Valuation of Statoil ASA

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Abstract

In recent years, the oil and gas industry has experienced a huge drop in commodity prices affecting many aspects of the world economy. Norway, among others, is heavily dependent on the petroleum revenue as a source of income. Much of this petroleum revenue is generated by the largest Norwegian petroleum company, Statoil ASA. Due to its large impact on Norwegian economy, we aim to investigate Statoil's performance and outlooks by estimating the fair value of the firm as of December 31. 2015.

In order to estimate Statoil's share price, a thorough strategic analysis is provided to identify both the industry challenges as well as Statoil's strategic position. We find that the firm is positioned well to compete in future energy markets due to a well-established presence on the NCS and a growing presence globally. Moreover, as the world's energy consumption changes and the environmental focus gains more attention, Statoil has engaged in projects within renewables, namely wind and tidal power. This supports a sustainable strategy and secures a solid position for the future.

A major challenge in estimating the value of a petroleum firm is to forecast a reasonable revenue stream. This industry is characterized by volatile commodity prices, mainly caused by the relationship between supply and demand. The strong forces on both sides make this a challenging task. Based on a stochastic model and a strategic approach, we have attempted to present a reasonable forecast of the commodity prices. This in turn is used when determining the future cash flow for the valuation.

Our estimate of the share price is 118.08 NOK which is slightly lower than what Statoil was publicly traded for at that time. Conclusively, we find that the share price of Statoil as of December 31, 2015 is close to fair value. Further, the results indicate that Statoil may not be sustainable if current levels of commodity prices remain constant. However, we acknowledge that the applied theory may, to some extent, be biased and that our valuation method suffers from limitations.

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Part I: Introduction

1.1 Subject Proposition

The petroleum industry is and has been one of the largest industrial drivers in the modern world (Deutsche Bank, 2013). Consequently, it affects most aspects of the world economy from private consumers to international trade and politics. Since mid-2014 the world has experienced a huge drop in oil prices mainly caused by oversupply of petroleum products in the market (Saltvedt, 2016c). Between June 2014 and January 2016, the crude oil price fell by 75% before seemingly stabilizing. The impact of lower oil prices has different effects on different industries, countries and consumers. For most of the petroleum industry and petroleum exporting economies, the effects of lower oil prices are immense while importing economies are enjoying a period of lower commodity prices and cheap energy (IEA, 2014). Although the oil and gas prices seem to have stopped falling, it is not expected that they will rebound to early 2014 levels anytime soon (Saltvedt, 2016a).

In Norway, oil and gas has been one of the main sources of income since its discovery in 1969 (Norsk Petroleum, 2016). The oil and gas industry has both directly and indirectly created jobs for a huge amount of people in Norway as well as the rest of the world (Forskning.no, 2009). Over the years, Norway has established itself as a strong welfare state and many people depend on jobs that are both directly related or a synergy effect of the oil and gas industry. Due to the importance of the oil and gas industry for the economic future of Norway and its habitants, we find it interesting to investigate a topic that relates to exactly this. Looking into the Norwegian State and its businesses, Statoil emerges as the largest contributor to the Norwegian oil and gas industry. Interestingly, Statoil is more than twice as big as the number two on the Norwegian Stock Exchange which indicates its huge size and impact on the Norwegian economy. As a result of this we want to get a better understanding of Statoil's operations, both how they manage their business and their position in the global petroleum industry as well as the expected future impact of changes in the commodity markets.

1.2 Problem Statement

In order to investigate how Statoil is performing and the impact of changes in the commodity markets we will perform a full strategic and financial valuation of Statoil. A valuation is a great tool to get a comprehensive understanding of the firm's strategy and financial position. The value of a company may refer to a number of different things whereas our objective is to find the fair market value. This is what a market participant with full knowledge of the firm would be willing to pay for the firm (Business Dictionary, 2016).

Main problem statement:

- **What is the fair value of Statoil ASA as of 31.12.2015?**

Sub-questions:

- How is Statoil ASA strategically positioned to compete in the future energy markets?
- Is Statoil ASA financially sustainable in a prolonged period of energy prices at the current levels?

1.2 Methodology

The purpose of a methodology section is to give the reader a better overview of the thesis as well as explain how the problem statement has been answered. When performing a full valuation of a firm, the theory used, information gathered and the choice of valuation model becomes crucial to identify the fair value. Hence, we will now elaborate on these aspects.

1.2.1 Valuation Models

There are many approaches that can be used in order to valuate a firm. We looked at three different approaches which are discounted cash flow models, multiples and real options. These models differ in what variables they take into account and thus have different strengths and weaknesses.

1.2.1.1 Discounted Cash Flow Models

Among discounted cash flow models we find the discounted cash flow model (DCF), adjusted present value (APV), economic value added (EVA), capital cash flow and equity cash flow. The DCF- and EVA-models are the two most commonly used valuation models and both yield the exact same results if applied correctly (Petersen & Plenborg, 2012). The DCF model is based on the future cash flow generated to the investors while the EVA-model uses the firm's earnings in comparison to the cost of capital (WACC) to assess whether the firm is adding value (Koller, Goedhart, & Wessels, 2010). Both of these models will first estimate the enterprise value of the firm. For the DCF model this is done by discounting the forecasted cash flows and determining a terminal value of the firm. The EVA, on the other hand, is retrieved by deducting each year's cost of capital from NOPLAT and summing up the present value of this with the terminal value. The terminal value of the two models is estimated by dividing the cash flow (DCF) or NOPLAT minus cost of capital (EVA) by the perpetuity formula provided by Gordon's growth model. After the enterprise value is determined in both models, net sum of debt claims and invested capital from the beginning of the period are subtracted to find the equity value.

Other methods and models can be applied in order to valuate Statoil, such as the APV model. The APV model is appropriate to use if the capital structure is expected to change or else the WACC will overstate the value of

tax shields. APV values the company as it would be all equity financed and add the present value of tax shields arising from debt financing. As interest on debt is tax deductible, profitable companies can reduce the taxes by increasing the debt. The APV model values the cash flow effects of financing instead of the effect of capital structure changes in the WACC. This is in line with Modigliani and Miller's theory that capital structure does not affect value (Koller, Goedhart, & Wessels, 2010). The capital structure of Statoil is assumed to remain stable in the coming years, thus we will not apply this model.

The capital cash flow and equity cash flow model are two other methods that use discounted cash flows in order to determine the fair value of a company. The capital cash flow model does not separate the tax shield from the cash flow as both are discounted by the same cost of capital (Ruback, 2000). The equity cash flow values equity directly by discounting the cash flow to the equity cost of capital and not the WACC. The equity method is considered to have flaws as the capital structure is already embedded in the cash flow, increasing the risk of error as the cash flows and the cost of equity are not aligned.

1.2.1.2 Multiples

Using multiples as a valuation method differs from the abovementioned models as it compares the firm to peer companies rather than forecasting the cash flows of the firm. It is most common to use the enterprise value-to-EBITDA multiple (EV/EBITDA). In order to get a reliable and useful multiple, it is crucial to choose the right peer group based on similar outlooks for long-term growth. This means that the peers must be similar in production methods, distribution channels as well as R&D which gives similar growth and return on invested capital characteristics. The DCF analysis gives the most accurate forecast, but is only as good as the forecast relies on. A multiple analysis can give a more comprehensive understanding and credibility to the DCF valuation, making it a good supplementary valuation to the DCF model. However, multiples alone are not a sufficient estimate of the firm value, and without access to very good peer companies for multiple valuation, this method is not a good approach (Koller, Goedhart, & Wessels, 2010).

1.2.1.3 Real Options

Real option valuation differs from the other methods in that this approach takes into account flexibility. Managers' decisions regarding when to launch a product or the success of it will not be covered by a discounted cash flow approach, while the real option approach will. For example, one might present a decision tree of events that affects the decisions a manager faces. Real option theory is a good tool to clarify if a project or investment will be profitable and/or if it should be abandoned at a certain point. Essentially, the real option approach captures the real value through free cash flow and managerial decisions.

1.2.1.4 Summing Up the Models

Conclusively, we have discussed several methods that each is valuable in their own way. Ultimately, we have chosen to use the DCF model supplemented with EVA to verify results rather than multiples or the real options. We struggled to find peer companies that seem good enough for a good multiple analyses. We find the DCF to be a better approach for our purpose as we also attempt to include a good strategic valuation of the firm and thus find the real option approach to be too extensive. The benefits of using the DCF as opposed to EVA is that it solely focus on the cash flows in and out of the firm and avoid complex accounting issues. On the other hand, this approach does not give good insight to the company's economic performance like the EVA model does. The EVA model highlights how the firm creates value while the DCF model can identify poor investments or challenging times ahead. Thus, we have chosen to focus on estimating a solid DCF valuation along with a strategic valuation approach.

1.2.2 Data Collection

This thesis is based upon public available information with the aim of conducting an independent and objective analysis. The sources used in the strategic analysis are mainly based on scientific papers and published reports. Information regarding production reserves is retrieved through the governmental page Norwegian Petroleum Directorate which provides reliable information on NCS. Historical data such as currency exchange rates, crude oil and natural gas prices is gathered from the Norwegian central bank, Thomson Reuters and the World Bank respectively.

In terms of information gathered, we rely mainly on secondary sources. We have not performed any interviews or conducted any surveys as we did not find it crucial for the purpose of the valuation. Additionally, first hand interviews and other primary sources have the potential to bias our interpretation of the firm performance.

1.2.2.1 Theory

To answer our problem statement, we have chosen specific theories in the field that we believe are suitable to enlighten the reader. In the strategic analysis, our aim is to provide a comprehensive understanding of both the internal and the external environment surrounding Statoil. To be able to do so we will use Porter's five forces framework and a PESTLE analysis to describe the external challenges and opportunities that the future market holds for Statoil. To evaluate the more internal aspects, we have applied the Resource-based View model to discuss Statoil's competitive advantage. To clearly identify what aspects we find most influential to Statoil, we have summed up the Strategic analysis in a SWOT analysis.

The more quantitative aspect of this master thesis relates to the financial analysis. This is carried out based on theoretical arguments provided mostly by authors such as Koller et. al (2010) and Peterson and Plenborg (2012). For the commodity price forecasts we applied a GARCH model to estimate volatilities and Geometric Brownian model to simulate future oil prices. Finally, we valuated Statoil on the basis of the abovementioned DCF model.

1.2.3 Structure of the Thesis

1.2.4 Assumptions and Limitations

In order to overcome certain challenges and perform a meaningful valuation, we have had to make some assumptions and limitations. It is expected that the reader is familiar with general economic theory and this paper will consequently be limited to explaining economic terms.

- The historical figures used in the financial analysis are of a period of six years. A longer period could naturally provide a better foundation for analysis; however we find the six year period to be sufficient for our purpose. Our sample period is mainly 31.12.2010 – 31.12.2015.
- For historical commodity prices we use the Brent Crude oil price and the import prices of natural gas for the German market. The German market is expected to serve as a benchmark for natural gas prices in Europe, which is Statoil's main market for natural gas.
- Data relating to historical commodity prices mainly consist of fifteen years. Taylor (2005) argued that the bigger the dataset is, the better the analysis. However, for commodity prices, the reported data for earlier period is subject to quite different market conditions and the frequency of reported numbers also changes. Thus, we find fifteen years to be sufficient.
- The cut-off date for our analysis is set to be 18.03.2016, as this was the release date of the 2015 annual report of Statoil. Although all reported numbers are in annual terms, meaning that they usually end at 31. Of December in their respective years, we take into account known changes up until our cut-off date. For instance, this relates to commodity prices.
- In calculating the future cash flows, we assume that Statoil's business is perpetual. Although oil and gas is not expected to be a perpetual industry, we expect Statoil to make adjustments to remain sustainable in a changing world. We will come back to this later.

Part II: Statoil and the Industry

2.1 Presentation of Statoil

Not only is Statoil ASA the largest oil and gas producing company in Norway, it is also the largest Norwegian company altogether measured in revenue and market capitalisation. Since its establishment by the Norwegian Government in 1972, Statoil has served as a commercial instrument for the Norwegian government to develop the Norwegian oil and gas industry. This has naturally given Statoil a dominant position as operator on the Norwegian continental shelf (NCS).

In 2001 Statoil went public and is now listed on both the Norwegian stock exchange in Oslo and the New York stock exchange. Regardless, the Norwegian State still owns 69 percent of Statoil ASA and the company still performs oil- and gas related activities for the Norwegian government. In going from a state owned national company in 1972 to a present day multinational corporation, Statoil is as of 2015 present in more than 30 different countries world-wide. Statoil employs an approximate of 21 600 employees world-wide, of which 19 000 are in Norway. Being the largest operator on NCS, an estimated 68% of Statoil's total entitlement production[1] comes from the Norwegian operations. The remaining 32% comes from activities both on- and offshore all over the world.

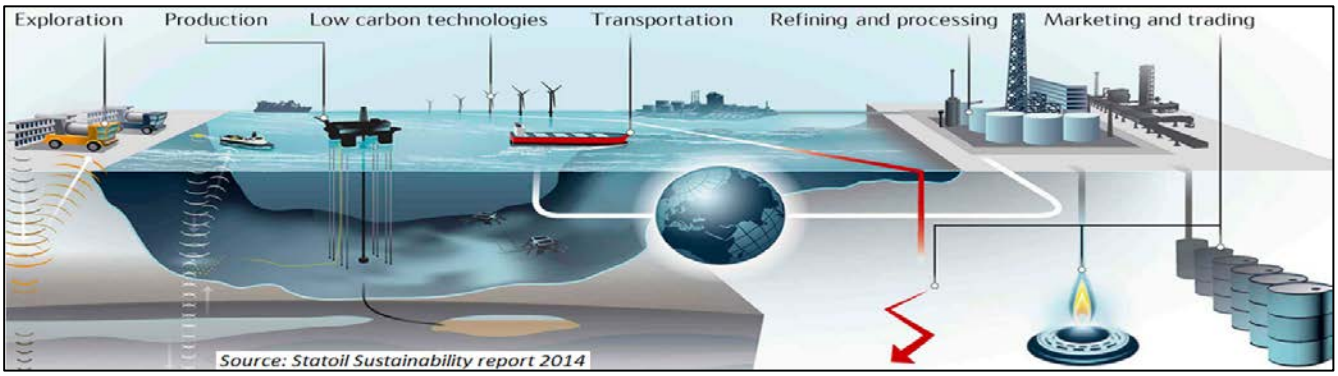

Figure 1: Statoil value chain (Statoil sustainability report, 2014)

Structurally, Statoil is a vertically integrated firm, meaning that most aspects of the value chain are controlled by the firm itself. The value chain is often referred to in up-stream, mid-stream and down-stream segments. Of the up-stream segments we find exploration and production. The mid-stream segment relates to

[1] Entitlement production is the share of produced volumes that Statoil is entitled to, usually through a production sharing agreement (PSA). This may differ from the equity stake Statoil has in a project.

transportation, refining and processing of mainly crude oil and gas. The down-stream segment is the marketing and trading of petroleum products to end consumers. This is illustrated in figure 1.

Historically, Statoil used to manage part of its marketing and trading to end consumers through its own gas stations. However, in 2010 Statoil separated the business unit named Fuel & Retail and had it listed on the Norwegian Stock Exchange as a separate entity under the name Statoil Fuel & Retail ASA. By 2012 the parent company, Statoil ASA had divested all its shares in its fuel and retail segment.

Statoil has expanded from its traditional business areas of offshore exploration and production to onshore activities, particularly in the US. In 2008 Statoil entered into a production agreement within the US shale oil segment, and has since seen a strong growth in production. Also, Statoil has started developing environmentally friendly solutions to its petroleum production by adding carbon capture storage technology. Additionally, Statoil has started investing in non-petroleum related and renewable energy solutions such as offshore wind- and tidal technology. In 2015 Statoil added a new business area to its corporate structure, named New Energy Solutions, with focus on developing and producing low carbon energy. For example, Statoil entered into a 35% ownership share of an offshore wind project called The Dudgeon Offshore Wind Park. Also Statoil has initiated projects to develop tidal energy solutions (Tidal Energy Today, 2015).

To sum up, all these historical aspects and forward looking activities and decisions have put Statoil among the world's leading firms when it comes to exploring and producing oil and gas, particularly in offshore and subsea environments.

2.2 The Global Oil and Gas Industry

To set the scene for what industry environment Statoil operates within, we will take a look at the global oil and gas industry. The current day petroleum industry facilitates the need for nuanced engineering and innovative solutions. Consequently, it is considered a high-tech industry (Teece, 1986). Being one of the largest industries in the world it naturally affects almost all aspects of the world economy – from private consumers, national aspects as well as international and macro levels of the world economy. For many years in the past, and still many years to come, petroleum products and oil in particular is by far the single largest energy source (IEA, 2014). For instance, the largest oil consuming sector is transportation, which in 2014 accounted for 55% of total demand for oil, a number that is expected to increase to 60% by 2040 (IEA, 2014). Gas on the other hand is mainly used for power and industrial purposes.

2.2.1 Industry Structure

First, let us look quickly at how the oil and gas industry is structured. Typically, the companies are categorized as one of three types; national oil companies, international oil companies or independent oil companies (Deutsche Bank, 2013).

The national oil companies are often partly or fully controlled by the government in the country which they operate within. These companies maintain control of the largest portion of the world's oil reserves and also accounts for the largest portion of the world's production (Tordo, Tracy, & Arfaa, 2011). This is a consequence of governments attempting to maintain control of their natural resources, hoping to collect as much rent as possible (Deutsche Bank, 2013). However, in recent years, even these national oil companies have become increasingly more international. Examples of national oil companies are Gazprom and Saudi Aramco.

The international oil companies, or sometimes referred to as majors, is generally oil companies that operate across borders and often larger with a more diversified portfolio. These companies are often characterized by taking higher risks in pursuit of higher returns and are also large drivers of innovation within the industry (Deutsche Bank, 2013). Some of the largest companies in the world fall within this category; Exxon Mobile, Royal Dutch Shell, British Petroleum and Chevron.

The independents are much smaller companies that often operate within a smaller geographical area. These companies are usually more specialized and less diversified (Deutsche Bank, 2013). Examples of independent oil companies are Tullow Oil Plc, Dragon Oil, Amsoil and Apache Corporation.

2.2.2 The Market Players and OPEC

The oil and gas industry is made up of different players, among which we find many OECD countries, Asian countries and OPEC[2]. Within the OECD countries we find many oil producing countries such as USA, Canada, Mexico, United Kingdom and Norway (OECD, 2016). These countries are the origin of many of the oil and gas companies known to us, such as Statoil, British Petroleum, Exxon Mobil and Chevron. Still, OECD countries are a minority in the world of oil production, given OPEC's size (OPEC, 2015). In the international oil and gas industry, OPEC is probably one of the most interesting topics to look at. This is because of OPEC's dominant position in the world's oil market.

