has a strong negative relationship with the share price. A small change in beta will result in a significant change in the estimated stock price for Aker BP. First, with a beta of 1.2, the price estimate is relatively high at NOK 451.6. Second, the estimated share price is equal to 279.3 when using beta value 1.5. Third, the value of the company's stocks is considered to be 189.4 with a beta value of 1.8. Lastly, when using a beta value of 2, the company's stocks is worth NOK 150.1. In conclusion, the beta estimate is considered highly sensitive, and can have drastic effect on the predicted share price. However, considering the relative change in the beta value versus revenues, the beta value has less affecting power.

Changes in Weighted average cost of capital (WACC)

The weighted average cost of capital is used twice when calculationg net present value of the company's equity. First it is used as a discounting factor for the cash flow to firm. Second it is used to calculate the terminal value for the company's growth into eternity. This analysis is conducted to study the effects of change in WACC on the share price. The illustration below is included for a visual representation. For more details see Appendix D.

Illustration 34: Effect of WACC change on share price (Own creation)

The graph above illustrates the negative effects that changing the WACC has on the share price. Small changes in the Weighted average cost of capital value is considered to have a big impact on the estimated values of the company's stocks. With a WACC of 6%, which is 3,08% less than what I found to be reasonable in chapter 9.4, we get an estimated share price of NOK 312,6. On the other extreme end, with a WACC of 12%, the estimated value of the company's stocks is 150,1 Norwegian kroner. In conclusion, like all the other variables, the WACC estimate is considered a significant risk element for the firm. This is because small changes in these uncertain variables can cause big changes in the price estimate. This analysis was done to uncover the sensitivities in the estimates. Despite these discoveries, I am confident that my assumptions are sensible and that the estimates are close to the true unobserved values. The next chapter will supplement with relative valuation in order to adjust the first value estimate.

11.   Relative Valuation

The main purpose of doing a relative valuation is to support the findings from the fundamental valuation, and to check if the estimated fair price seems reasonable. Conducting a comparison of different multiples with other peers (companies) with similar size, structure and in a similar sector is common practice in the field of valuation, when trying to spot price anomalies. A reason for the popularity among relative valuation is that relative valuation required less assumptions to be completed and it is also less time consuming. Even though multiple based pricing is easy and intuitive, there are many pitfalls to avoid (Damodaran, 2002), such as:

- Ignoring key variables (Risk, growth potential, cash flow, etc.) can lead to inconsistent estimates of value.
- Assets valued by relative valuation tend to be to high (low) if the market is overvaluing (undervaluing) comparable assets.
- Relative valuation has a weakness in being heavily exposed to value manipulation. A biased analyst can easily justify any value for an asset or firm if he is able to choose comparable firms and multiples.

11.1   Multiples and comparative companies

Damodaran (2002) argues relative valuation has two components:

1. **Standardized prices.** By converting prices into multiples assets can be valued on a relative basis.
2. **Similar firms.** Controlling for differences such as growth potential, risk and cash flows is a key element in the eyes of Damodaran (Damodaran, 2002).

Since both outstanding shares and the value of the firm's equity affects the stock price, it is impossible and misleading to compare firms based on their observed stock price. A process of standardizing values is important to be able to compare "similar" firms. The Figure below shows the selected multiples (standardized values) that will be used to compare similar companies with Aker BP, as well as an instruction of the process.
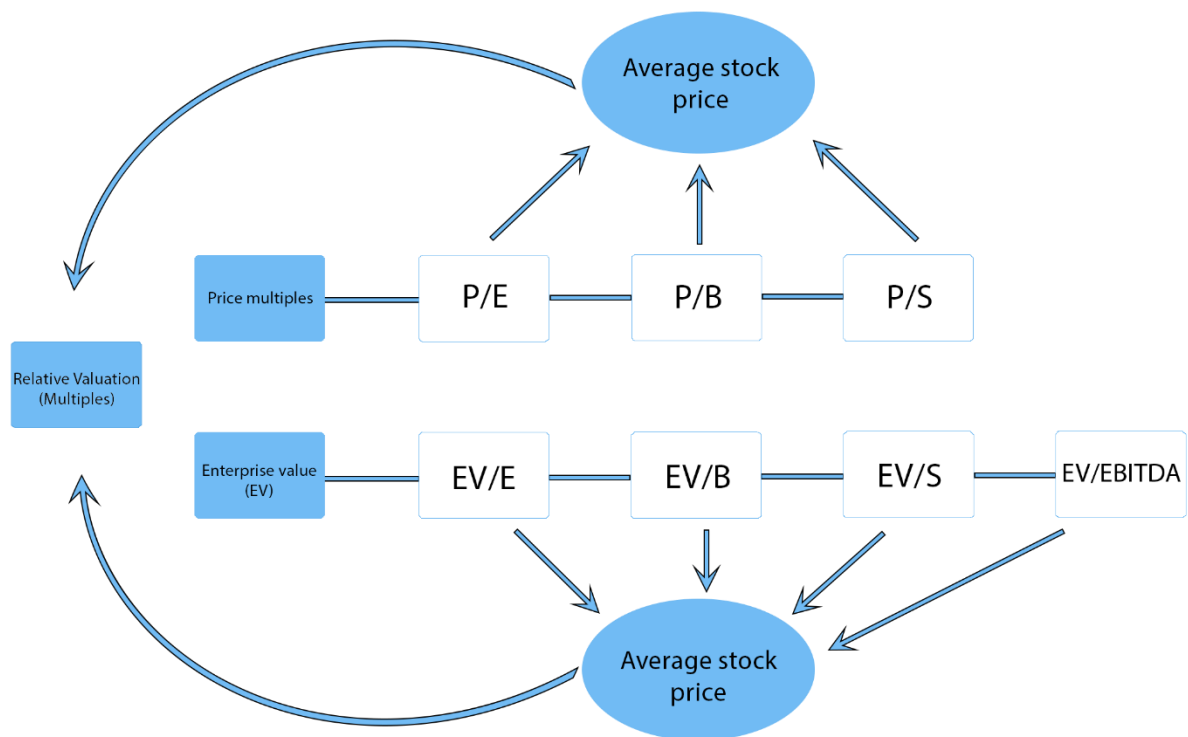
Illustration 35: Multiples and procedure (Own creation)

Firstly, the price multiples and the enterprise value multiples will be calculated for each company, and an average will be measured individually. Secondly, an estimate of the stock price for Aker BP with the average multiple will be computed. Lastly, these averages will be added together for a final value estimate which will be used later in addition to the fundamental value estimate.

Choosing similar companies can be a difficult task, because even though two companies are in the same business and roughly equal in size, doesn't mean they have the same risk, growth potential or cashflows (Damodaran, 2002). While keeping this in mind I have put effort into finding the best match for comparable firms. These are illustrated below.

Illustration 36: Comparable companies (Own creation)

11.2   Price multiples

The first set of standardized values applied includes three popular price multiples. These key figures show the ratio of the stock price to respectively earnings, book value and sales. They give an indication of the company's value in relation to some important factors. The ratios are estimated in the following manner, and results are included in the table below:

$$\frac{P}{E} = \frac{Stock\ price}{Earnings\ per\ share}$$

$$\frac{P}{B} = \frac{Stock\ price}{Book\ value\ per\ share}$$

$$\frac{P}{S} = \frac{Stock\ price}{Sales\ per\ share}$$

Company	P/E	P/B	P/S
Aker BP	84.3	5.0	3.5
Equinor	36.8	1.6	1.1
DNO	18.5	1.1	1.3
Lundin	13.0	-*	4.6
Average	**38.1**	**2.6**	**2.6**
Stock price	**130.8**	**148.6**	**214.8**
Average stock price	**kr 164.7**		

*N/A due to negative equity in report

Illustration 37: Price multiple results

The table shows that Aker BP is above average in all three price multiples. This could be a confirmation of overvalued asset found in the fundamental analysis. I want to again underline the fact that these companies have different capital structures, so this does not necessarily mean

that the firm is overpriced. To check even further, enterprise value (EV) multiples will be used next.