[2] Organization of the Petroleum Exporting Countries

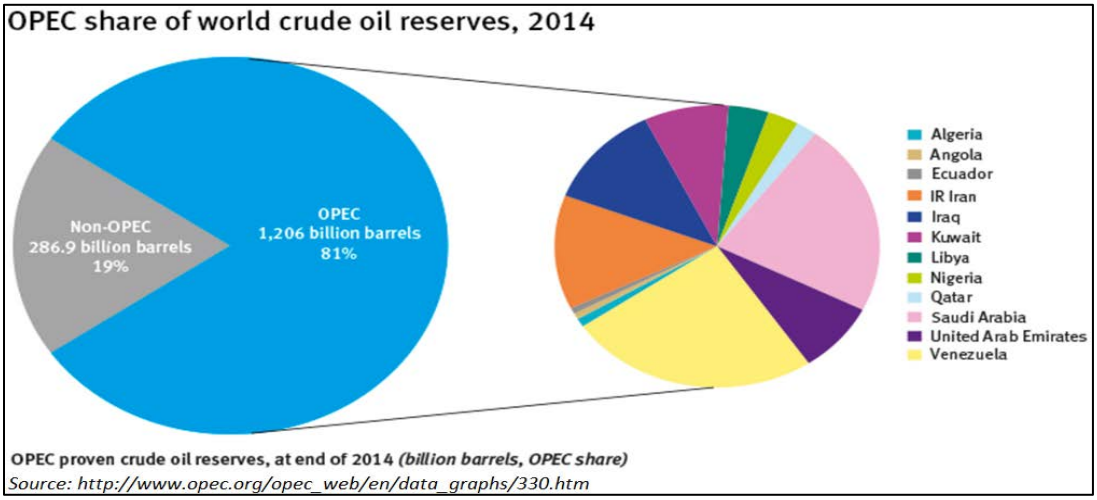

Figure 2: World Crude Oil Reserves (OPEC, 2014)

Looking at figure 2 provided by OPEC, we see that an astonishing 81% of the worlds' proven oil reserves[3] as of 2014 were located within the OPEC countries. OPEC is made up of a number of countries that originally functioned as a cartel within the petroleum industry. Historically OPEC has been able to control much of the worlds' production and thereby also the supply and essentially the oil prices (Hansen & Lindholdt, 2008). As we can see from figure 2, of the 81 % of OPEC-controlled proven oil reserves, more than half is allocated to Saudi Arabia and Venezuela. Interestingly, Saudi Arabia had a marginal production cost of a mere 3 USD per barrel of oil in 2014 (Knoema, 2016). This has a lot to do with all of Saudi Arabia' oil reserves being located on-shore. Ultimately, this has allowed OPEC with Saudi Arabia in the forefront to exercise a lot of power in the international market for oil supply (Hansen & Lindholdt, 2008). Nevertheless, more recent events have indicated that the control of OPEC as a cartel is diminishing. As we will discuss later, with the recent oversupply in the market, OPEC does not seem as united and co-organized as before.

2.3 Crude Oil and Natural Gas

Crude oil is unrefined petroleum composed of hydrocarbon deposits and other materials (Investopedia, 2016). Natural gas is a flammable gas consisting largely of methane and other hydrocarbons. Both crude oil and natural gas are known as fossil fuels[4] and are considered non-renewable resources as they are not being replaced within a meaningful time horizon. Crude oil can be extracted from a number of different sources, most commonly onshore, offshore, deep-water/subsea, and shale oil and oil sands reservoirs. In the same

[3] *Proved reserves* are reserves that have a reasonable (normally at least 90% confidence) of being recoverable under existing economic and political conditions, and using existing technology.
[4] Fossil fuels include coal, oil and gas

order, we find the marginal cost for production from low to high, seen in figure 3 (Saltvedt T., 2015c). Onshore production makes up the largest portion of oil supply and is mainly what countries like Saudi Arabia and Iran are producing (Saltvedt T. , 2015a). These reservoirs are among the cheapest sources of oil. Offshore, deep-water and subsea are more expensive to produce. This relates to its location under water making it more difficult to access. These are the types of reservoirs that Statoil have access to in Norway. Shale oil and oil sands are some of the more expensive oil products due to the difficulties of refining the products. However, it is easier and less expensive to start and stop production from these reservoirs once they are up and running (Saltvedt, 2015a). This allows for companies to shut down production when the oil price falls below the marginal cost of production. Natural gas is often produced as a by-product of oil production as the pressure the crude oil is exposed to changes gas is emitted (Sumit, 2013) (DraKoln, 2016).

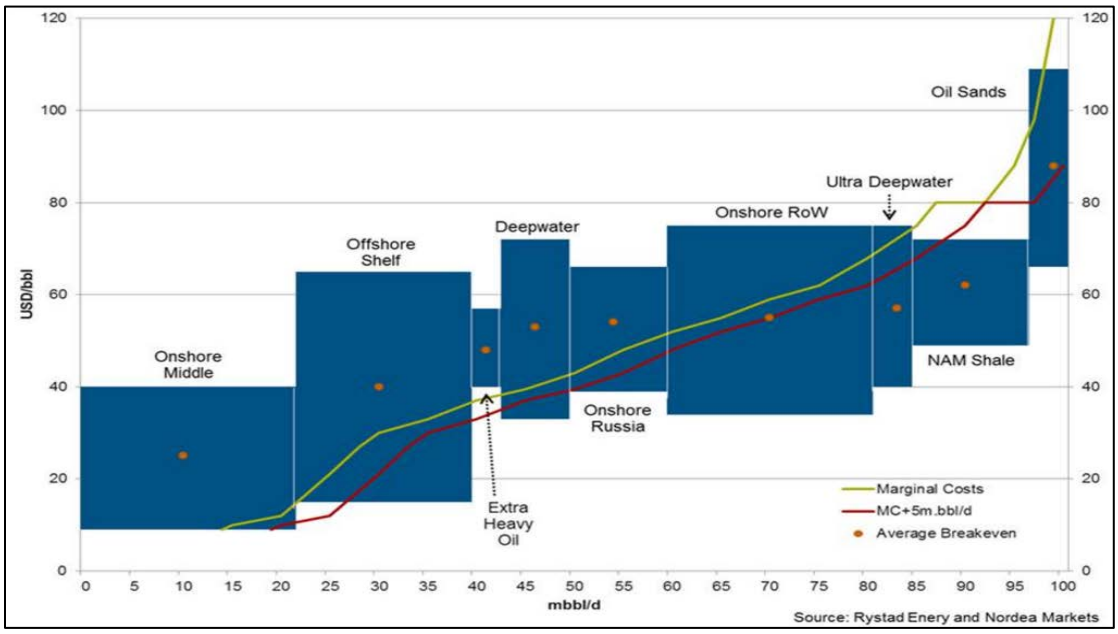

Figure 3: Marginal cost curves of different production areas (Saltvedt, 2015c)

Most commonly, traded oil is categorized as either Brent crude oil or West Texas intermediate (WTI). These can be traded at either spot price or with the use of futures contracts. Both of these oils are considered to be relatively pure and low in density which makes them easier to transport and refine than heavier oils (Forex, 2016). When Statoil trades its North Sea oil, it generally falls within the Brent crude segment. Natural gas on the other hand, is currently traded at quite different prices. There are mainly three different price categories,

namely United States import, Europe import and Japan imports. In the first quarter of 2016 these were traded at around USD 2, USD 4 and USD 8 per MMBTU[5] respectively.

2.3.1 The Drivers of the Oil and Gas Price

All of the abovementioned factors such as the development of OPEC and shale industry as well as a recent period of oversupply in the market have naturally affected the oil and gas prices. Essentially, for businesses within the oil and gas industry, the commodity price of oil and gas is one of the main value drivers. Therefore it seems natural to discuss what drives the oil price. Previous research has pointed out several factors affecting the oil and gas prices. Mainly the supply-demand framework and an informal approach theory have been used to explain what lies behind commodity price movements (Fattouh, 2007) (Bacon, 1991).

As mentioned earlier, oil is to a large extent used for transportation purposes (55%), while gas is used more for electricity, industrial purposes and in buildings (>75%). This naturally has some effect on how the price develops and how it might be expected to develop in the future. Even though crude oil and natural gas are used for somewhat different purposes, they both seem to follow a relatively similar path, as seen in figure 3. Consequently, the drivers of the oil price are roughly the same as the drivers of the gas prices.

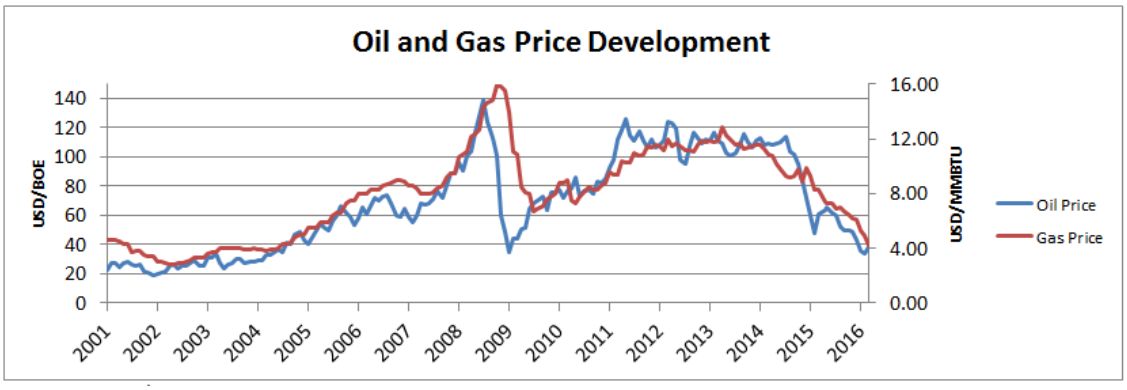

Figure 4: Oil and gas price development (Own production)

2.3.1.1 Supply-demand framework

The relationship between the supply and demand is ultimately considered to be the long-term determinant of the oil price. In short, the supply-demand framework states that the prices of goods and services will balance out when supply and demand reaches equilibrium. If supply increases more than demand, prices will fall. In turn, a reduction of price will in theory cause an increase in demand. Eventually these movements offset each

[5] MMBTU – Million British thermal units are a common measurement for natural gas. One barrel of oil equivalent (BOE) equals 5.62 MMBTU.

other and settle at an equilibrium price. This happens when suppliers are producing at a quantity where marginal cost equals the price of the goods or services. Whenever suppliers (collectively) are producing at a rate where marginal cost is lower than price, one can expect someone to increase production or new players to enter the market (Dorman, 2014).

That being said, there will naturally be many factors in play when the supply and demand of the market is determined. We may start off with looking at the demand side, given the fact that without demand there will be no supply. Initially, supply-demand theory indicates that higher prices will reduce demand. Nevertheless, between 2004 and 2008, both the demand and price for crude oil increased simultaneously (Deutsche Bank, 2013). This indicates that the demand for oil also correlates with economic activity. Thus, high economic activity and growth increases the demand for crude oil (Fattouh, 2007). Another factor that affects demand for oil and gas is naturally the availability for alternative energy sources. There has been an increasing focus on alternative energy sources, particularly renewables. However, in broad terms there are currently not enough innovation within alternatives to offset the increasing demand for oil and gas (IEA, 2014).

Producers and suppliers will naturally attempt to adjust their input in the market based on the demand. However, increased competition and technological advances makes this more and more difficult. OPEC controls an estimated 81% of the world's proved reserves and thereby also the majority of the world's supply. Nevertheless, technology within the shale oil industry has improved and countries like the US and Russia are now producing more oil at a lower cost than before (Saltvedt, 2015b).

There are of course also powers at play that may be offsetting to the theoretical interpretation of supply-demand. First of all, many of the oil producing countries of the world are largely dependent on the revenue generated by its petroleum reserves (Bloomberg Visual Data, 2016). This has led many countries to produce oil, even at a loss, to prevent from losing market shares (Saltvedt, 2015a). Also the cycles in supply and demand for oil and gas operates at different paces. The demand cycle is shorter and reacts much quicker to price changes and overall changes in the economy. The supply cycle on the other hand is a product of the time horizon for oil and gas projects in general. Let's consider the production of oil from a specific well. From the time the company/investors starts planning and investing in a project for a specific well to the time the oil from that well hits the market, most often at least 5-10 years will have passed (Deutsche Bank, 2013). Figure 5 illustrates the life cycle of an oil field. As a result of this lifecycle, the planning of a project relies on the expected future state of the market maybe 10-15 years into the future (Saltvedt T. M., 2016b).

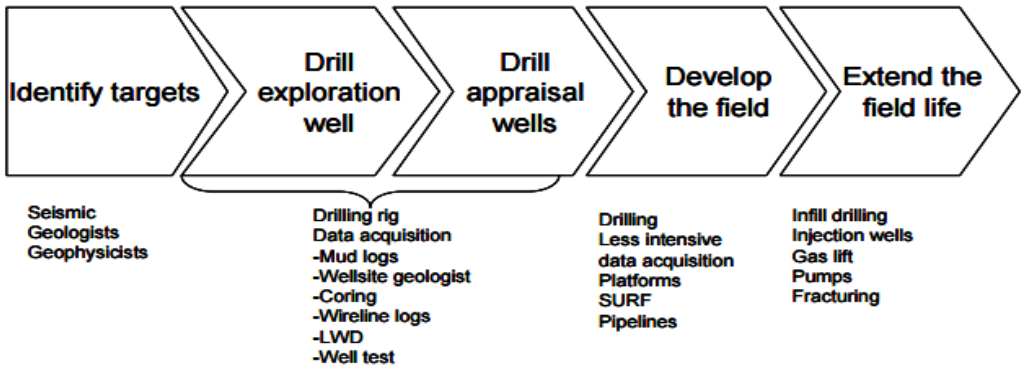

Figure 5: The life cycle of an oil field (Deutcshe Bank, 2013 - page 53)

Now, let's sum up the supply and demand for petroleum prices. There seems to be little doubt that the petroleum prices will vary depending on the supply and demand in the market. However, it is also highly dependent on the state of the economy, both on a national level as well as globally. Given the long time-horizons of petroleum projects, the supply and demand of oil and gas prices can only explain the long-term price movements. In short-term it is likely that we see unbalanced prices that deviate from the supply and demand theory. This brings us to the next framework.

2.3.1.2 The Informal approach

The informal approach focuses on factors that can explain the recent behaviour in oil prices and determine whether the influence of these factors is permanent or not. These factors may be political, demographic and/or geographic factors as well as incentives and risks of different players in the market. Before we move on, we need to point out that some researchers have discussed fluctuations in commodity prices as a result of investors speculating on future prices, and that the price movements are thereby caused by pure speculation rather than actual events (Engdahl, 2016; Hirst, 2015). However, as speculators base their investments on the same information as the rest of the market, we find it out of the scope for this paper to discuss and analyse the effect of speculations any further.

The largest and most powerful entity in the oil market is OPEC. Consequently, what happens within OPEC will to a large extent set the agenda for what happens outside OPEC, at least when it comes to oil and gas. Since its establishment in 1960, OPEC has actively intervened in the market to stabilize prices by adjusting its production levels (Hansen & Lindholdt, 2008). By cutting the production, the supply-demand framework predicts that demand will exceed supply and prices will increase. However, even within OPEC there are divergent interests. For example, some OPEC-members such as Iran, Iraq and Venezuela, are dependent on the revenue generated

from oil, which in turn gives them an incentive to keep production high (Bloomberg Visual Data, 2016). As a result these countries are less inclined to withstand a reduction in supply given their dependency on oil as a main source of income (Hirst, 2015). This in turn, may cause a discrepancy between stipulated OPEC production targets and the interests of its specific members.

On the other hand, recent development has also indicated that OPEC has experienced a decline in market power. Among others, this can be explained by the rapid development of the shale oil industry. Also some OPEC members are unable to produce profitably at low oil a price, which in turn transfers more power to non-OPEC countries that are able to produce at a lower cost. Historically OPEC has also enjoyed a high spare capacity[6]. This has allowed OPEC to rapidly respond to demand changes. Recently this spare capacity has been lower, which also indicates less flexibility as OPEC's responsiveness is reduced (Fattouh, 2007).

Another factor that affects the oil price is the political situation, particularly in the producing countries. In recent years, the world has seen a lot of political unrest. The Middle East in particular, which is the centre for much of the world's oil reserves, has been a target for terrorist attacks. Terrorists have even been targeting oil-related facilities, plants and areas. The increased risk of attacks has made the petroleum industry more vulnerable (Sorkhabi, 2014).

2.3.1.3 Conclusion

To sum up the drivers of the oil price, we find that both the supply-demand model and the informal framework should be considered together when trying to understand the oil-price movements. The supply-demand model explains the long-term movements of the oil price based on the actual supply and demand in the market. The informal model on the other hand points out factors such as power, political unrest and instability as determinants of the expectations of future oil supply. Consequently, these two models work well together in explaining how the oil price moves.

From the above discussion, a few points can be drawn. The oil price is determined by the relationship between supply and demand, however the complexity of the oil industry makes it difficult to predict. The supply side is driven by OPEC behaviour, proven reserves, space capacity and political events while the demand side is primarily driven by commodity prices and substituting products. The frameworks individually are limited in use to make market predictions, but are essential to understand the current and past behaviour in the oil price.

[6] Spare capacity is defined as the volume of production that can be brought on within 30 days and sustained for at least 90 days to cover sudden increase in demand (OPEC, 2015).

Hence, a combination of the frameworks can provide useful information on factors influencing the oil price and thereby better predict the future movements. Naturally, some things cannot be predicted such as environmental disasters, supply disruptions or what technological inventions the future has in store.

2.3.2 Historical Developments

With the development of the shale-oil industry in both the US and Russia, there has been a period of oversupply in the market leading to a significant drop in oil prices. This also affected the gas prices which followed in a quite similar path. The prelude to this fall was several years with high prices, high investments and high growth within the industry. There is no point in discussing the details of oil and gas price development 100 years ago, but we will take a brief look at historical prices moving up to current date. From the figure 4 below, we see the historical oil price in nominal prices from 1970 and up to our cut-off date – 18.03.2016. The oil price has fluctuated a lot over the course of 40 years. If we adjust the prices for inflation, we find that the high oil prices seen in 2008 and 2011/2012 are not much different than what was seen in the early 1980's. We note that the inflation in the figure 6 is on an annual basis whereas the nominal price is on a weekly basis.

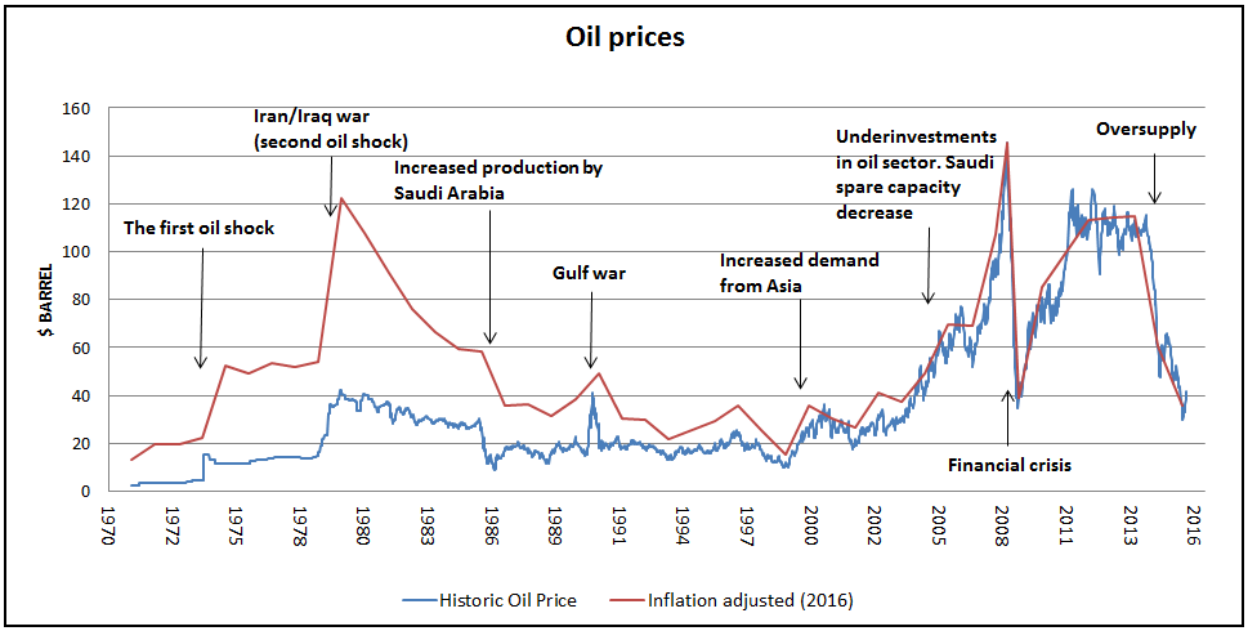

Figure 6: Historical Oil Price (Own production)

Since 1970 there have been a number of shocks and crises that has affected the oil price. In 1973, what has been named "the first oil shock" occurred as a result of OPEC imposing an oil embargo on the US for its involvement in the Yom Kippur war. In 1979, "the second oil shock" would put even more pressure on the

supply and demand of oil. This shock was mainly caused by the Iranian revolution and Iran-Iraq war. The Iranian oil production dropped significantly and caused a major hike in the oil price. In the years following the second oil shock, Saudi Arabia increased production to capture more market share which had a stabilizing and reducing effect on the oil price. In 1990, the Gulf war led to a relatively short period of elevated prices. The following two decades saw an increase in demand from Asian countries along with a stagnating production due to lack of investments (Saltvedt, 2015a). As mentioned earlier, Saudi Arabia also saw a decline in spare capacity which helped fuel an increase in prices due to more uncertain outlooks for supply. The prices continued to increase until the financial crisis of 2007/2008, where the real price of oil quickly dropped back to early 2000 prices. Nevertheless, shortly after the financial crisis hit, the oil price picked up and stayed high until the more recent oversupply (Deutsche Bank, 2013).

Due to technological development and high investments within the entire oil and gas industry, the gap between supply and demand seen in the 2000s was closed. The US started to develop its own shale oil industry and as recently as 2016, it exported freely traded oil for the first time in 40 years (Sider, 2016). This indicates that USA are finally producing quantities of oil that surpasses the national consume. The recent development in oil price has been argued to relate to this increase in shale oil industry. Moreover, OPEC with Saudi Arabia in the forefront acknowledged that production would need to be reduced to maintain a high oil price. However, Saudi Arabia argued that for them to reduce production alone would only give away market shares to its competition (Saltvedt, 2015b). In fact, as Saudi Arabia is able to produce at some of the lowest marginal cost per barrel in the world, it stepped up its production in protest to other countries not cooperating ((Saltvedt T. M., 2016b) (Tarver, 2016)). The result is that since 2014 the market has been flooded with oil and prices has again plummeted to early 2000s levels. In figure 7 we can see the supply and demand situation of 2015 (Saltvedt, 2015b).

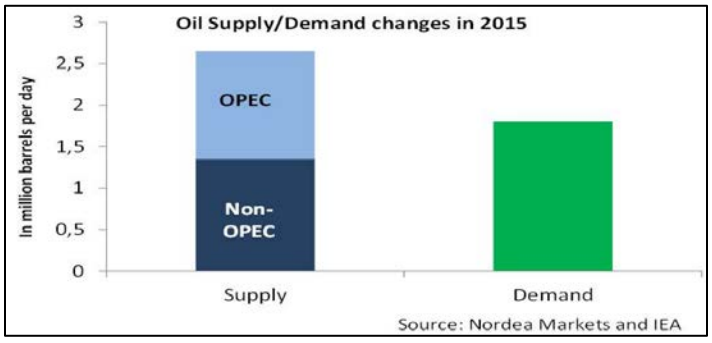

Figure 7: Oil Supply/Demand changes in 2015 (Nordea Markets and IEA)

Part III: Strategic Analysis

In the presentation of Statoil, we briefly presented the corporate strategy of the firm. To get a good grasp on the historical, current and expected performance of Statoil, we will perform a strategic analysis of the firm. First we present three main theories/frameworks for use in evaluating Statoil's current strategic position. Thereafter we will apply these theories and frameworks to Statoil followed by a discussion on Statoil's present day strategic position and outlooks.

3.1 Theory and Frameworks

3.1.1 The Pestle Framework

The first framework we intend to use is the PESTLE framework. The aim is to analyse the external environment of a firm and to identify key issues and ways of coping with complexity and change (Johnson, Scholes, & Whittington, 2005). This model divides the macro – environmental forces into the following categories; political, economic, social, technological, environmental and legal factors. The PESTLE – framework helps managers to evaluate which direction to go and which activities to undertake in a complex and challenging environment (Johnson, Scholes, & Whittington, 2005). The factors are not independent of each other, but linked in different ways. Consequently with changes in macro-environmental forces, organizations must understand the key drivers of change and the different impact of these factors and drivers on particular industries, markets and other organizations. The key drivers will vary depending on the environment surrounding the organization such as industry and country. As a result, the model will be used to look at the current and future impact of the environmental factors affecting the company. In industries where uncertainties and change about future impact on the business environment is high, a useful tool is to discuss how different scenarios affect the key drivers. Naturally, the oil and gas industry will face many changes while it is the combined effect of some of these factors that will truly be important. Consequently, the emphasis should therefore be on determining the most influential factors that could significantly change the external environment of the organization and its way of doing business.

3.1.1.1 Political factors

Political policies and rules have an impact on all organizations' operations. The political environment in a country is influenced by political forces including bureaucracy, political trends, corruption, trade restrictions and other policies. Governments might change their regulations on foreign direct investment policies and give tax advantages that give an incentive to continue with foreign trade. On the other hand, governmental

interventions in the market can be to avoid this. The implications can be changes in employment laws, consumer protection laws, environmental regulations, taxation, trade reforms, and health and safety requirements which affects companies' operations (Team FME, 2013). Even neighbour countries may have an impact in the organizations daily operations. Consequently, companies should be aware of possible pitfalls in foreign direct investments if the level of bureaucracy is too high to make it profitable. Overall, governmental interventions will affect an organization significantly and organizations must be able to respond to the current and anticipated future legislation and adjust their business accordingly.

3.1.1.2 Economic factors

The economic environment has a powerful impact on the industry an organization operates in. The economic forces in play are for instance potential changes to an economy's inflation rate, interest rate, exchange rate, taxes, trading regulations and excise duties (Singh, 2013). Moreover to sustain operational efficiency, organizations need to consider other factors such as unemployment rate, wages, and human capital. These factors have a direct effect on the customer's ability to buy the company's products (Root, 1998). Other economic factors that can affect your target market can be cost of living and availability of credit or financing options. Organizations seek to develop strategies that take into account these macro-economic changes. Rising inflation will have an effect on which price you set and the customer's purchasing power (Brealy, Myers, & Allen, 2011). On the other hand, an increase in local exchange rate would improve the competitive position towards export of products and reaching markets overseas. Official indicators such as GDP, GNP and consumer-based indices are further used to determine the potential market and to choose a suitable strategy that account for the changing macro-environment.

3.1.1.3 Social factors

Social factors are defined as those factors in the society that impact the market or markets the firm operates within. Among others, these factors can include population growth, unemployment levels, education and career trends, cultural and social conventions as well as religious beliefs (Johnson, Scholes, & Whittington, 2005). Social factors have been shown to greatly impact the overall performance of a firm (Hunger & Wheelen, 2003). Changes in demographics, lifestyles and social interests are only a fraction of matters that could affect a firm (Mind Tools, 2014). Take for example a firm that requires a lot of qualified human resources. If the firm operates within an industry that social conventions in general disapprove of, the firm may struggle to attract the right workers. Also people's awareness of eco-friendly products and focus on sustainability has changed how businesses operate and will be of importance in the future as the demand for the firm's products may

change (Johnson, Scholes, & Whittington, 2005). If we on top of this consider a firm that operates in a number of different countries, we see that the number of possible social factors increase significantly as different countries are subject to different social norms and factors.

3.1.1.4 Technological factors

The technological factors affecting companies are also important when assessing issues that could potentially impact a firm's operating performance and sustainability. In the present day, modern world, technological advancements are occurring more rapidly and with a larger impact than before (Chambers, 2004). Consequently, it is very difficult for firms to make accurate predictions on what technological challenges it will meet only a few years into the future.

Of the technological factors that firms are subject to, we can discuss two categories; manufacturing technologies and infrastructure. Manufacturing technology relate to efficiency and capabilities that affects a firm's performance. This may be automation, research and development, technical awareness in the market or the impact or new technologies (Mind Tools, 2014). If a producing firm falls behind in terms of manufacturing technology, competitors may deprive them of market opportunities or even make a competitive advantage obsolete (Chambers, 2004). Infrastructure usually relate to the availability of water supply, electricity, telecommunication and transportation options. Many firms will often choose to locate in areas where infrastructure is fairly well established already (Kessides, 2004). Firms that operate in areas with a more developed infrastructure are likely to have better prerequisites for performing well than firms who operate in less developed areas.

3.1.1.5 Legal factors

Among legal factors affecting firms we can identify consumer laws, health and safety standards, labour laws and trade barriers (Mind Tools, 2014). Consumer laws may dictate how a firm is legally obliged to act towards customers or what guarantees the firm is expected to provide. Health and safety standards are important issues, particularly when it comes to industrial firms where employees are exposed to a higher level of work hazard than in other businesses (Lippin & Eckman, 2000). Strong health and safety regulations as well as labour laws may impose relatively high costs on a firm as such standards are not necessarily always efficient in terms of production (Mearns & Flin, 1995). For example, some laws may require a firm to provide its workers with health insurance or that the firm assigns each worker with a pension savings plan provided by the company. Trade barriers can also be an important factor for firms to take into account. The long-term effect of trade

barriers or trade quotas may cause a firm to lose its competitive advantage towards firms that are not subject to the same legal factors.

3.1.1.6 Environmental factors

Issues regarding environmental factors have become increasingly more important in recent years due to globalization (Audirac, Fol, & Martinez-Fernandez, 2012). Environmental factors may refer to how firms are exposed to the risk of events that cannot be anticipated or controlled. For example are natural disasters a type of environmental risk that a firm cannot completely protect it-self against. However, companies are to a larger extent facing issues that relate to eco-friendly production and practices. As firms to a larger extent are being held accountable for environmental incidents than before, the term environmental governance has gained traction in recent years (Worthington, Rask, & Minna, 2013). Essentially, this refers to how a firm governs itself in terms of environmental aspects. If a company governs its environmental policies poorly they face increasingly higher risks of sanctions. For example, firms are expected to properly dispose of waste, follow environmental protection laws, and comply with emission standards and energy consumption. Ultimately, firms are continuously facing changes in rules and regulations that aim at ensuring environmental friendly practices by firms.

3.1.2 Porters Five Forces

Following the analysis of the external factors in the macro-environment, we will look at the industry environment by studying the organization's relationship to its suppliers, customers and competitors. Many organizations invest considerable amounts to understand and approach the different industry players in a best way possible. Early 1980s Michael Porter introduced five forces to understand the competitive structure and the potential profitability within industries (Porter M. , 2008). He claimed that the industry structure is shaped by five forces consisting of the bargaining power of suppliers, bargaining power of buyers, threats of substitutes, threats of new entrants and rivalry among existing competitors. According to Porter (2008), understanding these competitive forces, and their underlying causes, can help a firm understand the industry's profitability potential while providing a framework for anticipating and influencing competition over time. Hence, understanding the industry structure is crucial for effective strategic positioning.

Each industry is different in terms of its configuration of the five forces. The most dominant competitive forces will be the determinants of the strategy formulation and potential profits for a firm. Nevertheless, it is not always the most prominent forces that are the reason for a firm's profitability or non-profitability. Moreover,

the industry structure is a result of a set of economic and technical characteristics that determine the strength of each competitive force (Porter M. , 1998). In the following, we will elaborate on each of the five forces.

3.1.2.1 Threat of entry

Most markets are subjected to the risk of new entrants seeking to exploit opportunities of the established market. New entrants can intensify competition and put pressure on prices, profits and production capacity of existing firms. In many cases, new entrants can leverage capabilities and cash flows to shake up competition, particularly if new entrants are diversified into or from other markets. The level of new entrants depends on the entry barriers and how existing market participants react (Porter M. , 1998).

From the viewpoint of the already established firms, there are a number of major categories of entry barriers. The magnitude of these barriers will affect the attractiveness to enter that particular industry. **First**, we find economies of scale on the supply-side to be an entry barrier. This is a result of firms being able to cut costs by producing larger volumes with lower unit costs (Brealy, Myers, & Allen, 2011). In such cases, the firm can reduce its fixed cost per unit and often negotiate better terms with suppliers. A **second** barrier of entry is economies of scale on the demand-side. This is caused by a network effect that arises when firms enjoy high trustworthiness and become the preferable choice in the market (Brealy, Myers, & Allen, 2011). New entrants will face customers that are unwilling to switch to a new supplier. Consequently, new entrants will have to differentiate themselves to attract customers. **Third**, we find the cost of switching suppliers to be an entry barrier to new firms. Essentially this means that if switching supplier entails costly modification of processes or information systems, retraining employees to use of new products or altering the product specifications, the customer may be reluctant to switch to new suppliers. For instance, the shipping industry is partly characterized by high switching costs due to large capital investments to specifically tailor a service to the needs of a customer (Stokes, 1997). A **fourth** barrier relates to how easily a new entrant can access distribution channels. Distributers may be tied up to existing competitors forcing new entrants to find their own and often costly distribution channels. A **fifth** barrier relates to the quality and cost advantages an existing firm has that are not available to new entrants. Such advantages may be geographical location, access to raw material, established brand name, human capital and industry know-how (Porter M. , 2008). What makes these factors difficult to compete with is that they are often accumulated over time. The **sixth** barrier is governmental policies that can influence the abovementioned factors in favour or against potential new entrants (Porter M. , 2008).

3.1.2.2 The power of suppliers

The second force of Porter's five forces is the power of suppliers. A powerful supplier is assumed to capture more of the value by charging higher prices or shift costs to other industry participants. This allows suppliers to squeeze profitability out of an industry that is unable to pass on a cost increase in its own prices (Porter M. , 2008). The less dependent a supplier is on the revenue from a particular customer or industry, the more bargaining power the supplier is likely to achieve. Also, in situations where the supplier has established a monopoly-like situation, the bargaining power of that supplier is strong considering that few other suppliers can provide the same product or service (Porter M. , 2008). Consequently, the more powerful the suppliers are, the more intense the rivalry become. From the buyers' side, we also see that suppliers gain more bargaining power as the costs of switching suppliers increase. This may happen if the buyer has to invest in a particular set of equipment fitting to a particular supplier.

In cases where the suppliers retain a weak form of bargaining power, companies will often be able to negotiate more favourable terms. The bargaining power of the suppliers will be weakened if its revenue largely depends on a few numbers of customers or industry segments. Also, if buyers can easily switch suppliers, the bargaining powers of the suppliers are substantially reduced. To strengthen the bargaining position, suppliers can vertically integrate to capture more value from an industry.

3.1.2.3 The power of buyers

The buyers in an industry are the customers. The bargaining power of buyers depends on much of the same aspects as discussed above. When a buyer has much bargaining power, it can negotiate favourable prices and quality requirements from the suppliers. Which of the supplier or the buyer captures the most value all comes down to the relative bargaining power of the two (Porter M. , 2008). This bargaining power may also differ within customer groups. An industry with few buyers or buyers of large volumes will allow the buyers to maintain a high level of bargaining power.

The bargaining power of the buyers is lower in cases of higher price sensitivity, lower profits or pressure to cut costs. A remedy for lower bargaining power is to backwards integrate and start producing the product within the purchasing firm. Thus, threatening to integrate backwards can be a viable leverage to increase the bargaining position towards suppliers (Peng, 2014).

3.1.2.4 Threat of substitutes

The threat of substitutes consists of competitors or other industries providing different products or services that satisfy the same need (Porter M. , 2008). Such products are often overlooked as they often initially appear

very different from the original product. However, the consequences of substitutes can be quite severe as they can limit the industry profitability by placing an upper limit on prices (Peng, 2014). The threat of substitutes is highest when substitutes offer competitive prices and superior quality and when switching costs are low.

To protect or distance it-self from substitutes, a firm must do something that makes the substitute less desirable in comparison. For example, competing on product quality, design or marketing may be approaches to outperform possible substitutes. Naturally, this requires the firm to be aware of what possible substitutes are threating its position, and what technological changes are happening in the business environment (Porter M. , 2008).

3.1.2.5 Rivalry among existing competitors

Rivalry among existing competitors in the industry may be conceived as the strongest of the five forces as it interconnects with the other forces. For example, new product introductions, price discounts and marketing campaigns affects the magnitude of rivalry among existing firms. Actions by one firm are likely to affect how other competitors respond (Porter M. , 2008). From a company perspective, high rivalry is considered to be damaging for the industry as it limits the profitability while the end customer benefits. The level of rivalry depends on two factors, namely the intensity of competition and on the basis of which they compete.

The intensity is considered highest when the market participants are equal in both size and power. If the industry also suffers from slow growth and high exit barriers, the rivalry can become quite immense. The effect of such conditions may be excess capacity and low profitability and returns. Firms may then attempt to compete in terms of pricing strategy to increase its market share (Porter M. , 2008).

The basis of which the competition takes place also has a major influence on the profitability. If the competition is solely based on the price dimension, profit levels will usually suffer and the surplus will be transferred to the customers (Brealy, Myers, & Allen, 2011). This happens in cases of very similar products, large fixed costs, excess production capacity or perishable products. However, competition can also exist on the basis of other factors. For example, companies may compete based on brand image, delivery time, support and product features. These factors are less likely to erode profitability as this increases customer value and could potentially increase entry barriers. Equally important is whether or not they compete on the same dimension. If all competitors serve the same need in the market, one will gain on the others loss (Brealy, Myers, & Allen, 2011). In a market where market participants aims to serve several needs with different attributes, the average profitability in the market can increase.

3.1.3 Resource-Based View

While considering the external aspects of a firm, scholars have argued that one also need to understand the internal resources and capabilities of a firm to thoroughly assess its strategic position. Barney (1991) addressed the topic of competitive advantage and argued that sustainable competitive advantage is derived from a firm's ability to implement a value creating strategy that no other firm is able to implement. Porter (1996) supported this in his view that a company can only outperform its competition by obtaining a difference it can preserve.

The firm may be looked at as a bundle of resources and capabilities (Peng, 2004; Barney, 2007). In this view, scholars such as Barney (2007), Prahalad & Hamel (1990) and Peteraf (1993) have argued that a sustainable competitive advantage depends on a firm's resources and the characteristics of those resources. In response to this view, a framework known as the resource-based view of the firm has been developed. The aim of this framework is to assess the resources, competencies and capabilities the firm possesses or needs to establish a competitive advantage (Barney, 2007).