11.3   Enterprise value multiples

These multiples compare the ratio of enterprise value to respectively earnings, book value, sales and earnings before interest, taxes, depreciation, and amortizations (EBITDA). The enterprise value of a firm includes Market capitalization, which is outstanding shares multiplied by market price, and both long and short debt but deducted all cash and cash equivalents. Since estimating the market value of debt is very difficult, book value will be used. The formula for the multiples is shown below:

$$\frac{EV}{E} = \frac{Enterprise\ value}{Earnings\ per\ share}$$

$$\frac{EV}{B} = \frac{Enterprise\ value}{Book\ value\ per\ share}$$

$$\frac{EV}{S} = \frac{Enterprise\ value}{Sales\ per\ share}$$

$$\frac{EV}{EBITDA} = \frac{Enterprise\ value}{per\ share\ EBITDA}$$

Company	EV/E	EV/B	EV/S	EV/EBITDA
Aker BP	153.72	9.1188	6.4665	9.4
Equinor	76.281	3.3671	2.2029	6.2
DNO	20.551	1.2083	1.4445	5.9
Lundin	23.294	-*	8.3256	6.7
Average	68.462	4.5647	4.6099	**7.0**
Enterprise Value	234.75	263.85	375.76	396.3
Average enterprise value	317.7			
Average stock price	174.2			

*N/A due to negative equity in report

Illustration 38: Enterprise value multiple results

The results from the enterprise value analysis coincides with the results from the price multiples in that the values for Aker BP is above average in all multiples. This can be yet another proof that the fundamental analysis results are accurate, and that Aker BP is overpriced in the market.

11.4   Summary of relative valuation

The relative valuation was included to increase the ruggedness of the value estimate in this thesis. The average stock price from the relative valuation came in at NOK 164.7 for the price multiples and NOK 174.2 for the enterprise valuation. I have chosen to weight these equally so that the combined value estimate from the relative valuation is NOK **169.5**.

Value Method	NOK	Weight
Price multiples	kr 164.7	50 %
Enterprise Value	kr 174.2	50 %
Combined value	kr 169.5	

Illustration 39: Combined value for relative valuation

12.   Conclusion and trading recommendation

In this master's thesis an estimated stock price for Aker BP has been calculated using a fundamental approach. The calculations are based on underlying strategic and financial analyzes. Furthermore, the estimates are backed up by a comparative value analysis to increase robustness and credibility. Following this, a weighted combined price with a trading recommendation is introduced.

12.1   Weighted value estimate

From chapter 10 a fundamental analysis resulted in a value estimate of 219.7 and in chapter 11 the comparative valuation resulted in an estimated share price of 169.5. Since the fundamental analysis is the main valuation approach and the comparative valuation is associated with more uncertainty, I have chosen to weight the fundamental analysis $\frac{4}{5}$ and the comparative analysis $\frac{1}{5}$. The final value estimate for Aker BP is therefore **NOK 209.6:**

Value method	NOK	Weight	Weighted value
Fundamental	kr 219,7	80 %	kr 175,73
Comparative	kr 169,5	20 %	kr 33,89
SUM			**kr 209,6**

Illustration 40: Final price estimate

12.2   Trading recommendation

The final price estimate of NOK 209.6 as of January 2nd, 2020, is lower than the price in the market as of the same day. This estimate and the current market price are a foundation for giving out recommendations for trading. Normally one would buy stocks that are cheaper than market value and sell if the actual value is more than the price, but as discussed earlier a buy recommendation requires market price to be more than 10% lower than estimated value and vice versa for sell. This is because of the level of uncertainty associated with the estimate and its underlying factors and value drivers.

Based on all previous information a **sell** recommendation is given due to the actual fair price being 27.5% lower than the market price per stock as of 02.01.2020. This implies that investors should sell all or reduce the numbers of stocks in Aker BP ASA until a new recommendation is given.
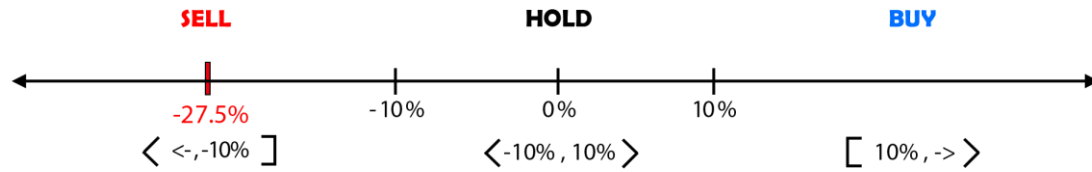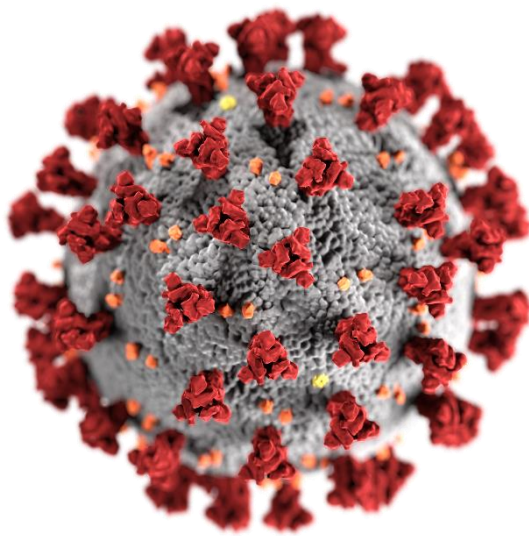
SELL   **HOLD**   **BUY**