When discussing a firm's resources we refer to all tangible and intangible assets, capabilities, competencies, organizational processes, firm attributes, information and knowledge that facilitates for strategy implementation (Prahalad and Hamel, 1990; Barney, 2007; Peng, 2014). Barney (2007) further divided resources into four different categories roughly covering all types of resources a firm may have. These are financial capital, physical capital, human capital and organizational capital. **Financial capital** encompasses all the firm's monetary resources that can be used to implement strategies. This may include the firm's cash, capital structure, retained earnings, creditors and debtors. **Physical capital** covers resources such as physical technology, plant, equipment, geographical location and raw materials. **Human capital** consists of the resources that are embedded within the individual employees of the firm. Among others, this is the training, experience, relationships and tacit know-how of the people working within the firm. **Organizational capital** is the collective attributes of a firm. This may be the reporting structure, coordinating systems, culture and reputation. Reputational capital can be a brand name, goodwill or attractiveness towards new employees, customers, business partners or even countries/governments (Barney, 1991).

3.1.4 VRIO Framework

The resource based view constitutes a belief that a competitive advantage is generated by the internal resources of a firm. However, for a resource to provide a sustainable competitive advantage Peteraf (1993) argued that four underlying conditions must be fulfilled. These conditions are neatly summed up in a

framework known as VRIO. The aim of this framework is consequently to establish to what extent a resource is considered to be valuable, rare, in-imitable and organizational (Barney, 2007) (Peteraf, 1993).

3.1.4.1 The question of value

This question seeks to establish to what extent a resource or capability will enable the firm to respond to environmental threats or opportunities. For a resource to be valuable it should enable the firm to respond to those opportunities and threats that arises in the environment. On the other hand, if a resource prohibits the firm to react on opportunities or threats, the resource is more likely to be a weakness to the firm. For example a firm that has established an organizational structure that historically proved strong could encounter problems with recognizing market opportunities or change in demand due to a rigid organizational structure.

According to Barney (2007), firms that find their competitive advantage diminishing due to valuable resources losing their value ultimately have two fundamental choices. These are either to develop new valuable resources and capabilities or attempt to redeploy the existing resources in new ways. Developing new resources can sometimes be quite costly and difficult to do. Redeploying an existing resource allows the firm to use ready-made knowledge or assets in a different manner. This can be done by launching products or services in a different market or segment.

3.1.4.2 The question of rarity

Given that a resource is valuable, the ability for this resource to provide a sustainable competitive advantage naturally depends on the rarity of the resource. When the number of firms that possesses a valuable resource is less than what is needed to generate perfect market dynamics, the resource can be considered rare and has the potential of serving as a competitive advantage (Barney, 2007). On the other hand, if many firms have access to the resource, it is not considered rare and is not likely to provide a competitive advantage. At best, if a common resource is valuable to a firm, it will serve as a competitive parity. Resources that provide competitive parity may serve to increase the probability of survival even though they do not generate specific one firm gains.

3.1.4.2 The question of imitability

Resources that are both valuable and rare can provide a temporary competitive advantage. For a competitive advantage to be sustainable, it is also necessary that it is difficult or impossible to imitate the resource or resources that provide this advantage. When a resource or capability is easily imitated other firms will likely do so to collect the gains of the resource. Ultimately, there are two ways to imitate a resource or capability. These are direct duplication or substitution (Barney, 2007). The imitability of a resource depends on the relative costs

of imitation. If the cost of direct duplication is greater than the costs of developing the resource or capability for the firm with the competitive advantage, the resource or capability may be sustainable for the firm. Then the resource or capability would be more costly for the imitator than the original firm, and thereby yield less rent to the imitator in comparison.

Barney (2007) points out factors that reduce the risk of imitation. Unique historical conditions, causal ambiguity, social complexity, non-recoverable costs and patents are all sources of cost disadvantage for potential imitators.

Unique historical conditions can give a firm a cost advantage compared to competitors at a later stage. If a firm is able to develop a resource by favourable historical conditions that later change, competitors will not have the same favourable conditions to develop that resource. Also Barney (2007) points out that path dependency can affect the value of a resource. In the early stages of developing a resource, the potential value of that resource may not be entirely clear and therefore allowing the firm to develop the resource at a lower cost than it would be if the true value was known. When the true value becomes known at a later stage, the cost of developing that resource will immediately increase giving the initial resource holder a cost advantage over potential imitators. It is also worth mentioning that historical conditions such as uncertainty of value at an early stage may also cause firms that possesses a future valuable resource may actually dismiss and rid themselves of such a resource rather than developing it (Prahalad & Hamel, 1990).

Causal ambiguity is another factor that can prevent effective imitation of a resource or capability. This is when other firms are unable to understand the source of a firm's competitive advantage (Peteraf, 1993). In effect, imitating firms struggle to find a clear relationship between a resource controlled by a firm and that firm's competitive advantage. Causal ambiguity may be a result of a resource being tacit knowledge[7] or that the resources are interconnected. Some resources may also be protected by **social complexity**, embedded in the interpersonal relations or culture of a firm. Naturally, such resources are difficult to imitate. Barney (2007) also points out that **patents** may provide protection against imitation. This may also very well be the case as the rights use a patent resides with the patent-holder. However, patents also make a resource or capability explicit. In return, this also allows imitators to study the components of a resource and thereby also possibly tweak the resource to circumnavigate the patent and develop a similar resource.

[7] Non-explicit knowledge that is difficult to transfer by verbalizing.

3.1.4.3 The question of organization

Ultimately, a competitive advantage requires valuable resources that are rare and difficult to imitate. However, the firm also needs to be organized in a way that utilizes the full potential of such resources. Firms need to be organized with reporting structure, management control systems and compensation policies, often referred to as complementary resources and capabilities. These complementary resources and capabilities do not actually provide any competitive advantage alone, but in combination with other resources, they allow the firm to utilize the full potential (Peng, 2014).

3.1.4.4 Applying the framework

Naturally, it is important that firms utilize the potential for competitive advantage. Likewise the firm must also be aware that non-valuable resources can in fact cause competitive disadvantages and impose a weakness to the firm. To help evaluate a resource's competitive ability and its effect on the firm, Barney (2007) developed the following guide to assess resources.

Valuable?	Rare?	Costly to imitate?	Exploited by organization?	Competitive implications	Economic performance	Strength or weakness
No	-	-	No	Competitive disadvantage	Below normal	Weakness
Yes	No	-	↑	Competitive parity	Normal	Strength
Yes	Yes	No	↕	Temporary competitive advantage	Above normal	Strength and distinctive competence
Yes	Yes	Yes	Yes	Sustained competitive advantage	Above normal	Strength and sustainable distinctive competence

Figure 8: VRIO Framework (Barney, 2007)

3.2 Strategic Analysis of Statoil

3.2.1 The Pestle Framework

The PESTLE framework aims to describe the business environment surrounding the firm by analysing the external factors that influence the company. As Statoil operates on a global level and the oil industry is of a global character, we find it valuable to apply the PESTLE framework to examine Statoil's strategic position in relation to the international environment it operates within. Of all possible aspects, we will naturally only discuss the forces we believe have the strongest impact on the business. The aim is to distinguish between the strengths and weaknesses to consequently match them with the market's opportunities and threats.

3.2.1.1 Political factors

Statoil is an international firm with presence in many countries. As a result, Statoil is faced with many different types of political factors and interests. This in turn affects the processes relating to access to resources, permits for exploration and collaboration with other companies. Some firms are more exposed to something called political risk than others. Political risk is a term that refers to political changes or instability in a country that can affect the company's profitability (Busse & Hefeker, 2007). Both the absence of effective regulations and too much regulation can impose serious political risk.

Foreign Direct Investments

As we touched upon in our review of the oil and gas industry, the industry has predominantly been state owned in the past decades (Deutsche Bank, 2013). This is largely a result of governments in places like the Middle East, North Africa and South America actively influencing how concessions have been distributed in the past (Mitchell, 2012). This can be explained by the fact that most countries are eager to gain as much as possible from the resources that are rightfully theirs instead of being exploited by international companies. Historically this made it difficult for IOCs to make investments in some parts of the world as some governments would not allow this. However, as time has gone by, the challenges of both searching for oil and gas as well as operating the production has proved more and more technically demanding. As a result, nations that possess natural resources have to a lager extent started to open up for IOCs to participate in exploration and production of oil and gas (Deutsche Bank, 2013). Nevertheless, this shows just how much political influence can mean in terms foreign direct investments for a firm.

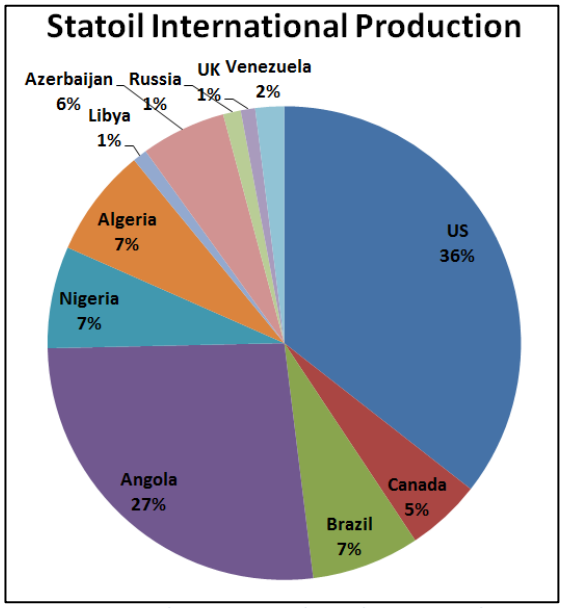

Figure 9: Statoil International Entitlement Production (Own production, Statoil Annual Report 2015)

Currently, Statoil is present in more than 30 different countries world-wide, many which are located in North Africa and South America. Figure 9 shows how Statoil's international entitlement production is distributed. As we can see from the figure only eleven out of the thirty countries contribute to Statoil's production at this point. Nevertheless, presence in these foreign countries exposes Statoil to a number of different political risks. In its annual report, Statoil recognizes greater authority and more stringent conditions as factors of political

risk. For example, Statoil may face restrictions on exploration and production or even risk having trade barriers or quotas imposed. Tax, royalty increases and retroactive claims are also political factors that can have large implications. Recently, Statoil was imposed additional taxes on profits from oil for the period 2002 to 2012 by the Angolan government, a matter that is currently being disputed (Statoil ASA, 2016a).

Political Instability

The discoveries of oil reserves in countries with less political stability have also made the oil industry exposed to corruption. This is arguably results from a lack of laws and regulations where opportunists seek to seize a part of the profits (Karl, 1997). In the early 2000s, Statoil was found guilty in a corruption case where the son of the then Iranian president was paid to influence political figures. Also, more recently, concerns of corruption have been raised as Statoil made a series of payments to the Angolan national oil company for a research centre that has never been built (Reuters, 2016). Now it is worth mentioning that as of yet, this has not been deemed a corruption case. However, both these incidents clearly indicate the political risks associated with international operations.

Another major political issue relates to conflicts and acts of war. The earlier mentioned Russian annexation of Crimea was by the west regarded as a breach on Ukraine's sovereignty (Szczepanski, 2015). The implications on the oil and gas industry arise as Russia is one of the largest suppliers of natural gas to Europe. In 2013, import from Russia accounted for approximately 15% of the European consumption of natural gas (CIEP, 2013). Interestingly, the Russian gas pipeline passes through Ukraine, which is essentially the epicentre of the Crimean conflict. Europe is quite dependent on Russian gas, although this dependence is slightly decreasing, Europe naturally didn't impose any sanctions that affected the supply from Russia. However, in the period following the annexation, both oil and gas prices fluctuated more than usual as the commodity markets feared implications on the supply levels from Russia (Szczepanski, 2015). Ultimately, we see how this can affect Statoil as such events could have implications for the supply of natural gas to Europe.

Expanding on the conflicts and war-related issues, we direct our focus to the Middle East. For a number of years, these regions have experienced political instability. One of the currently more pressing issues is the increasing number of terrorist attacks. In recent years, several oil and gas operating facilities, including some which are operated by Statoil, have been subject to terrorist actions. In 2013 terrorists attacked a Statoil-operated production site in Algeria. Not only did this affect production levels from that site, but sadly it claimed the lives of several innocent workers (Statoil ASA, 2013). As recently as March 2016, another different site in

Algeria was attacked by terrorists (Statoil ASA, 2016b) (Løvås, 2016). Luckily, this time no lives were lost. As a result of such events, after the 2013 incident, Statoil stepped up its security measures in Algeria to reduce the risk of similar events. However, the last incident indicates that Statoil cannot rid itself of this risk.

Norway

Finally, we feel the need to point out that Statoil's majority of operations are located in Norway. Initially, this could seem like a factor of less political risk, and that may very well be the case. However, given that the majority shareholder of Statoil is the Norwegian Government, a higher level of transparency, documentation, compliance and corporate social responsibility is expected by Statoil (Nærings- og handelsdepartementet, 2010). Also, as we will discuss in more debt later, Norway actively participates in climate debates and seems committed to contribute to reduce the emission of greenhouse gasses. Stronger political systems can cause a political risk of too much restrictions and regulations for firms like Statoil (Busse & Hefeker, 2007).

3.2.1.2 Economic factors

Statoil is naturally affected by many of the economic factors such as currency fluctuations, oil prices, attractiveness to commit capital to the industry, and economic growth. In many cases these factors are determinants of profitability for the entire industry and not just Statoil.

First of all, as we pointed out earlier, the oil and gas prices are mainly driven by supply and demand. Recent shifts in this equilibrium have caused commodity prices to plummet and consequently affect most companies in the industry (Saltvedt, 2015b). It seems almost fair to say that all oil and gas companies have initiated large cost cutting measures in order to survive the lower commodity prices (Saltvedt, 2015a). Another aspect that relates to the supply and demand equilibrium is economic growth. Economies that are growing usually demand more energy often in forms of oil and gas (IEA, 2014). In figure 10 we presented the economic growth of China, India and Nigeria in the period 2008 to 2015 (The World Bank, 2016). The reason for these choices is that the net increase in world demand for oil and gas is expected to come from developing nations and these three in particular (IEA, 2014). We can see that both China and Nigeria has faced a declining growth rate recently. A worry for the oil and gas industry as a total is thus the economic health of the larger oil consuming nations, such as China, India and Nigeria. In fact, Africa in total is also considered among the fastest growing regions of the world, however, slowing down (The World Bank, 2016a). If the world were to face a scenario of continuous decreasing growth from developing nations, this negatively impact the demand for energy and oil in particular (IEA, 2014).

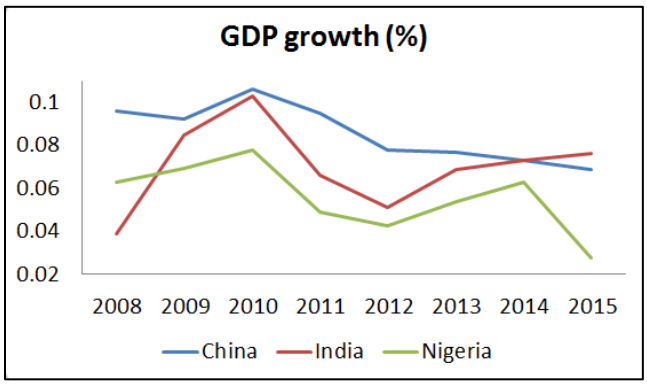

Figure 10: GDP growth in %, select countries (Own production)

Second, oil and gas is mainly traded in US dollars and Euro respectively. For companies like Statoil, the exchange rate impacts the profitability. The exchange rate depends on a number of different macroeconomic factors such as interest rates, economic growth and outlook of a country as well as political signals and factors (Van Bergen, 2016). Although companies like Statoil actively trade derivatives and other financial instruments in order to hedge against currency fluctuations, the bottom line profitability will always be affected by the currency effect (Statoil ASA, 2016a). We compared the development of the historical oil price and the NOK/USD exchange rate to illustrate the currency effect for Norwegian companies (figure 11) (Norges Bank, 2016). The past five years shows a correlation of -0.97.

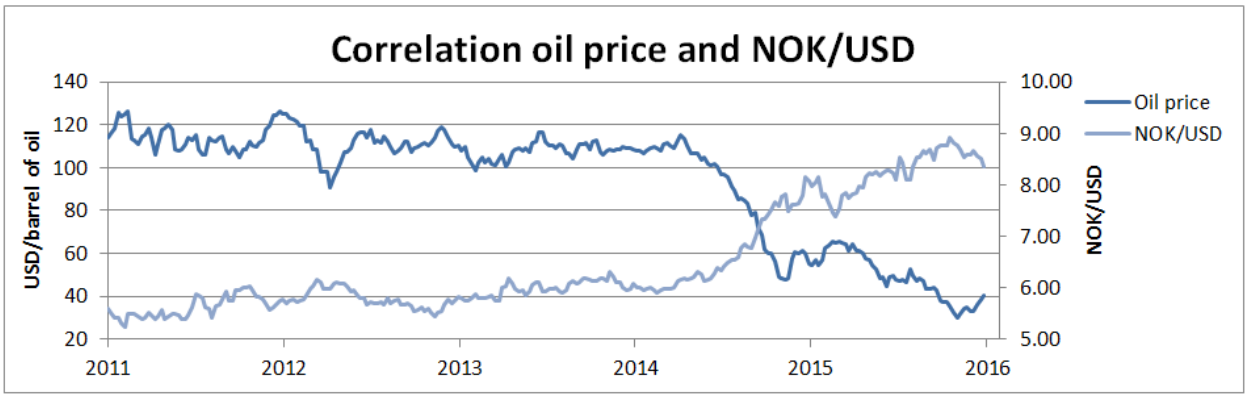

Figure 11: Correlation oil price and NOK/USD (Own production)

Third, the attractiveness for investors and creditors to provide capital affects the ability to raise funds. With the currently lower oil prices, we can expect the industry attractiveness to decrease. Share prices of oil and gas companies are falling as investors become less willing to invest capital in an industry with lower profits. Also, creditors become less inclined to lend money to the industry as the risk of default is increasing (Hull J. C.,

2012a). This is also supported by credit rating agencies like Standard & Poors and Moody's who have started downgrading oil and gas companies (Statoil ASA, 2016a). Ultimately, for companies like Statoil, this can cause a surge in cost of debt over the coming years (Hull J. C., 2012).

3.2.1.3 Social factors

Continuing on the employment rate and wages, we also see that there are many social factors affecting the oil and gas industry. The lower oil prices have reduced the activity within the Norwegian oil sector to the point where the unemployment rate is at its highest since the middle of 2005 (Statistics Norway, 2016). This in turn has implications for a number of social aspects such as income levels and people's careers. In 2015, a Swedish company by the name Evidente presented a study on attractiveness of Norwegian companies. The study showed that the oil and gas industry dropped significantly in attractiveness between 2014 and 2015 (Sjøberg, 2015). This development may indicate a more challenging future for companies like Statoil to attract good engineers and newly educated people. In turn, this could affect a number of different issues such as wages, innovation rate and turnover rate of employees (Dorman, 2014).

3.1.2.4 Technological factors

Even though oil and gas has been used for centuries, the present day petroleum industry is to a large extent very technologically driven. As we will discuss later, technological development is one of the more important factors for firms to stay competitive. Technological factors may be the internal aspects of a firm and how technologically developed it is. However, it can also refer to the surrounding factors of a firm. Among others, we find the business for substituting products to be on the rise.

First, let's look at the competitive aspects related to technology. Even though oil and gas has been used for centuries, the present day oil and gas industry is to a large extent very technologically driven. The oil industry is in constant need of technological advancement and better infrastructure. As much as technology can be an advantage for a firm, it can also be a disadvantage if the firm does not have the right technology (Barney, 2007). Most oil and gas companies are continuously developing their resources to operate more efficiently and environmentally friendly. Day & Schoemaker (2005) discussed how firms that neglect to establish a good peripheral view of the business environment it operates within stand the risk of falling behind its competition. The market may send many signals as to how technology is developing, but if firms are not able to pick up on these signals they will not be able to prepare itself for changes in competition. Statoil is a very large firm and naturally spends a lot of resources in research and development. Consequently, Statoil has earned a reputation for good technological advances within areas such as improved oil recovery (IOR) and carbon capture storage

(CCS) (Statoil ASA, 2016b). This is something that has made a larger portion of the reserves recoverable (Statoil ASA, 2014b). Nevertheless, we also know that some of the oversupply of oil in the market seen in the past years is a result of technological improvements (Saltvedt, 2016a). A few years ago, the shale oil industry was considered too expensive to operate. However, development has allowed companies to produce oil from shale sands at more competitive prices. The fact that Statoil invested in this segment back in 2008 indicates that Statoil managed to keep a somewhat good peripheral view of the oil and gas industry. Nevertheless, failing to do so could have left Statoil inferior to competition from the shale oil segment.

Building on this peripheral view of technological development, Forrest (2015) argued that the declining performance of oil and gas companies is likely to be followed by a period of market consolidation. It is expected that we will start seeing much more activity in mergers and acquisition as some companies are not sustainable on its own anymore. For Statoil this may give opportunities to acquire the right technology or it may leave them struggling if other firms are able to acquire technology necessary to compete with Statoil.

Another aspect relating to technology is the consumer-side of the petroleum industry. One of the biggest long-term challenges for companies like Statoil is the fact that technological development may shift consumers from petroleum consumption to other sources of energy. Environmentally friendly solutions are continuously finding its way into the market at a quicker pace than before. For example, only recently the now well-known car brand Tesla, entered the market with its electrical powered family sports-car. Today, this has not had any serious impact on Statoil, but in the future nobody knows how much of the automobile market is expected to consist of electrical powered cars. Also, petroleum companies may worry about what other present-day fossil fuel consuming segments will shift from petroleum to other forms of energy. These are naturally something for oil and gas companies to think about when investing in projects with a horizon of 20 and 30 years (Deutsche Bank, 2013)(Saltvedt, 2015b).

As production continues to increase, the infrastructure relating to transportation also needs to be developed. The World Energy Outlook predicts a growing demand for energy in developing countries (International Energy Agency, 2015). Given that many of the world's developing countries are far from Norway we see that Statoil's transportation-abilities must stay competitive as well. Oil is usually transported by sea, whereas gas is commonly transported in pipes (Statoil ASA, 2016a). It goes without saying that Statoil is not about build gas pipes from Norway to China for example. This is where LNG-technology starts coming in handy. Liquid natural

gas (LNG) is natural gas that is subjected to lower temperatures and higher pressure, thus becoming liquid. This allows the gas to be transported more easily by means such as shipping (Royal Dutch Shell, 2016).

3.1.2.5 Legal factors

First off, legal factors mainly relate to those regulations and policies that a company is exposed or subject to. Among others this may be consumer laws, labour laws, health and safety standards and trade barriers. For international oil companies such as Statoil, many of the laws and regulations it is subjected to will differ from country to country, making it more demanding to fully comply. Some of these factors are relating to and overlap with some of the previous mentioned political aspects.

When it comes to labour laws, we find that there are several aspects that pose a risk to Statoil. In Norway, an employment contract is largely regulated by law (Arbeids- og sosialdepartementet, 2006). Recently, due to the lower commodity prices, Statoil has had to reduce its workforce considerably to lower its operating costs (Senel, 2016). Due to labour regulations, firing people can be a costly affair in Norway. Evidently, Statoil is no different as the approach to downsizing has been by offering people to retire early with a certain percentage of pay for a certain period (NTB, 2015). Although we know less about labour regulations in other countries Statoil operate in, there are certainly much risk related as one can expect local governments to manage its labour laws in a way that benefits the country and its workers.

Another legal factor that may affect Statoil is trade barriers. A country may impose trade barriers on either imports or exports depending on the desired effect (Mind Tools, 2014). For example, the US recently lifted/eased a trade barrier restricting oil producers in the US of exporting oil to other countries. The reason for this was that the US consumed more oil than it produced and saw it fit to retain as much of its own production as possible for own consumption (Sider, 2016). However, with the barrier lifted, the market situation also changes for producers as the US currently producing enough to satisfy its own consumption. Also, in the case of Statoil, with the trade barrier gone, operations in the US may seem more attractive than before considering that Statoil is in fact a European operator.

A third legal variable relates to how Statoil is exposed to concession-making and licensing in other countries. We find that different countries impose different legal actions to regulate what companies can operate and where (Statoil ASA, 2016a). Most countries determine this by organizing bidding rounds for the investing companies (Deutsche Bank, 2013). In Norway for instance, the government invites companies to apply for exclusive rights to the petroleum activities in designated areas. However, in the US the bidding process is open

to all competition, meaning that all firms can perform bids (Njå, 2013). Sometimes a government may grant its licences by dividing them upon several different companies to co-operate the license. Nevertheless, we find that firms like Statoil must adapt to a number of different licensing systems depending on what country it aims at operating in.

3.1.2.6 Environmental factors

Environmental factors have become increasingly important in recent years as concerns for the global environmental health has increased. Looking back at the previous sections we see that environmental factors could relate to political, social and legal aspects as well. As recently as this January this year, 195 countries participated in what has become known as the Paris climate Conference or Paris Agreement. The participating countries agreed to follow through on a number of different environmental targets, starting from 2020 (European Commission, 2015). Essentially, we see that events such as the Paris Agreement may have large implications for the oil and gas industry and Statoil. Governments and regulators are expected to make changes to rules and regulations, thus putting pressure on companies in terms of carbon emission (IEA, 2015). We will discuss this a bit more in debt when discussing the expected future of oil and gas prices. Nevertheless, we see that an increased focus on environmental factors can have a large impact on firms like Statoil.

Another aspect relating to carbon emission is that consumers are becoming more aware of the environmental impact of fossil fuels. Consequently, consumers are becoming more open to environmentally friendly products and services, even at a higher cost (PricewaterhouseCoopers, 2010). The implications for the oil and gas industry are, much like implied by the Paris Agreement, that firms must to a larger extent be able to produce and provide goods and services that are more eco-friendly.

Although Statoil is a major player in the market for fossil fuels, Statoil has an obligation to meet environmental targets to maintain a sustainable business in the future. As a result, Statoil is investing in eco-improving technologies with CCS. Also Statoil has started to investment in low-carbon projects such as offshore wind-parks (Statoil ASA, 2016b). Ultimately, this lets us believe that Statoil takes environmentally challenges seriously and aims at being proactive towards these changes rather than reactive.

3.1.2.7 Conclusion

By examining the business environment of Statoil using PESTLE, we have identified a set of factors of relative importance. **First**, we find that Statoil is very exposed to political risk both in terms of too much and too little political stability and regulation. **Second**, of the economic factors we find that economic growth, particularly of

developing countries largely affects demand for oil and gas. Also lower commodity prices have a large impact on the currency exchange rate of NOK/USD which Statoil is exposed to. The ability for the industry to issue debt at a low cost has also been reduced with the lower commodity prices. **Third**, we find the social factors to be of less importance to Statoil. However, a higher unemployment rate of the industry, particularly in Norway, has damaged Statoil's reputation as an employer. **Fourth**, the technological factors are some of the more important variables in the PESTLE analysis. The industry is very technologically driven and staying competitive is a continuous struggle for firms like Statoil. The supply and demand changes seen recently are also partly a result of technological development. **Fifth**, we find a number of legal factors of which labour regulations, trade barriers, licencing and concession making of different countries to affect the profitability. **Sixth** and last, the environmental factors mainly include the threat or possibility of environmentally friendly changes that could negatively impact profitability of the oil and gas industry.

3.2.2 Porters Five Forces

In order to assess the structure of the oil and gas industry we will now apply the Porters Five Forces-framework. As pointed out earlier, the profitability potential and shape of an industry can be determined by the five competitive forces. These describe how the economic value created is divided between suppliers, competitors and buyers (Porter M. , 2008).

3.2.2.1 Threat of new entry

As we will point out later from looking at the industry peers, the oil and gas industry has been a very profitable industry in the past. When industries are profitable, it also becomes attractive for other companies to enter the business (Porter M. , 2008). However, the oil and gas industry is also subjected to a number of entry barriers making it difficult for new entrants to compete with the established firms.

The Barriers

As mentioned in the literature review, established companies are often at an advantage in terms of location and access to raw materials. The oil and gas industry is characterized by many mature and well established companies. These companies already control much of the known resources and distribution networks (Deutsche Bank, 2013). While concession-making and distribution of licenses often depend on the governments controlling the area in question, we see that new entrants also face a large entry barrier in terms of capital investments and actually discovering marketable oil. The industry is quite capital intensive and requires substantial investments in exploration, technology and specialized equipment only to start exploring for oil.

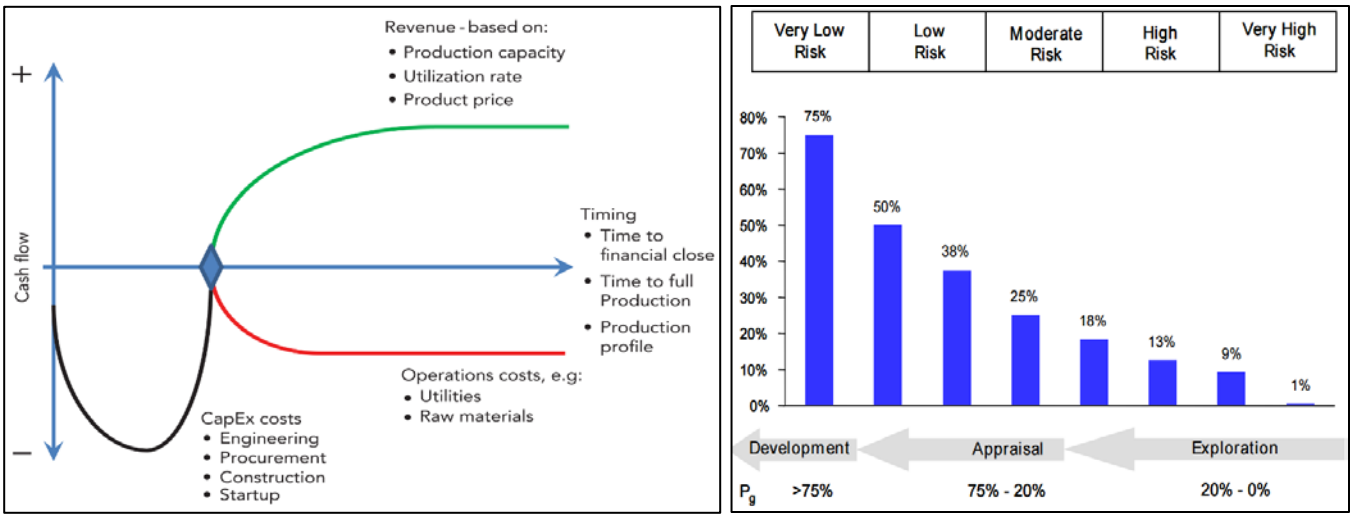

Figure 12: Cash flow, oil and gas projects (Westney, 2011), Probability of geological success (Deustche Bank, 2013)

As we can see from figure 12 before a project starts generating a positive cash flow (given that it does), there is a large period of capital expenditure (Westney, 2011). This makes it difficult for market entrants to establish a solid and profitable business. Particularly if we also consider that many oil and gas projects have a very large time horizon (Deutsche Bank, 2013). This becomes more evident if we look at a relative new entrant in the market, Det Norske Oljeselskap ASA (DETNOR). DETNOR was established in 2006 and has to this day not generated profits.

Sometimes, projects may not even generate value if the oil and gas prospects that are found turn out to be too expensive to produce from. The early capital expenditure and time horizon of projects constitutes a significant risk for new entrants as the early stage risk is quite high. Deutsche bank (2013) presented (figure 12) the risk related to geological success in a project. Early stages and new geographical areas constitutes a low probability of geological success, while the probability increases as the project and exploration are becomes more mature.

Another aspect of entry barriers is the infrastructure and transportation possibilities of oil and natural gas. Transportation of gas is considered difficult, and the infrastructure to transport gas usually consists of pipe-systems. Such pipe-systems are usually established over a longer period of time and often controlled by the larger and more mature firms (Deutsche Bank, 2013). New entrants in the gas segment would either have to build their own pipe and transportation systems or rely on that of the established firms.

The Threats

In recent years, the market has seen a trend of increasing consolidation and the expected number of mergers and acquisitions are increasing (Deloitte, 2015). The lower commodity prices have caused many companies to sell assets such as onshore and offshore licences and production rigs at a lower cost to free capital (Gov.uk, 2015b). Most licences carry obligation to pay rentals. This has caused led many large companies to surrender licences in order to rid themselves of the attached obligation (Gov.uk, 2015a). These aspects allows for the possibility for new entrants to get a head-start in production at a discount (Økland, 2016). Consequently, we see that new entrants can circumnavigate some of the entry barriers.

3.2.2.2 The power of suppliers

The oil and gas industry consists of a large number of suppliers. Many firms can be considered to be both a supplier and a buyer, depending on what aspects of the business are discussed. For instance, many oil producing companies are buyers of engineering services or equipment from its suppliers, while they are themselves suppliers of crude oil and natural gas to its own buyers. Also, sometimes, due to different capabilities, oil and gas companies supply and buy from each other (Statoil ASA, 2016a). In regards to suppliers of engineering services and equipment, the lower oil prices have cause oil and gas companies to put pressure on the suppliers with the aim of cutting costs. Essentially, the recent period of declining investments in oil and gas has put pressure on suppliers as many suppliers are currently experiencing shrinking reserves of orders (Grønvald Raun, 2016) (Mills, 2016). The decline of new investments thereby puts pressure on suppliers as all suppliers are competing for a declining number of projects to participate in.

Bertocco and Keuer (2015) argued that there has been an increasing consolidating activity from service and equipment providers to vertically integrate. As discussed earlier, this could potentially pose a threat to oil and gas producing companies as more power will reside with the suppliers. However, along with falling oil prices and reduced investments in oil and gas projects, we see that the number of new contracts to suppliers is drastically reduced altogether (Mills, 2016) (Statistisk Sentralbyrå, 2016b). Thus, we deem the supplier power of these companies to be relatively small.

Oil service and engineering companies are not the only suppliers to the oil and gas industry. Governments may also be considered a form of supplier in the form that access to natural resources is given or sold by the residual countries. In that sense, we find that there are many companies that function as buyers in order to gain access to natural resources. In many countries these natural resources are controlled by national firms,

which sometimes are indirectly controlled by their respective governments. Further down we will discuss how oil and gas can in some sense be considered a scarce resource, much due to the implications of actually discovering more. Initially, this would point in the direction of governments having some degree of bargaining power over oil and gas companies as buyers of access to resources. However, as we discussed under threat of new entrants, several oil and gas companies are currently surrendering oil and gas licences, thus indicating a diminishing bargaining power of the governments (Gov.uk, 2015b) (Porretto, 2009).

3.2.2.3 The power of buyers

In the oil and gas industry there are many suppliers and many buyers, something that makes it difficult to identify all the market participants. In the previous section we discussed the power of suppliers assuming that oil and gas companies are buyers. However, many oil and gas companies are in fact both a buyers and suppliers of crude oil and gas. This exposes them to the relative bargaining power of both aspects.

Let's consider the buyers to be the companies and end consumers that buy crude oil, natural gas and processed petroleum products from suppliers like oil and gas companies. Essentially, the market for oil and gas is quite large, both in terms of suppliers and buyers. Most of the crude oil and natural gas as products by different suppliers are relatively close in substance and quality. This arguably makes both suppliers and buyers price-takers in the economic sense that none can really affect the commodity price alone (Dorman, 2014). As mentioned earlier, there are many oil and gas providers in the world, which in turn allows the consuming countries to buy products from whichever provider/company they see fit. However, we also find that energy by fossil fuels is largely needed across the world, which in turn make even large institutional consumers and entire countries dependent on the suppliers that exist (IEA, 2014). Conclusively, we find that there is little bargaining power for neither buyers nor suppliers in the market end consumers of oil and natural gas products.

3.2.2.4 Threat of substitution

As discussed earlier, crude oil is the dominant source of energy and expected to be se for many years to come (IEA, 2014). However, continuously research on alternative energy sources makes the oil and gas sector exposed to changes that are difficult to avoid. To take a step back, we find common forms of energy such as coal, hydrogen and nuclear energy, solar and wind power. Historically, coal has been one of the most important sources of energy, and still is to this day (IEA, 2014). However, in a world with environmental awareness of consumers, institutions and governments, the demand for alternative energy sources is increasing and we find many firms investing a lot of resources in developing low-carbon energy (Frankfurt School of Finance & Management, 2016). The demand for coal is naturally expected to go down as it is one of

worst polluters of all energy. This actually speaks for a higher demand for oil and gas, although nuanced and more environmentally friendly technology may and likely will substitute the need for fossil fuels eventually (IEA, 2014).

Another contestant in the energy market is hydrogen, which is regarded as a pollution-free fuel (Renewable Energy World, 2016). This is because hydrogen energy is produced by power cells where hydrogen and oxygen is converted into water. However, although hydrogen is an environmentally friendly source of energy, it becomes inferior to oil and gas at this point as it is difficult and more expensive to store and transport (IEA, 2007). Nuclear energy has also been around for some time and is used in many countries to produce electricity. As a source of energy, nuclear power provides clean air and low carbon emissions and costs. Consequently it made up 11% of the worldwide electricity in 2014 (World Nuclear Association, 2014). However, nuclear energy is considered a more dangerous and risky form of energy as accidents may have very severe implications and the nuclear waste is difficult to handle/dispose of (BBC, 2016). This is proven time and time again, with the nuclear catastrophe in Tschernobyl in 1986 and the more recent close-call nuclear accident in Fukushima, Japan in 2011.

Natural gas has been argued to be a good fit for gradually decarbonizing energy systems and to replace oil in the future (Pless et. al, 2015). The consumption of natural gas increased by 50% in 2015 and is expected to be an important substitute to oil in the coming future (World Energy Outlook, 2015). The natural gas reserves are predicted to be larger than the oil reserves and gas consumption emits less carbon dioxide (IEA, 2014). Although natural gas is a potential substitute for oil, many of the oil companies are also gas producing companies. Thus, this does not pose any immediate threat to the industry.

To wrap up the aspects of substitutes we must point out that much of the world's energy demand is driven by the transportation industry and heating purposes (IEA, 2014). Considering the transportation industry we find that switching from fossil fuels to other forms of energy is likely to be costly and is not going to happen quickly. Thus, we find that that despite an increased focus on shifting energy consumption from fossil fuels to cleaner energy, much of the demand for oil and gas comes from sources that are not easily nor cheaply switched out. The demand for oil is in fact expected to increase in the coming future (IEA, 2014). Nevertheless, it is expected that eventually the demand for energy will be met by different energy sources. However, there is no telling when this shift is expected take place or increase in magnitude. We find that the threat of substitutes is quite present and inevitable for the oil and gas industry, although partly anticipated.