-27.5%   -10%   0%   10%

⟨ <-,-10%]   ⟨-10%, 10%⟩   [10%, ->⟩

Illustration 41: Sell recommendation (Own creation)

12.3   Covid-19 pandemic reflections

In this last part of the thesis I am going to reflect upon the consequences of the COVID-19 pandemic and discuss the outcome of this outbreak on the valuation. A two-pronged crisis is

impacting oil, gas, and chemical companies: 1) a global oil price war & 2) fear of a potentially deadly disease named COVID-19, which comes with infection of the coronavirus SARS-CoV-2. Firstly, when OPEC (Organization of the Petroleum Exporting Countries) and the Russian Federation could not come to an agreement on production cuts, the global oil prices fell drastically. Simultaneously, industrial outage and restrictions in international travel due to COVID-19 affected the supply and demand of oil even further (Chopra, 2020).

Illustration 42: SARS-CoV-2 (Coronavirus)(Wikipedia.org, 2020)

From the findings in the sensitivity analysis, the predicted share price is heavily dependent on expected revenue, and therefor oil prices. However, the impact of the oil price decrease on the share price will not be linear and as aggressive as in the analysis. This is because the company, like the rest of the industry, is going to extreme measures to cut costs associated with the production. This means that the company is lowering their break-even price dramatically in order to reduce the deficit. Some even argue that Aker BP will be able to adopt to the situation so well that they even make some profits despite the low oil price. This profit will likely be lower than predicted before the outbreak, and there for the free cashflow to the firm will also be lower. This will result in a decrease in predicted share price of the company.

Nevertheless, both the corona virus effects, and the oil price war is only temporary. When oil and gas companies start losing money, they cut investments in some of the more expensive fields. These fields will have large investment requirements to start up again, resulting in lower global production and therefor higher demand than supply. Before returning to the price levels we saw before the oil price war the prices of the oil may even make a short-term leap because of these actions. In conclusion, if I were to value Aker BP as of June 15th, I would most likely find the price to be lower than my current calculations, because of lower profits and therefore lower cashflows to firm. However, like was argued earlier, the effects are only temporary. The oil price levels will rise back to give Aker BP the anticipated profits. And in the meantime, Aker BP is cutting costs in all departments. The sell recommendation still stands.

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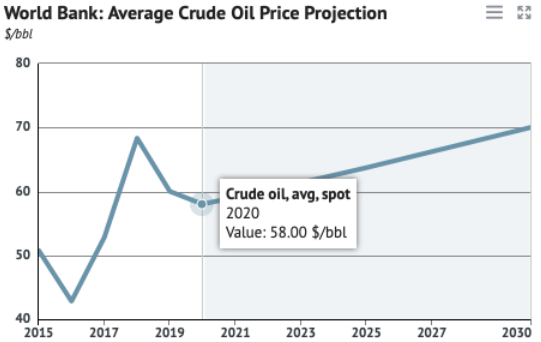
List of illustrations

Appendix A – Oil forecast World Bank

Appendix B – Detailed estimation of future financial result

Financial results:

Financial results ($1000)	2017	Δ(%)	2018	Δ(%)	2019	Δ(%)	2020E	Δ(%)	2021E	Δ(%)	2022E	Δ(%)	2023E	Δ(%)	2024E	Δ(%)	2025E	Δ(%)	2026E
Operating revenues	2 575 654,00	44%	3 711 472,00	-10%	3 338 667,00	16%	3 872 853,72	-11%	3 446 839,81	9%	3 757 055,39	23%	4 621 178,13	21%	5 591 625,54	0%	5 591 625,54	3,5%	5 787 332,44
+Other operating income	- 12 721,00	-403%	38 600,00	-78%	8 421,00	34%	11 284,14	-1%	11 171,30	5%	11 729,86	15%	13 489,34	6%	14 298,70	2%	14 584,68	3,5%	15 095,14
-Exploring costs	- 225 702,00	31%	- 295 908,00	3%	- 305 516,00	13%	- 345 233,08	-12%	- 303 805,11	8%	- 328 109,52	5%	- 344 515,00	8%	- 372 076,19	15%	- 427 887,62	2,0%	- 436 445,38
-Production costs	- 523 379,00	32%	- 689 102,00	5%	- 720 321,00	28%	- 922 010,88	-9%	- 839 029,90	2%	- 855 810,50	6%	- 907 159,13	12%	-1 016 018,22	20%	-1 219 221,87	3,0%	-1 255 798,53
-Other operational costs	- 27 606,00	-38%	- 17 037,00	107%	- 35 328,00	14%	- 40 273,92	-3%	- 39 065,70	2%	- 39 847,02	2%	- 40 643,96	8%	- 43 895,47	15%	- 50 479,79	1,5%	- 51 236,99
=EBITDA	1 786 246,00	54%	2 748 025,00	-17%	2 285 923,00	13%	2 576 619,98	-12%	2 276 110,40	12%	2 545 018,22	31%	3 342 349,40	25%	4 173 934,35	-6%	3 908 620,93	3,8%	4 058 946,69
-Depreciation	- 779 019,00	-1%	- 772 609,00	24%	- 958 682,00	20%	-1 150 418,40	18%	-1 357 493,71	6%	-1 438 943,33	-9%	-1 309 438,43	11%	-1 453 476,66	3%	-1 497 080,96	5,0%	-1 571 935,01
=EBIT	1 007 227,00	96%	1 975 416,00	-33%	1 327 241,00	7%	1 426 201,58	-36%	918 616,68	20%	1 106 074,89	84%	2 032 910,96	34%	2 720 457,69	-11%	2 411 539,97	3,1%	2 487 011,67
+Interest income	7 716,00	237%	25 976,00	-37%	16 490,00	9%	17 974,10	9%	19 591,77	6%	20 767,28	8%	22 428,66	9%	24 447,24	12%	27 380,90	2,0%	27 928,52
+Other financial income	75 507,00	88%	141 823,00	-75%	35 255,00	10%	38 780,50	15%	44 597,58	3%	45 935,50	6%	48 691,63	5%	51 126,21	8%	55 216,31	2,0%	56 320,64
-Interest expenses	- 103 627,00	16%	- 120 033,00	-36%	- 76 587,00	15%	- 88 075,05	0%	- 88 075,05	4%	- 91 598,05	3%	- 94 345,99	3%	- 97 176,37	6%	- 103 006,96	3,0%	- 106 097,16
-Other financial expenses	- 175 696,00	24%	- 218 272,00	0%	- 218 145,00	12%	- 244 322,40	1%	- 246 765,62	2%	- 251 700,94	5%	- 264 285,98	4%	- 274 857,42	4%	- 285 851,72	3,0%	- 294 427,27
Profit before taxes	811 127,00	123%	1 804 910,00	-40%	1 084 254,00	6%	1 150 558,73	-44%	647 965,35	28%	829 478,68	110%	1 745 399,27	39%	2 423 997,35	-13%	2 105 278,51	3,1%	2 170 736,40
+/-Taxes	- 536 340,00	148%	-1 328 486,00	-29%	- 943 204,00	-5%	- 897 435,81	-44%	- 505 412,98	28%	- 646 993,37	110%	-1 361 411,43	39%	-1 890 717,93	-13%	-1 642 117,24	3,1%	-1 693 174,39
Net profit	274 787,00	73%	476 424,00	-70%	141 050,00	79%	253 122,92	-44%	142 552,38	28%	182 485,31	110%	383 987,84	39%	533 279,42	-13%	463 161,27	3,1%	477 562,01

Cashflow to firm:

Cashflow to firm ($1.000)	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Net profit	274 787	476 424	141 050	253 123	142 552	182 485	383 988	533 279	463 161	477 562
+Depreciation	779 019	772 609	958 682	1 150 418	1 357 494	1 438 943	1 309 438	1 453 477	1 497 081	1 571 935
+/- Δ Working capital		341 391	252 202	150 000	150 000	150 000	100 000	50 000	50 000	20 000
- Investments		1 100 000	1 000 000	900 000	1 000 000	1 100 000	1 110 000	1 400 000	1 150 000	750 000
CFF	1 053 806	490 424	351 934	653 541	650 046	671 429	683 426	636 756	860 242	1 319 497