3.2.2.5 Rivalry among existing competitors

The degree of competition in the industry is determined by the forces we previously have discussed. The industry is perceived to be quite competitive given the oversupply of crude oil and a large number of players in the market. In the current situation, the most prominent rivalry relates to the rise of shale oil production in North America and OPEC. When the oversupply of oil became evident in 2014, Saudi Arabia increased production in an effort to outlast competition in a market of lower prices and thereby gain market shares (Saltvedt, 2015b). Interestingly is that OPEC has traditionally been considered a cartel that actively maintains production at certain levels to achieve the right commodity prices (Hansen & Lindholdt, 2008). In terms of rivalry, this could be seen as a good thing as it increases the surplus of the companies and reduces the surplus of the buyers (Dorman, 2014). Nevertheless, there seems to be less co-operative and co-ordinated approach from within OPEC (Saltvedt, 2016c). One of the main reasons that Saudi Arabia and other members of OPEC can allow themselves to compete on price and quantity like we are currently seeing is that the marginal cost of production is extremely low compared to other countries (Saltvedt, 2015c). Altogether, there is no denying that the rivalry within the oil and gas industry is quite high.

3.2.2.6 Conclusion

Using Porter's five forces framework we have identified the major forces determining the structure in the oil and gas industry. First, we find that the threat of new entries is relatively small for the oil and gas industry due to high entry barriers. Second, the bargaining power of suppliers (considering oil and gas companies as buyers) is relatively small, especially now that oil prices are low and new investments are scarce. The bargaining power of oil and gas companies as suppliers is also relatively small as the market is currently characterized by many suppliers and an oversupply of oil and gas. Third, the bargaining power of buyers (considering oil and gas companies as suppliers) is also relatively small. Although oil and gas companies as suppliers also have little bargaining power, we find that end consumers possess little power to affect prices. Fourth, the threat of substitution is an increasingly important factor for the industry. However, in short-term, it is not expected that the oil and gas industry will suffer the effect of any market changing substitutes. Fifth and last, we find a high level of rivalry within the industry.

3.2.3 Resource-Based View

In this section we will discuss what main resources Statoil currently possesses and how these resources contribute to the competitive position. Mainly, we can regard Statoil's resource pool to be made up of natural resources, technological resources, financial resources, human resources and reputational resources.

3.2.3.1 Natural resources

The main inputs in Statoil's production are the natural resources such as oil and gas. Therefore the most important factors in Statoil's production are also the access to such natural resources. This is something that Statoil itself recognizes in their annual report of 2014 as one of the key factors to remain competitive. Along with expectations on profitability of current projects, proved reserves[8] over the next 10-15 years are one of the main value drivers of oil and gas companies (Statoil ASA, 2015).Currently, around 68% of Statoil's proved reserves are situated in Norway whereas the remaining 42% are distributed to locations in Americas, Eurasia and Africa. In 2015, Statoil had a reserve replacement ratio of 0.81, meaning that the proved oil and gas reserves slightly decreased. In other words, Statoil is extracting and producing more oil and gas from existing reserves than what they are discovering. Naturally, the reserve replacement ratio will fluctuate from year to year depending on the significance of reserve findings and technological development. However, the reserve replacement ratio affects Statoil in a long-term perspective as increasing competition, tighter fiscal conditions, and high costs ultimately pose a significant challenge in accessing new profitable resources.

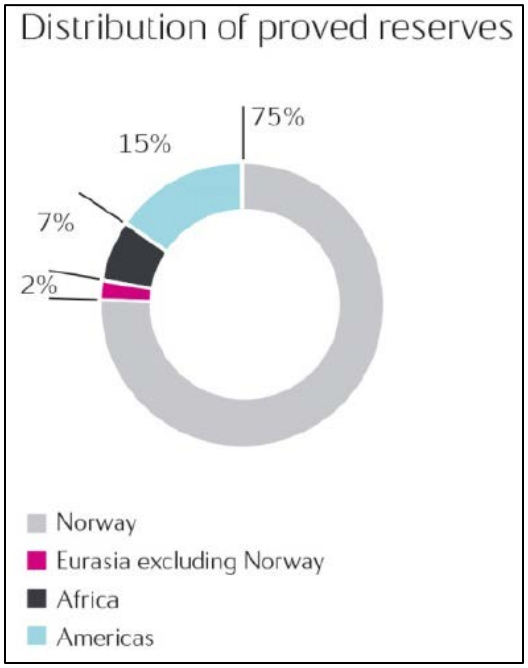

Figure 13: Statoil proved reserves (Statoil annual report, 2015)

	2015	2014	2013	2012	2011	2010
Proved oil and gas reserves (mmboe)	5,060	5,359	5,600	5,422	5,426	5,325
Reserve replacement ratio (three-year average)	0.81	0.97	1.15	1.01	0.90	0.60

Figure 14: Statoil reserve replacement ratio (Statoil annual report, 2015)

In the extent that natural resources are one of the most valuable resources a company like Statoil can possess, it is arguably also a rare resource. Oil and gas is a non-renewable resource and most reservoirs that have been discovered are already controlled by a company or government in one way or another. Given this, neither Statoil nor any other firm is likely to stumble across currently unknown oil or gas reserves without incurring significant costs in doing so. Discovering new reservoirs are becoming more difficult as the technical aspects

[8] *Proved reserves* are reserves that have a reasonable (normally at least 90% confidence) of being recoverable under existing economic and political conditions, and using existing technology.

are becoming ever more demanding. It is worth mentioning that Statoil itself has high hopes for discovering more oil in the Barents Sea, which is something that could positively impact the reserve replacement ratio (Mogård, 2016).

However, despite the fact that new and undiscovered oil and gas reserves are becoming rarer, Statoil is far from having a unique position in this regard. OPEC estimated the total amount of proven crude oil reserves in the world to be 1.493 billion barrels (OPEC, 2015). Out of this, only 19% is located in Non-OPEC countries. Statoil has a proven oil reserve of 5.060 million barrels of oil in 2015, of which the majority is located in OECD countries. Considering this, we see that Statoil's total proven reserves make up an approximate of 4% of the world's total oil reserves. The remaining reserves are under production or control by other entities, mainly national oil companies and OPEC members in particular.

Because OPEC maintains control of a substantial amount of the world's proven oil reserves and new undiscovered reserves are rare, we argue that the market conditions cannot be considered perfectly dynamic and therefore natural resources rare (Barney, 2007). This being said, Statoil is far from the only company with access to natural resources and are therefore not likely to gain a competitive advantage due to their proven reserves. In a sense, natural resources are very imitable as companies may access existing reserves through acquisitions or production sharing agreements. In addition to this, a significant proportion of Statoil's proven reserves stem from early findings in the 1970's and 1980's, also known as legacy fields. As these reserves are considered mature they are already very well developed and provide little additional value to Statoil. Thus, the maturity of Statoil's oil reserves may even be considered a weakness.

3.2.3.2 Technological Resources

Knowledge and technology are important input factors in all aspects of the value chain of an oil company. Whether it relates to discovering, producing, transporting or refining oil, up-to-date technology is essential to compete with other competitors. For example, Jackie Mutschler, head of upstream technology for BP stressed the importance of innovation and technology in relations to discovering oil reserves and maximising the value and recovery rate of existing reservoirs (Cooke & Capper, 2013). Supported by researchers, technology is widely believed to be a major source for competitive advantage (Arora & Nandkumar, 2012).

Statoil's sustainability objective is to create high value growth and increased efficiency as a technology focused up-stream oil and gas company (Statoil ASA, 2014). Considering the fact that Norway's oil and gas resources are located below water, Statoil has developed a great deal of competency within subsea operations. Specifically,

Statoil recognizes innovative and competitive solutions within rig-construction, subsea installations and carbon capture storage (CCS) (Statoil ASA, 2016b) as well as world class improved oil recovery technology (IOR) (Statoil ASA, 2014b). Improved oil recovery technology allows the company to recover a higher portion of oil from a reserve. Essentially, this will increase the value of Statoil's current and possible future oil and gas reservoirs. Historically, all these technologies seem to have provided Statoil with a competitive position on both the NCS and in international arena. Along with being a major player in the international oil segment, Statoil is as of 2015 the second largest supplier of natural gas to Europe (Statoil ASA, 2014). In addition to producing oil and gas on the NCS, Statoil has become more and more present in the international market. Currently, about half of Statoil's total business takes place outside of Norway. Part of Statoil's contributions in international production is undoubtedly its technological knowledge and capabilities in regards to exploring and producing oil and gas.

To what extent part of Statoil's subsea technology can be considered a competitive advantage seems to be contingent on the supply and demand situation in the world. If oil prices dip below 40 USD per barrel, a lot of the world's offshore reservoirs are too expensive to produce from (Saltvedt T. M., 2016b). Production from offshore sources is more expensive compared to onshore production such as what can be found in Saudi Arabia and Iran. According to Statoil, about half of its current day production comes from around 500 subsea wells (Statoil ASA, 2016c). The remaining half comes from other sources, including shale oil. Luckily, part of Statoil's technology from subsea is transferrable to on-shore production, as seen in Statoil's shale and oil sands activities (Statoil ASA, 2014c). Among others Statoil provides innovative technology to reduce use of freshwater in shale oil production. Also, Statoil possesses some of the most advanced carbon capture storage technologies, which come in handy with the risk of stronger regulations for carbon emissions after the Paris Agreement. Nevertheless, prolonged periods of very low commodity prices could render much of Statoil's offshore technology obsolete.

Altogether, we consider Statoil to have a valuable, rare, in-imitable and organizational competitive advantage related to its technological resources. However, this competitive advantage is partly contingent on the market. As long as oil prices stay high enough for production that requires this technology to be profitable, Statoil will have a competitive edge in the offshore sector. As we will show later, there are no clear reasons in the long-term perspective that Statoil's offshore technology will become obsolete.

3.2.3.3 Financial Resources

Financial resources are a firm's ability to access capital through equity or debt as well as the capital structure within the company. Statoil ASA is a listed company that can be freely traded at both the Norwegian stock exchange (Oslo Børs) and the New York Stock Exchange (NYSE). As we will come back to in our financial analysis, Statoil has a satisfactory debt-to-equity ratio, even when taking the recent struggles into account. Given its size and historical stability, Statoil also has a relatively good credit rating (Statoil ASA, 2016a), which in turn should allow it to borrow money at a competitive rate (Hull J. C., 2012). The fact that Statoil maintains dividend pay-outs in times of less profit supports the argument that the firm has a healthy financial status. However, there are many listed oil and gas companies in the world with a satisfactory debt-to-equity ratio and credit rating (looking at the peers, for instance). In fact, many of the larger competitors have a much more solid financial foundation than Statoil. To what extent Statoil possesses any financial resources that provide a competitive advantage is rather doubtful. We will discuss Statoil's financials more in the financial analysis.

3.2.3.4 Human Resources

The oil and gas industry in Norway has for many years been one of the sectors employing most people. Consequently, Norway both provides several petroleum-related educations as well as it attracts a lot of international workers. In the previous years, there has been a tense competition between oil and gas companies for the best workers, engineers in particular. If we look back at the importance of technological advancement and innovation, this seems natural. Statoil alone employs some 19,000 people only in Norway (Statoil ASA, 2016a). It is no doubt that Statoil possesses a lot of knowledge and competence through its workforce. Some of this knowledge is likely to be tacit and organizational in the form that it cannot be easily transferred to other companies.

There has been a widespread reduction of workforce in the last couple of years (Senel, 2016). Even though companies like Statoil will attempt to retain the most valuable portion of the workforce, with much of the petroleum workforce of Norway and the rest of the world entering into unemployment, the scarcity of qualified and good workers is likely to go down. Statoil may have valuable human resources, but they are not rare anymore and much less difficult to imitate or even "steal". Consequently, we deem it unlikely for Statoil to maintain a competitive advantage by human resources.

3.2.3.5 Reputational Resources

The final resource we will discuss is reputation. A company's reputation can have an effect on a range of different issues from attracting capital and human resources as well as receiving concessions for exploration and production in foreign countries. Reputation is not a resource that a company is likely to be able to build up in a short period of time. This leads us to believe that even though most companies potentially can build up a good reputation, it is not necessarily easily built up.

In 2004 Statoil was found guilty of an extensive use of corruption in Iran in the time period of 2002 and 2003 (Statoil ASA, 2009). For companies like Statoil, such incidents may seriously dent the reputational capital of the firm. Since then, Statoil has actively managed its ethical and compliance aspects to avoid similar incidents in the future (Statoil ASA, 2016c). Corruption scandals like that may seriously damage a company's reputation as foreign governments and other companies may defy working with you. Today, Statoil has in our opinion managed to gain a relatively good reputation in the international arena, at least when it comes to being trusted. For example, Statoil's majority shareholder is the Norwegian government. This in turn leads us to believe that Statoil will gain a fair amount of trust when dealing with foreign governments. Nevertheless, a fair international reputation is not something that Statoil is enjoying on its own. We think many of Statoil's main competitors such as Royal Dutch Shell, Exxon Mobil and the smaller Norwegian company named Det Norske enjoy similar reputational recognition in the international arena.

According to employee surveys Statoil used to be the number one firm students wanted to work for in Norway for many years. Today, this is not the case. One can argue that the industry attractiveness has decreased as oil prices went down and most oil and gas companies had to downsize their workforce. This in turn can affect the reputation towards human capital and in turn make it more difficult for companies like Statoil to attract good workers. Again, this argument naturally applies to all companies of the same industry. However, it can be expected that some companies are likely to maintain a better reputation of job security for its employees than other companies. This in turn would naturally speak for a better reputation among workers as well.

To sum up reputational capital, we regard reputation in itself as a valuable resource. We do believe Statoil has earned a fair reputation internationally, while the reputation as an employer has suffered due to recent troubles in the oil industry. We do not believe reputation to be particularly rare among large companies in the

same business. Consequently, Statoil does not gain any competitive advantage due to its reputation. Nevertheless, a loss of reputation could in fact prove quite disastrous.

3.2.3.6 Conclusion

To sum up, we have presented the discussed resources in figure 15. Our conclusion is that Statoil's natural resources are a weakness to the firm while technology is the only strength and sustainable distinctive competence. The remaining resources are only competitive parities, meaning they are no different from that of the competition.

Resources	Valuable?	Rare?	Costly to imitate?	Exploited by organization?	Competitive implications	Economic performance	Strength or weakness
Natural resources	Yes	Yes	No	No	Competitive disadvantage	Below normal	Weakness
Technology	Yes	Yes	Yes	Yes	Sustained competitive advantage	Above normal	Strength and sustainable distinctive competence
Financial resources	Yes	No	No	Yes	Competitive parity	Normal	Strength
Human resources	Yes	Yes	No	No	Competitive parity	Normal	Strength
Reputational	Yes	No	Yes	Yes	Competitive parity	Normal	Strength

Figure 15: Statoil's main resources (Own production)

3.3 Statoil's Strategy

So far, we have discussed the industry environment, business environment and the internal aspects of Statoil. What we have not discussed is the corporate strategy of the firm. The previous sections provide insight to assess Statoil's current position in regards to its surroundings. However, we wish to take a look at how Statoil is structured, what it strives to achieve and how it intend to do so.

3.3.1 Statoil's Corporate Strategy

> *"Statoil creates value by accessing, exploring, developing, and producing energy sources globally, and by enhancing the value of such production through its mid- and downstream segment."* (Statoil ASA, 2016a)

In the annual report of 2015, Statoil refers to a corporate strategy consisting of four main points. These are (1) to deepen and prolong Statoil's NCS position, (2) grow material and profitable international positions, (3) pursue focused and value-adding mid- and downstream activities and (3) provide energy for a low carbon future.

Deepening and prolonging its position on the NCS is done by continuous exploration, development and production. As Statoil continues to find new and profitable production reservoirs/wells on the NCS and developing technology that ensures cost efficient and competitive production the future outlooks for Statoil remain bright. In the early 2000's a fear of oil shortage started to grow. However, today it is expected that the oil reserves in Norway along with developing technology will allow for production even into the next century if desired (Carstens, 2015). Naturally, this depends on the commodity prices and competitiveness of production on NCS compared to that of other nations.

To grow material and profitable international positions is a part of Statoil's strategy that has become quite visible in the recent years. An increasing amount of Statoil's equity production comes from international exploration, development and production. As we will present later, we expect this trend to continue into the future as well. Pursuing focused and value-adding mid- and downstream activities entails improving the current operations of production and processing. Among others, Statoil is the second largest supplier of gas to the European market and aims at maintaining a leading position in this segment. To do so, Statoil is investing in technologies and solutions that allow them to remain competitive in a fast moving industry.

Statoil is set on providing energy for a low carbon future. This indicates that even in a future where demand for oil and gas is declining, Statoil is determined to maintain a market share for supply of energy by tapping into other sources of production. Consequently, we see that for a firm that is big within an industry that is not expected to last forever, Statoil has no plans of shutting down operations and liquidate itself once oil and gas is not demanded anymore.

3.3.2 An Assessment of Statoil's Strategy

3.3.2.1 Vertical Integration

As pointed out earlier, Statoil is a largely integrated firm, meaning that it maintains control of most aspects of its value chain (Stuckey & White, 1993). This naturally raises the question of whether or not this vertical integration is beneficial or restrictive to Statoil. Being vertically integrated is often associated with diverting focus from core activities. If we look back at the resource based view of the firm, we find that much of Statoil's core competence is concentrated in the exploration and production segment. Hence, Statoil divested the Fuel & Retail department. Another aspect that speaks against vertical integration is that it induces less cost incentives for different business units. For example, the refining segment of Statoil receives input of crude oil and gas from within the organization. If the refining segment competed on price for refining raw material from different customers, it would have a larger incentive to keep costs down.

There are also advantages and arguments for firms to vertically integrate. First of all, it increases the level of expertise and flexibility within the organization to adapt to changes. Stuckey and White (1993) also argued that if the industry is subject to high transaction costs and/or high level of asset specificity[9], vertical integration can be beneficial for the firm. Transaction costs are often an effect of high asset specificity, and arise when interacting with other firms become costly (Barrera-Rey, 1995). The oil and gas industry is arguably characterized by a high level of asset specificity as much of the assets are location and technically specific to the industry. For instance, Statoil has an established network of pipelines to transport its gas. Although transportation is not one of Statoil's core competences, the specificity of pipeline investments makes it costly for non-integrated entities to invest in. Another aspect to consider is that Statoil's integrated structure has allowed it to exercise power over other market participants. Put together, we find the benefits of vertical integration to offset the disadvantages.

[9] Assets specificity refers to how particular an asset is to a firm, segment or industry. Assets with high specificity are not easily transferred to other businesses.

3.3.2.2 Diversification – Renewables

Diversification is another aspect of Statoil's strategy that has become more interesting. To start off, we find that for companies to diversify, it is not sufficient to do so only to reduce risk. Investors can more easily and with less cost diversify risk on their own, thus firms should arguably only diversify if it is considered value adding (Brealy, Myers, & Allen, 2011).Statoil is per say not really a much diversified company in terms of what businesses it operates. As of yet, Statoil is mainly exposed in production and marketing of crude oil and natural gas. However, we see that Statoil is arguably diversified within this segment. Statoil produces oil and gas from both off-shore, traditional on-shore and shale sands. This form of diversification from only producing offshore seems natural. Offshore production becomes more expensive as new reserves are located at larger debts in the ocean and are consequently more costly to produce from. By also producing from onshore sites, Statoil maintains the possibility of increasing its proved reserves without necessarily inducing higher costs. However, more interesting is that Statoil has started to diversify by entering a non-fossil-fuel segment, namely wind-power and tidal power.