Expected cash flow to firm:

Free cash flow outlook[1]
USD billion
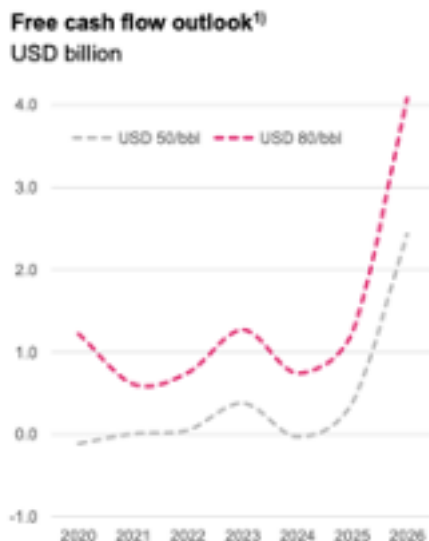
Appendix C – Regression and beta estimates
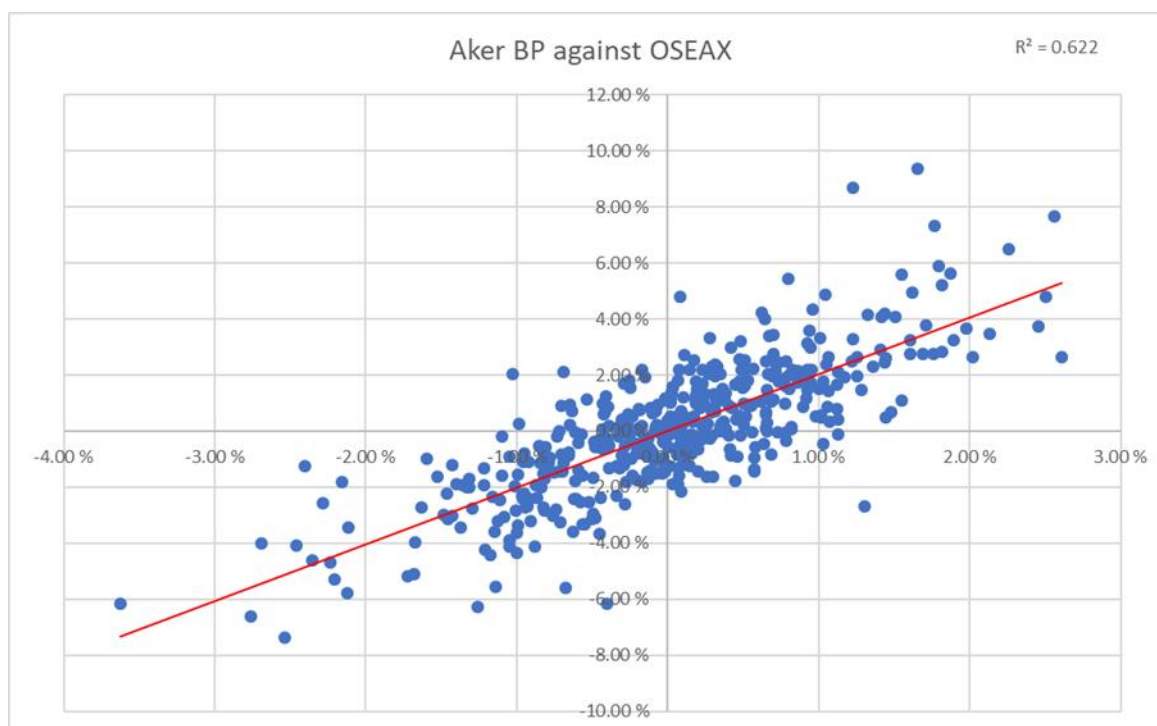
Regresjonsstatistikk	
Multippel R	0.788741643
R-kvadrat	0.622113379
Justert R-kvadrat	0.621300719
Standardfeil	0.014102847
Observasjoner	467

Variansanalyse

	fg	SK	GK	F	Signifkans-F
Regresjon	1	0.152256047	0.152256047	765.5278195	2.5529E-100
Residualer	465	0.092483983	0.00019889		
Totalt	466	0.244740031			