Entering the wind- and tidal power segment will arguably take Statoil away from its core competences discussed in the resource based view. Prahalad and Hamel (1990) argued that a firm must focus on the core competences to achieve sustainable competitive advantage. Nevertheless, it is fully possible for Statoil to benefit from diversification if it is done for the right reasons. Markides (1997) discussed what aspects a firm need to consider when diversifying. These relate to how the firm is positioned to succeed in the new market and how it will affect the existing operations. When entering the wind- and tidal power segment, Statoil must consider what it can do better than its competition, what strategic assets it has that can help it succeed, and if it can catch up or leapfrog the existing competitors. However, not only must Statoil perform in the new market, it must also make sure that the wind power segment does not break up any current strategic assets essential for current operations.

The offshore wind- and tidal segment are growing industries, while not yet very established. Statoil has practically no experience from these forms of energy, while it is a world leading firm in offshore activities. Given the little experience from renewable energy, Statoil is at a loss compared to competition in this regard. This is why Statoil has partnered with other players such as Statkraft, Masdar and E.On to develop these projects (Dudgeon Offshore Wind Farm, 2016). When it comes to offshore technology, Statoil possesses strategic assets that can put them far ahead of its competition. Statoil has knowledge on how to operate in an unstable and unsecure offshore environment, which is likely to be an essential aspect of installing offshore

windmills and underwater tidal mills. Also, Statoil already possesses infrastructure and transportation vessels to help ease the entry into the segment.

From Barney (2007) we found that resources that are not valuable, firms can attempt to redeploy in order to find new uses. Although Statoil's technology and knowledge of offshore production is one of the assets that are actually of high value to Statoil already, we find that utilizing this knowledge in the wind power segment seems like a choice that could potentially add much value to Statoil. Also, as far as we can tell, developing wind- and tidal power technology does not have any severe implications for Statoil's current oil and gas operations. One might argue that investing in renewable is somewhat cannibalizing to existing services if this would cause more of the demand for energy to shift away from oil and gas. However, as we have discussed earlier, it does not seem likely that this shift will happen too quickly. Rather, we find wind- and tidal power to be a good start for Statoil to remain sustainable in a world of possible diminishing profitability in the oil and gas industry.

3.4 Conclusion

3.4.1 SWOT

To wrap up the strategic analysis of Statoil, we can present our findings in a SWOT analysis, figure 16. SWOT is short for strengths, weaknesses, opportunities and threats. This is a good way of summarizing our discussion of Statoil as it incorporates the positive and negative sides of both internal and external strategic variables in Statoil's strategy.

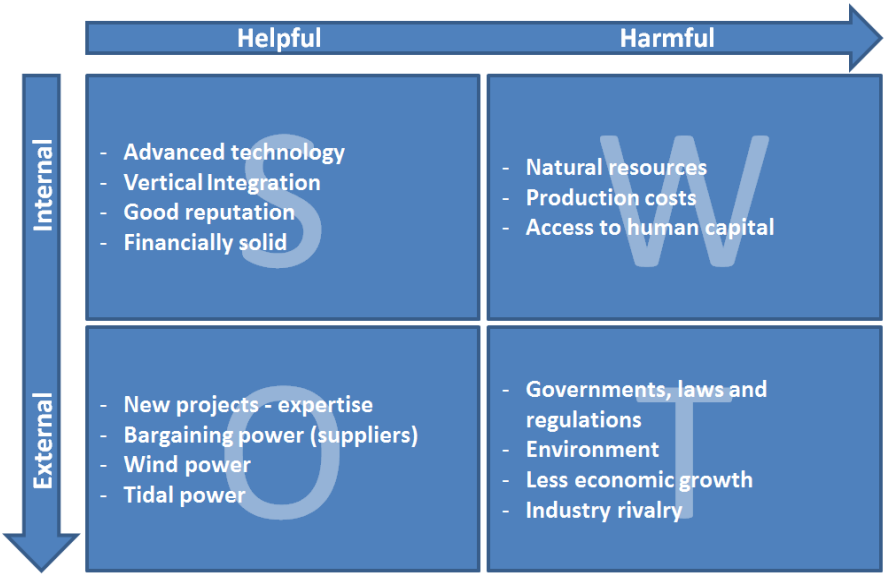

Figure 16: SWOT analysis (Own production)

3.4.1.1 Strengths

Technology: Statoil possesses advanced technology for exploring and producing crude oil and natural gas. Particularly, we find that Statoil is a dominant player in subsea operations. In some aspects, we find that technology is a competitive advantage for the firm.

Vertical integration: The vertical integration of the firm partakes in providing Statoil with more bargaining power and a stronger competitive position. This partly serves as an entry barrier for competition and the company can benefit from the asset specificity that characterises investments in the industry.

Reputation: The reputation as a reliable and trustworthy business partner provides Statoil with a solid foundation for entering into business with other companies and governments.

Financial: Financially, Statoil is in a comfortable position despite a period of lower profits and deficits. This has allowed Statoil to maintain dividend pay-outs as well as the ability to make investments should an opportunity arise. Nevertheless, this strength does not provide any competitive advantage over competition.

3.4.1.2 Weaknesses

Natural resources: Much of Statoil's current oil and gas reserves are mature. Access to new reserves requires costly and risky investments. Thus, the firm's natural resources are more of a competitive disadvantage.

Production costs: Although Statoil has managed to reduce its marginal production cost; it still remains high in comparison with competitors such as OPEC. A prolonged period of lower oil prices could prove fatal.

Human capital: Unlike the good reputation as a business partner, the recent downsizing of workforce in the overall industry has reduced the attractiveness to work in oil and gas companies. Consequently, we find that access to human capital is likely to become more difficult and therefore a weakness to the firm.

3.4.1.3 Opportunities

New projects: Statoil has a lot of expertise and good technological capital. This gives the firm good opportunities to participate in new projects both on NCS and in foreign countries.

Bargaining power: The increased bargaining power towards suppliers provides Statoil with an opportunity to capture a larger surplus.

Offshore wind power: We find offshore wind power to be one of Statoil's most important opportunities. Statoil has a good foundation to perform well in other offshore segments than fossil fuels. As a result, offshore wind

power can arguably provide Statoil with a business area that offsets part of a future decline of profitability in fossil fuels.

3.4.1.4 Threats

Governments, laws and regulations: Given that Statoil operates in many different countries we find that Statoil is quite exposed to government intervention, laws and regulations. By this we are mostly referring to those countries with less political stability, however, it also applies to Statoil's Norwegian operations.

Environment: An increasing environmental concern raises the probability of laws and restrictions to be imposed on Statoil. Also, substituting products may reduce the demand for oil and gas.

Economic growth: Economic growth is one of the main drivers of demand for oil and gas. Should the world economic activity decrease a lot, the effect could be crippling to the oil and gas industry. Even an economic stagnation in China alone would have serious implications for companies like Statoil.

Industry rivalry: The internal rivalry within the industry is quite high. Particularly OPEC with Saudi Arabia and Iran pose a threat to supply and demand factors of oil and gas.

Part IV: Financial Analysis

In a valuation, the main purpose of the financial analysis is to facilitate a better understanding of the firm's historical and present performance for making better forward looking predictions. In this section, we start with presenting the reasoning and theoretical background for re-organizing income statements and financial analysis. Then we walk through our reasoning and choices in the re-organized income statements followed by a profitability-, growth- and liquidity risk analysis of Statoil. To strengthen the analysis, we have also re-organized the income statements of a set of five peer companies, and will compare Statoil to these.

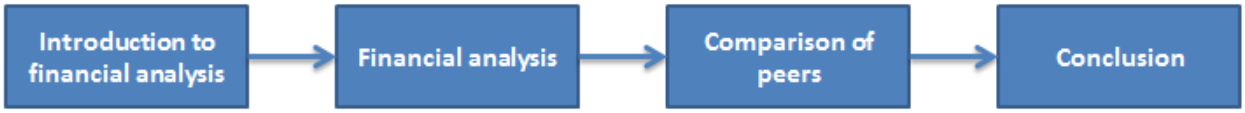

Figure 17: Financial analysis structure (Own production)

4.1 Re-organized Statements

As presented by the company, financial statements do not clearly distinguish between operating, non-operating items and sources of financing. The effect of this is that financial statements are not initially well suited for assessing operating performance. When looking at the performance of a company, financial statements are re-organized to avoid the risk of double-counting, omitting cash flows or hiding leverage that may artificially boost reported performance. First we will re-organize the income statement into an analytical income statement. Essentially, this allows us to find net operating profit less adjusted tax (NOPLAT) which is used to calculate key performance ratios. When finding NOPLAT we exclude any gains from non-operating assets or financing expenses, such as interest, from after-tax profit from core operations (Koller, Goedhart, & Wessels, 2010). The aim is to present only those profits that are generated by the invested capital. Invested capital, in turn, is the net operating assets of the firm. Second we will re-organize the balance sheet to explicitly distinguish between operating and non-operating assets and liabilities. The analytical balance sheet allows us to find the invested capital or net operating assets as well as the net-interest-bearing debt of the company. These are used to make a well-justified analysis of the company's historical performance. When re-organizing the balance sheet, some posts are not straight forward operating or non-operating as given by the annual report and needs adjustments. We will discuss our assessment a little further down. All original and re-organized financial statements with notes can be found in appendix 1 to 7.

4.2 Performance Ratios and Liquidity Risk

4.2.1 Performance Ratios

After re-organizing the financial statements, we can analyse the historical performance of the company. There are several different measures that can be calculated to evaluate the performance. Essentially, different ratios provide different information on the actual performance. We have chosen to evaluate Statoil based on economic value added (EVA) and return on invested capital (ROIC) supplemented with a comparison to the return on equity (ROE).

$$ROIC = Profit\ margin * Turnover\ rate\ of\ invested\ capital \quad (4.1)$$

$$ROIC = \frac{NOPLAT}{Invested\ capital} \quad (4.2)$$

$$Profit\ Margin = \frac{NOPAT}{Net\ Revenues} \quad (4.3)$$

$$Turnover\ rate\ of\ invested\ capital = \frac{Net\ revenue}{Invested\ capital} \quad (4.4)$$

$$EVA = \frac{Net\ earnings\ after\ tax}{Book\ value\ of\ equity} \quad (4.5)$$

$$EVA = (ROIC - WACC) * Invested\ capital \quad (4.6)$$

Source: (Petersen & Plenborg, 2012)

ROIC is a measure that analyses the overall profitability of the company's operations, compared to ROE which analyses the profitability of all invested capital. The difference is that ROE also accounts for the performance of non-operating items and therefore does not distinguish between performance of operations or non-operating activities such as financial investments. Now, ROIC is a ratio made up of the company's profit margin and turnover rate of invested capital. The profit margin depicts how much of the operating expenses the revenue is able to cover. The turnover rate of invested capital indicates how well the company utilises its invested capital. All things equal, a high profit margin and turnover rate of invested capital indicates good operating performance. A lower profit margin could be offset by a high turnover rate of invested capital and vice versa. Summing up, ROIC shows the company's operating performance and ROE shows the overall performance taking financial leverage into account.

Even in a case where ROIC is positive, meaning that the company generates a positive return on the invested capital, it does not mean that the company is generating value. If the cost of capital is higher than ROIC, the company will in fact destroy value. This is where EVA comes in as a handy measure. EVA takes into account the weighted average cost of capital (WACC) and presents how much value the company is actually adding in that year (Petersen & Plenborg, 2012).

4.2.2 Growth

Analysing the growth and growth potential of a firm is also considered an important aspect of an analysis. Growth in sales are often considered one of the main sources of progress for a firm. However, growth in itself is not necessarily always good as it may induce unwanted implications for a firm. Peterson and Plenborg (2012) discuss a measure called sustainable growth rate (equation 4.7). This measure indicates at what rate a firm can grow its revenues while maintaining its financial risk. The factors that affect the sustainable growth rate are thus operating profitability, financial leverage and dividend policies.

$$g = [ROIC + ROIC - NBC) * \frac{NIBD}{E}] * Parent\ interests\ share * (1 - PO) \quad (4.7)$$

Source: (Petersen & Plenborg, 2012)

Not all companies will aim at keeping the sustainable growth rate as high as possible. First of all, the effect of operating profitability in the sustainable growth rate is represented by the ROIC measure. All else equal, it is always desirable to retrieve a high ROIC. The financial leverage on the other hand affects the liquidity risk of a firm, as we will come back to shortly. Dividend policies are maybe the most influential factors when it comes to sustainable growth. A firm that pays out most of its profit will achieve a much lower sustainable growth rate than firms who re-invest the profits. However, if re-investing profits are made in projects that are not considered value creating, the investors would be much better off receiving the dividends instead. Ultimately, we find that if a firm is able to invest in projects that generate value (increasing EVA measure), retaining earnings seems like a good thing. However, if EVA is reduced by growth, re-investing capital is in fact value destroying (Petersen & Plenborg, 2012).

4.2.3 Liquidity Risk

Understanding a company's liquidity standing is important as poor liquidity increases the financial risk of the firm. A lack of liquidity may result in missed investment opportunities, forced divestments or even suspension of payments and default on debt. Liquidity risk analysis can be divided into short- and long-term liquidity risk. The short-term liquidity risk indicates how the firm is able to meet its obligations in the near future while the

long-term liquidity risk measures the firm's ability to meet its obligations in the long run. The following equations represent measures that can be calculated to assess the short- and long-term liquidity risk of a company.

Short-Term Liquidity Risk:

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities} \quad (4.8)$$

$$Quick\ ratio = \frac{Cash + securities + receivables}{Current\ liabilities} \quad (4.9)$$

$$Cash\ burn = \frac{Cash\ and\ cash\ equivalents + securities + receivables}{EBIT} \quad (4.10)$$

Source: (Petersen & Plenborg, 2012)

Long-Term Liquidity Risk:

$$Financial\ leverage = \frac{Total\ liabilities}{Equity} \quad (4.11)$$

$$Solvency\ ratio = \frac{Equity}{Total\ liabilities + equity} \quad (4.12)$$

Source: (Petersen & Plenborg, 2012)

The current ratio (4.8) gives an indication on the firm's ability to meet its current liabilities such as trade payables and taxes based on all the current assets of the firm. This number should preferably be above 1, whereas a current ratio moving towards 2 is considered good. The quick ratio (4.9) gives the same measure, only excluding the impact of inventory. Considering that the inventory is not a liquid asset, normally it cannot actually be used as payment. This ratio should is considered good when moving towards 1 (Petersen & Plenborg, 2012). The cash burn rate (4.10) indicates for how many months a company is able to fund its costs without any further cash contributions from shareholders or creditors, assuming the continuous performance at the time of the ratio.

For the long-term liquidity risk, financial leverage (4.11) and solvency ratio (4.12) are two measures that indicate the long-term liquidity risk of the firm. These measures show how much debt the firm has taken on compared to the equity. The total debt of a firm may be more than what the balance sheet indicates. It may also involve off-balance sheet obligations, such as operating leases. As a result, we use the total liabilities and equity from the re-organized statements for these ratios. Normally, a firm has a low long-term liquidity risk if the financial leverage is low and the solvency ratio is high (Petersen & Plenborg, 2012).

4.3 Financial Analysis of Statoil

4.3.1 Analytical Income Statement

When re-organizing the income statement, we use the information provided by the annual report of the respective years to assess to what extent the given numbers are part of the operating or non-operating segment of the firm. In the following we will explain our interpretation and how we applied this to the re-organized income statement

Revenue

Revenue is generally the income made from the firm's operating activities. Initially there is no need for adjustments to this post. However, we have deducted an operating portion of Statoil's provisions from Revenue.

When provisions relate to asset retirement obligations or decommissioning costs, they are considered long-term operating provisions. Statoil states that the provision is discounted using a risk-adjusted risk-free rate based on Statoil's credit risk. Such provisions are usually built up as a reserve as if the money were gradually borrowed over time (Koller, Goedhart, & Wessels, 2010). Based on this, we consider the provisions to be made up of an operating portion and a thought interest cost. The result is that the operating portion of the provision is deducted from the revenue to determine NOPLAT whereas interest portion is considered to be non-operating. As we will show later, the reserve portion in the balance is treated as a debt equivalent. In 2015, there was a reduction in decommissioning provisions due to changes in cost estimates for plugging and abandonment of production wells. Consequently, this had a positive effect on our calculation of NOPLAT.

Associated Companies

Income from associated companies is classified depending on how the associates relate to the company's core business. In the case of Statoil, associated companies and joint ventures are almost exclusively related to exploring, producing, transporting, refining and/or marketing and trading of oil and gas. This is in direct line with Statoil's core businesses and is thereby included as operating income in NOPLAT (Petersen & Plenborg, 2012).

Other Income

The other income post may include different forms of income that are not necessarily related to normal operations. For example, a company may recognize gains on sale of assets such as machinery under this post. Whether or not other income should be included in NOPLAT depends on whether or not the income is related to operating activities and if it can be classified as recurring. In the case of Statoil, the following events have been explicitly mentioned in the annual report.

Recurring events recognized in other income		
Year	Description	Gain (mmnok)
2015	Sale of interests in the Gudrun Field and acquisition of interests in Eagle Ford	1.2
2015	Sale of interests in the Trans Adriatic Pipeline AG	1.4
2015	Sale of interests in the Shah Deniz project and the South Caucasus Pipeline	12.4
2014	Sale of interests in the Shah Deniz project and the South Caucasus Pipeline	5.4
2014	Sale of interests in licences on the NCS	5.9
2013	Sale of interests in exploration and production licenses on the NCS to Wintershall	6.4
2013	Sale of interests in exploration and production licenses on the NCS and the United Kingdom continental shelf to OMV	10.1
2012	Sale of interests in exploration and production licenses on the NCS	7.5
2011	Sale of interests in Gassled	8.4
2011	Sale of interests in Kai Kos Dehseh	5.5
2011	Sale of interests in Peregrino asset	8.8
2010	Sale of Swedegas	0.3

Non-recurring events recognized in other income		
Year	Description	Gain (mmnok)
2015	Sale of head office building	1.5
2015	Sale of office buildings	0.6
2014	Sonatrach Arbitration Settlement	2.8
2012	Divestment of shares in Statoil Fuel & Retail ASA	5.8

Figure 18: Statoil, recurring and non-recurring events (Own production, Statoil annual reports)

The events listed as recurring relates to the sale of interests in either a project or exploration and production licenses. As previously discussed, Statoil possesses expertise when it comes to exploration and developing projects in difficult environments, particularly related to subsea projects. We regard Statoil's gain on sale of interests in projects related to exploring and developing potential as well as proven oil reserves to be operational. The same goes for sale of interests in exploration and production licenses. For example, Statoil may contribute in developing the potential in a project and then divest the project when other parties have more to gain from the forward operations.

Statoil also includes a number of events in other income that we consider to be non-recurring and/or non-operating. These are sale of office buildings, an arbitration settlement and the divestment of Statoil Fuel & Retail ASA. Gain on sale of office buildings is not considered recurring nor is it operating. The arbitration settlement relates to a disagreement on the fulfillment of contractual obligations between Statoil and Sonatrach – the Algerian state oil company. One could argue that this relates to an operating activity as the contractual agreements are related to operations. However, such gains are an anomaly to Statoil and unlike sale of interests, this rarely occurs. The divestment of Statoil Fuel & Retail ASA is also considered to be a non-recurring event. Statoil Fuel & Retail was Statoil ASA's division for gas stations. Historically this would naturally be considered part of operations. However, this gain comes from Statoil ASA discontinuing their engagement in gas stations altogether.