	Koeffisienter	Standardfeil	t-Stat	P-verdi	Nederste 95%	Øverste 95%	Nedre 0,95%	Øverste 0,95%
Skjæringspunkt	0.00025983	0.00065290	0.39796954	0.69083528	-0.00102316	0.00154283	-0.00102316	0.00154283
Avkastning OSEAX	2.02045036	0.07302435	27.66817340	0.00000000	1.87695176	2.16394895	1.87695176	2.16394895

Appendix D – Sensitivity analysis

Revenue change:

(In $1.000)	2020E	2021E	2022E	2023E	2024E	2025E	2026E
7,5 %	4 163 318	3 705 353	4 038 835	4 967 766	6 010 997	6 010 997	6 221 382
5 %	4 066 496	3 619 182	3 944 908	4 852 237	5 871 207	5 871 207	6 076 699
0 %	3 872 854	3 446 840	3 757 055	4 621 178	5 591 626	5 591 626	5 787 332
-5 %	3 679 211	3 274 498	3 569 203	4 390 119	5 312 044	5 312 044	5 497 966
-7,5 %	3 582 390	3 188 327	3 475 276	4 274 590	5 172 254	5 172 254	5 353 283

Effects on the share price:

Change in revenue (%)	-7,5 %	-5 %	0 %	5 %	7,5 %
Estiamted share price (NOK)	kr 74,1	kr 122,6	kr 219,7	kr 316,7	kr 365,2

Capital expenditures change:

Δ Capital expenditures ($1.000)	2020E	2021E	2022E	2023E	2024E	2025E	2026E
10 %	-1014212	-922933	-941392	-997875	-1117620	-1341144	-1381378
5 %	-968111	-880981	-898601	-952517	-1066819	-1280183	-1318588
0	-922011	-839030	-855810	-907159	-1016018	-1219222	-1255799
-5 %	-875910	-797078	-813020	-861801	-965217	-1158261	-1193009
-10 %	-829810	-755127	-770229	-816443	-914416	-1097300	-1130219

Effects on the share price:

Δ Capital Expenditures	-10 %	-5 %	0 %	5 %	10 %
Estimated share price (NOK)	kr 261,8	kr 240,7	kr 219,7	kr 198,6	kr 177,6

Beta change and effects on share price:

Beta	Beta estiamte	Share Price
	1,2	kr 451,6
	1,5	kr 279,3
Original Beta	1,68	kr 219,7
	1,8	kr 189,4
	2,0	kr 150,1

WACC change and effects on share price:

WACC	6 %	7 %	8 %	9,08 %	10 %	11 %	12 %
Share price (NOK)	kr 312,6	kr 279,8	kr 249,6	kr 219,7	kr 196,0	kr 172,1	kr 150,1

Appendix E – Financial statements

Financial results 2017-2019:

Financial results ($1000)	2017	Δ(%)	2018	Δ(%)	2019
Operating revenues	2 575 654,00	44 %	3 711 472,00	-10 %	3 338 667,00
+ Other operating income	- 12 721,00	-403 %	38 600,00	-78 %	8 421,00
- Exploring costs	- 225 702,00	31 %	- 295 908,00	3 %	- 305 516,00
- Production costs	- 523 379,00	32 %	- 689 102,00	5 %	- 720 321,00
- Other operational costs	- 27 606,00	-38 %	- 17 037,00	107 %	- 35 328,00
= EBITDA	1 786 246,00	54 %	2 748 025,00	-17 %	2 285 923,00
- Depreciation	- 779 019,00	-1 %	- 772 609,00	24 %	- 958 682,00
= EBIT	1 007 227,00	96 %	1 975 416,00	-33 %	1 327 241,00
+ Interest income	7 716,00	237 %	25 976,00	-37 %	16 490,00
+ Other financial income	75 507,00	88 %	141 823,00	-75 %	35 255,00
- Interest expenses	- 103 627,00	16 %	- 120 033,00	-36 %	- 76 587,00
- Other financial expenses	- 175 696,00	24 %	- 218 272,00	0 %	- 218 145,00
Profit before taxes	811 127,00	123 %	1 804 910,00	-40 %	1 084 254,00
+/-Taxes	- 536 340,00	148 %	-1 328 486,00	-29 %	- 943 204,00
Net profit	274 787,00	73 %	476 424,00	-70 %	141 050,00

Balance assets side:

Balance Sheet Assets ($1000)	End of 2017	Δ(%)	End of 2018	Δ(%)	End of 2019
Goodwill	1 860 126	0.00 %	1 860 126	-7.92 %	1 712 809
Capitalized exploration expenditures	365 417	16.97 %	427 439	45.36 %	621 315
Other intangible assets	1 617 039	24.05 %	2 005 885	-4.48 %	1 915 968
Totalt intangible assets	3 842 582	11.73 %	4 293 450	-1.01 %	4 250 092
Property, plant and equipment	5 582 493	2.93 %	5 746 275	22.22 %	7 023 276
Right-of-use assets	0	0.00 %	0	-	194 328
Total tangible fixed assets	5 582 493	2.93 %	5 746 275	25.60 %	7 217 604
Long-term receivables	40 453	-7.06 %	37 597	-27.07 %	27 418
Long-term derivatives	12 564	-100.00 %	0	-	2 706
Other non-current assets	8 398	23.70 %	10 388	-0.23 %	10 364
Financial assets	61 415	-21.87 %	47 985	-15.62 %	40 488
Total non-current assets	9 486 490	6.34 %	10 087 710	14.08 %	11 508 184
Inventories	75 704	23.08 %	93 179	-6.05 %	87 539
Accounts recievable	99 752	63.20 %	162 798	18.82 %	193 444
Tax recievables	1 586 006	-99.30 %	11 082	-100 %	0
Other short-term recievables	535 518	-32.74 %	360 194	-8.24 %	330 516
Short term derivatives	2 585	567.43 %	17 253	-100 %	0
Recievables	2 223 861	-75.21 %	551 327	-4.96 %	523 960
Cash and cash equivalents	232 504	-80.67 %	44 944	138.31 %	107 104
Total current assets	2 532 069	-72.77 %	689 450	4.23 %	718 603
Total assets	12 018 560	-10.33 %	10 777 160	13.45 %	12 226 787

Balance equity and liabilities side:

Balance Sheet Equity and liabilities ($1000)	End of 2017	Δ(%)	End of 2018	Δ(%)	End of 2019
Share capital	57 056	0.00 %	57 056	0.00 %	57 056
Share premium	3 637 297	0.00 %	3 637 297	0.00 %	3 637 297
Other equity	-705 756	-0.19 %	-704 432	88.35 %	-1 326 767
Total Equity	**2 988 597**	**0.04 %**	**2 989 921**	**-20.81 %**	**2 367 586**
Deffered taxes	1 307 148	37.72 %	1 800 199	24.17 %	2 235 357
Long-term abandonment provision	2 775 622	-11.82 %	2 447 558	8.08 %	2 645 420
Provisions for other liabilities	152 418	-29.46 %	107 519	-99.63 %	403
Long-term bonds	622 039	78.52 %	1 110 488	46.87 %	1 630 936
Long-term derivatives	13 705	91.72 %	26 275	-100 %	0
Long-term lease debt	0	0.00 %	0	-	202 592
Other interest-bearing debt	1 270 556	-28.54 %	907 954	57.40 %	1 429 132
Non-current liabilities	**6 141 488**	**4.21 %**	**6 399 993**	**27.25 %**	**8 143 840**
Trade creditors	32 847	221.39 %	105 567	37.30 %	144 942
Short-term bonds	0	0.00 %	0	-	226 700
Accrued public charges and indirect taxes	27 949	-10.33 %	25 061	3.64 %	25 974
Tax payable	351 156	57.18 %	551 942	-34.57 %	361 157
Short-term derivatives	7 691	14.20 %	8 783	389.51 %	42 994
Short-term abandonment provision	268 262	-60.85 %	105 035	35.95 %	142 798
Short-term interest-bearing debt	1 496 374	-100.00 %		-	110 664
other current liabilities	704 197	-16.09 %	590 860	11.72 %	660 132
Current liabilities	**2 888 476**	**-51.97 %**	**1 387 248**	**23.65 %**	**1 715 361**
Total liabilities	**9 029 964**	**-13.76 %**	**7 787 241**	**26.61 %**	**9 859 201**
Total Equity and liabilities	**12 018 560**	**-10.33 %**	**10 777 160**	**13.45 %**	**12 226 787**