In our analytical income statement, of other income, only the listed recurring events in figure 18 are removed to find NOPLAT. We consider the remaining part of other income to relate to other non-operating and/or non-recurring events.

Purchases

Purchases or cost of goods sold are naturally part of operations and these costs are therefore included in NOPLAT. However, it is sometimes necessary to consider write-downs of inventory. Write-downs usually relate to a diminishing book value of the assets which are written down to its fair value (Koller, Goedhart, & Wessels, 2010). To what extent inventory write-downs are considered operating or not depend on how likely it is that they occur. Koller et al. (2010) argues that if a restructuring charge such as inventory write-downs is unlikely to occur, the charge should be treated as non-operating. Inventory write-offs would be likely to occur if the company shows a pattern of continuously restructuring and thereby also make frequent write-downs.

Statoil presents purchases as net of inventory variation. The effect of this is that Statoil's inventory expenses include the inventory write-offs for each year. The write-down expenses are historically very small and in some years no write-downs are made at all. Our conclusion to this is that write-downs are not a likely event nor are they part of continuous restructuring of Statoil. Therefore we treat these as non-operating and they are not included in the cost of goods sold. Hence, only the cost of goods sold excluding write-downs are included in NOPLAT.

Implied Interest - Operating Leases

Companies with a sizable portion of operating leases will present an artificially low NOPLAT and invested capital. This is because assets that relate to operating leases are not presented on the balance sheet. Instead the rental expense is embedded within the company's interest costs in the income statement. To account for this, we make an estimate of the asset value and add this back to the PP&E in the balance. Second, we estimate the rental expense and add this back to EBITDA. The rental expense is estimated using the company's cost of secured debt multiplied with the previous year's value of operating leases (Koller, Goedhart, & Wessels, 2010).

Selling, General & Administrative Expenses

Statoil presents expenses related to those identifiable tangible and intangible assets, liabilities and contingent liabilities acquired under selling, general and administrative expenses. In most cases we regard these as operating as those assets and liabilities acquired relate to operations. However, we point out that in 2014 Statoil recognized a curtailment gain related to a change in pension plan under this post. This gain relates to Statoil's prepaid pension plan. Such pension plans are considered non-operating and we regard a gain derived from this to be non-operating as well (Koller, Goedhart, & Wessels, 2010). Thereby, the gain has been removed in NOPLAT.

Exploration Expenses

Exploration expenses are incurred when oil and gas companies look for new resources. These expenses are recorded as an intangible asset on the balance sheet. However, like inventory, the exploration assets may also lose its value compared to what has been recorded in the balance sheet. The result is that the company will sometimes record impairment losses on this asset, just like inventories.

In Statoil's case, recorded impairments of exploration expenses are presented along with new exploration expenses in the income statement. However, we treat this the same way as inventories and exclude the effect of the impairments when calculating NOPLAT. Unlike other intangible assets like goodwill, the exploration expenses are not acquired, but developed. As a consequence their expenses are recorded the same way as inventory purchases.

Depreciation and Amortization

Companies often acquire physical assets that are capitalized on the balance sheet. Because these assets lose economic value over time, the assets need to be depreciated over the course of its lifetime. These depreciation expenses are considered operating and are excluded in NOPLAT.

Intangible assets also lose economic value over the course of its lifetime and are therefore amortized. However, intangible assets are expensed and not capitalized like capital expenditures. The effect is that investments in intangible assets are penalized twice, first through expenses and thereafter through amortization. In the re-organized balance sheet, this is accounted for by adding back historical cumulated amortization and impairments. Therefore amortization and impairments are not deducted from revenues when determining NOPLAT (Koller, Goedhart, & Wessels, 2010). Further, intangibles also often include both operating and non-operating intangibles, something that needs to be taken into account when calculating NOPLAT. In Statoil's case, the intangible assets are almost exclusively exploration expenses, acquisition costs related to oil and gas prospects and goodwill. Other intangibles make up a marginal part of Statoil's intangibles and are considered operational in both the income statement and balance sheet.

Taxes

Income tax as presented in a company's income statement normally includes the tax of both operating and non-operating items. Consequently, subtracting the reported income tax from EBITA will give a misleading NOPLAT in the end. This needs to be accounted for in the re-organized income statement. However, this can be a difficult exercise as most companies do not explicitly present what taxes come from operating and what taxes come from non-operating activities. Luckily, Statoil presents an overview of how much tax is derived from different sources. When calculating operating taxes we included the following posts; income tax at a statutory rate, petroleum tax, tax uplift, tax effect of permanent differences (excluding effect of currency changes), unrecognized deferred tax assets and change in tax regulations. The remaining taxes or tax benefits were derived from tax effect of currency differences and prior period adjustments.

The income tax at a statutory rate is the normal tax that every company would pay. In Norway the statutory tax rate as of 2015 is 27%, down from 28% in 2014 and earlier. In 2016 the statutory income tax will in fact be reduced to 25%. The petroleum tax is unique for the oil and gas industry. This tax is naturally considered operating due to its direct relation to Statoil's core business. Tax uplift is an additional tax-free allowance given to oil and gas companies. In Norway the uplift is 5.5% per year on the basis of the original capitalized cost of

offshore production installations (Statoil ASA, 2016a). We also see this as a direct effect of Statoil's operating activities. The tax effect of permanent differences regarding divestments is a bit more unclear in regards to operating versus non-operating. However, earlier we argued that Statoil invests in projects on a continuous basis, sometimes followed by a divestment with a gain. These divestments sometimes release tax benefits for Statoil. As we considered the majority of Statoil's gain from divestments under other income as operating, we see it fit to include the belonging tax benefit as operating as well. The unrecognized deferred tax assets may naturally include non-operating aspects. However, as we will show in the re-organized balance sheet, most of Statoil's deferred taxes are operating. As a result we have also considered change in unrecognized deferred tax assets to be operating taxes. Finally, the change in tax regulations is according to Statoil an effect of the change in statutory tax rate and is thereby considered operating.

4.3.2 Analytical Balance Sheet

Operating cash

Oil- and gas companies typically have a sizable amount of cash and cash equivalents such as marketable securities on hand. When re-organize the balance sheet, we attempt to seclude the excess cash from the operating cash. Excess cash is considered to be the cash and cash equivalents that are greater than the operating needs of the business. Most firms, including Statoil, do not disclose the amount of cash needed for operations alone. Consequently, based on historical research on cash balances of companies of the S&P 500, we assume that the firms in our study requires an average of 2 % of sales as operating cash (Koller, Goedhart, & Wessels, 2010). Further, we consider the excess cash to be interest-bearing despite its liquidity and low risk.

Trade and Other Receivables

On the balance sheet, trade and other receivables may include both operating and non-operating assets. When re-organizing this post, we separated current financial receivables as we consider these to be non-operating. The remaining receivables, including those of joint venture and associated companies are considered operating and are included in invested capital.

Investment in Associates and Joint Ventures

In the oil- and gas industry it is very common to share risk by entering into production sharing agreements through joint ventures and investments in associates. In Statoil's books an investment is recorded as a joint venture when Statoil has rights to the net assets of the investment. Investments in associates are those investments where Statoil has neither control nor joint control, only ability to exercise influence (Statoil ASA,

2016a). We consider these investments to be made on the basis of the company's core business of exploring, producing, trading and marketing of oil, gas and renewables. Consequently, we consider all investments in associates and joint venture operational investments in our re-organized balance sheets. In relation to this, all payables and receivables to and from associated companies are also considered to be operational.

Property, Plant & Equipment and Off-Balance-Sheet Assets

Most companies will have assets and liabilities that are not represented by the balance-sheet. The most common form of off-balance-sheet debt arises in the form of operating leases. Operating leases are usually reported as an expense in the income statement, and the true value of the assets and debt that relates to it is not disclosed. This, in turn, will contaminate the financial ratios by presenting a lower invested capital than what the company actually operates with. For example, as a consequence return on invested capital (ROIC) may receive an upwards adjusted bias.

$$Asset\ Value_{t-1} = \frac{Rental\ Expense_t}{k_d + \frac{1}{Asset\ Life}} \tag{4.13}$$

(Koller, Goedhart, & Wessels, 2010)

In our re-organizing of the balance sheets, we present the property, plant and equipment as given by Statoil, adjusted for operating leases. We assume that the given book value of PP&E is fair value. When adding the value of operating leases we make an estimated asset value (equation 4.13) which is added to PP&E along with a corresponding adjustment to the debt equivalents. The asset value is estimated using the rental expenses related to operating leases, cost of debt and an estimated asset life into account. The asset life is estimated using property, plant and equipment (PP&E) divided by annual depreciation (Lim, Mann, & Mihov, 2003).

On the topic of operating leases, it is worth mentioning that firms like Statoil also perform subleases of property, plant and equipment. These subleases may be oil-rigs, ships or other property, plant and equipment. Mainly, these subleases are given to Statoil-operated licenses on NCS. Ultimately, Statoil being the lessor, the subleases are recorded in Statoil's balance as receivables and we regard them as operating and part of invested capital.

Parts of a rental expense for operating leases will include compensation to the lessor for the cost of financing the asset. According to Koller (2010) this rental expense should be measured as the cost of secured debt as the debt is secured by the underlying asset. The unanswered question is at what rate the lessor is able to finance an asset where the asset is considered collateral towards the debt. Koller et al. (2010) point out that AA rated

corporate bonds function as a good proxy for secured debt. This does not seem to be too far off for Statoil either as their credit rating by Standard & Poor's is AA-. However, it seems plausible that debts relating to oil- and gas assets are considered more risky at the current volatile market situation than before. Statoil recognizes the interest rate of secured bank loans, which is Statoil's debt with collateral. We find this to be a good proxy for the interest cost Statoil has to pay for its operating leases. In 2015 this is 3.11% (Statoil ASA, 2016a) and we used the respective interests for each year.

Intangible Assets

Intangible assets in our cases mainly consist of exploration expenses, acquired intangibles and goodwill. Acquired intangibles are the separable identifiable intangibles such as patents. In our re-organized balance sheet we present invested capital both with and without goodwill and acquired intangibles. This is to be able to evaluate the company's ROIC in both cases and evaluate whether the company performs well based on its underlying business. Goodwill and acquired intangibles are assets that do not wear out or are replaceable. Also, intangible assets are both expensed through investment and amortization which entails a double-counting. Therefore, in terms of evaluating performance, goodwill and acquired intangibles are adjusted for historical amortization and impairments. In addition to this, we assume that all goodwill has been recognized.

Deferred tax

Deferred tax assets (DTA) and deferred tax liabilities (DTL) may arise due to a number of different circumstances. These posts should also be arranged as operating and non-operating accordingly. Non-operating DTAs and DTLs are netted and recognized as equity equivalents in the re-organized income statement. Operating DTAs and DTLs on the other hand are netted and recognized as interest-bearing liabilities in the re-organized income statement. We will now explain the reasoning behind this.

Operating-related DTAs and DTLs derive from warranty reserves and accelerated depreciation in which the latter often makes up the largest portion of deferred tax for a company. The company will recognize a DTL due to accelerated depreciation if there is a difference between the valuing of assets and liabilities for accounting purposes and tax purposes. In the re-organized balance sheet, these operating DTAs and DTLs are netted and presented as equity equivalents. The reason for this is that operating DTAs and DTLs flow through NOPLAT via cash taxes. When accrual taxes are converted to cash taxes, income is adjusted and the difference becomes part of retained earnings, which in turn makes it an equity equivalent (Koller, Goedhart, & Wessels, 2010)

Non-operating DTAs and DTLs come from tax loss carry-forwards, pension and postretirement benefits and non-deductible intangibles. Because the government do not make cash reimburses when a company loses money, tax loss carry-forwards are credits toward future taxes. Because historical losses are not related to current profitability, tax loss carry-forwards should be considered non-operating. Pension and postretirement benefits arise as a deferred tax asset when there is a difference between actual cash contributions and reported pension expenses. In line with underfunded pensions being treated as non-operating, deferred tax that relates to pensions are also treated as non-operating. Non-deductible intangibles arise when a company acquires another company and recognizes identifiable intangibles. Such intangibles are deductible on the investor's statement but not for tax purposes, thereby creating a DTL for the company. These non-operating DTAs and DTLs are netted and recognized as a debt-equivalent in the reorganized balance sheet because they mainly relate to debt-related accounting differences.

Statoil's DTAs and DTLs are made up of tax losses carried forward, property, plant and equipment, intangible assets, asset retirement obligation, pension, derivatives and other. Of these, we have presented tax losses carried forwards, pensions and derivatives as non-operating and the rest as operating. The net sum of operating DTAs and DTLs have been added to equity and the net sum of non-operating DTA and DTL have been added to interest-bearing debt.

Pension

Most companies acknowledge pension assets and/or pension liabilities in their balance sheets. Pension assets or liabilities are mainly treated as non-operating. First of all, pension assets arise when a company has an overfunded pension plan. These pension assets are considered non-operating and in the re-organized balance sheet these are recognized as interest-bearing assets. Second, pension liabilities arise when a company has a benefit plan that is underfunded. This underfunding is also considered to be non-operating and is recognized under interest-bearing liabilities.

Provisions

Provisions reflect the company's expected future costs or losses. In general, provisions consist in four different classifications, namely ongoing operating provisions, long-term operating provisions, non-operating provisions and income-smoothing provisions. In the re-organized income statement, the ongoing operating provisions are deducted from operating assets to determine the invested capital. This is because they are part of ongoing operations and are treated as non-interest-bearing liabilities. Long-term operating provisions usually relate to

plant decommissioning and are treated as debt equivalents. Non-operating provisions may relate to one-time restructuring provisions and are treated as debt equivalents. Finally, income-smoothing provisions are used to smoothen out the company's performance and are clouding the actual performance of that year. Firms usually do not acknowledge these provisions as income-smoothers, but rather include them in other provisions. Essentially these provisions are added back to the EBITA to find the real performance. Hence, these income smoothing provisions are treated as equity equivalents in the re-organized balance sheet.

The majority of Statoil's provisions relate to asset retirement obligations. We regard these provisions as ongoing operating provisions. However, Statoil also discloses a relatively small portion of provisions as other provisions. To adjust for possible income-smoothing provisions we have considered the non-current other provisions as equity equivalents, effectively adding these back to invested capital. Also Statoil included a provision for litigation charges in 2015. These are also treated as non-operating as charges like these rarely happen. Consequently, they are also added back to EBITA.

4.3.3 Profitability Analysis

Using the re-organized income statement and balance sheet, we calculated a set of ratios to analyse the historical performance of Statoil. Overall, Statoil has a relatively stable profit margin and a decreasing turnover rate of invested capital. In turn, this gives a decreasing ROIC in the period 2011 to 2015. We calculated the ROIC both with and without goodwill to isolate the effect of acquisition and mergers. We find that ROIC is slightly lower when taking into account goodwill, something that seems natural as the invested capital increases. Nevertheless, this means that the ROIC including goodwill is slightly distorted by the premiums paid for acquisitions. ROIC excluding goodwill removes the effect of acquisitions and gives a better picture of Statoil's underlying operating performance. We present these measures in figure 19.

Statoil Performance Ratios					
	2011	*2012*	*2013*	*2014*	*2015*
Profit Margin	12.03%	9.27%	10.75%	10.29%	9.07%
Turnover rate of invested capital (with goodwill)	1.16	1.16	0.98	0.81	0.62
Turnover rate of invested capital (without goodwill)	1.27	1.31	1.08	0.89	0.67
ROIC (with goodwill)	13.95%	10.77%	10.48%	8.29%	5.61%
ROIC (without goodwill)	15.24%	12.10%	11.66%	9.11%	6.08%
WACC	7.15%	6.11%	6.21%	6.42%	5.66%
ROE	30.65%	22.97%	11.61%	5.97%	-10.13%
EVA (with goodwill)*	38.25	28.58	27.99	14.06	-0.45
EVA (without goodwill)*	41.65	32.69	32.11	18.38	3.09

** In billion NOK*

Figure 19: Statoil performance ratios (Own production)

The decreasing ROIC can be explained by looking at the underlying factors such as invested capital and what it includes and the different drivers of NOPLAT. The invested capital is increasing in all years except for in 2015, where it remained almost stable. The NOPLAT on the other hand is decreasing in all years except for a very moderate increase in 2012. This is mostly due to falling revenue, particularly in 2015, and increased operating expenses and depreciation. NOPLAT would have been much lower if it were not for a 50 percent decrease in operating taxes due to losses and a 30 percent decrease in inventory purchases in 2015.

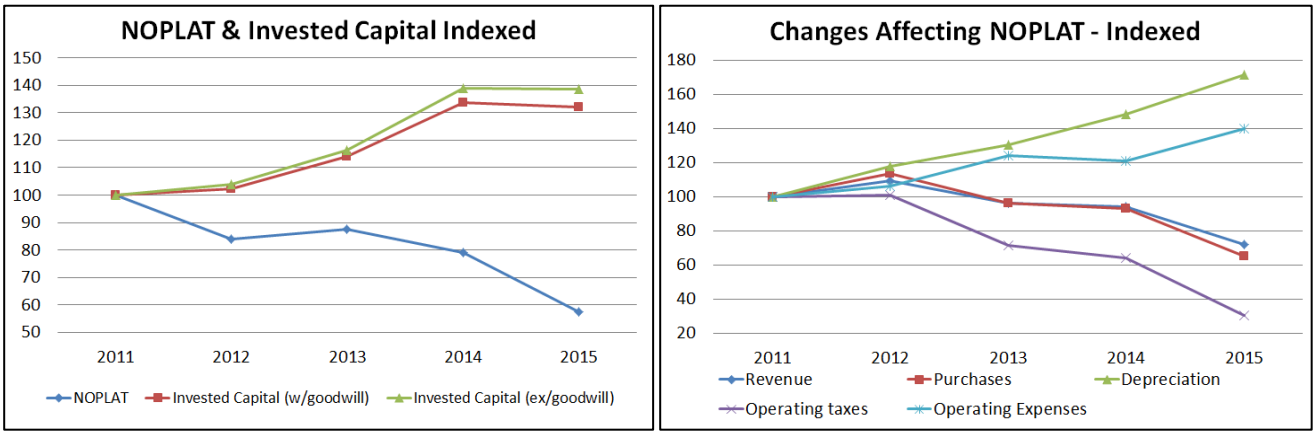

Figure 20: NOPLAT, Invested capital and changes affecting NOPLAT (Own production)

Now, as mentioned earlier, a positive ROIC is not synonymous with creating value for its shareholders. Investors require a certain return for taking on the risk of making an investment. This required return is represented by the company's weighted average cost of capital (WACC) (Koller, Goedhart, & Wessels, 2010). We will come back to how we calculate the WACC later, but for now we can see our measure of Statoil's WACC in figure 5. Essentially, as long as ROIC is higher than the WACC the company is creating value. This is expressed in the EVA calculation in figure 20. In the case of a ROIC lower than the WACC, the company would destroy value for its investors. It is then assumed that the investor could invest elsewhere in the market and expect a representative return for the incurred risk.

Looking at figure 21, we see that Statoil performs very well compared to the cost of capital in the first years of our study. However, the performance measured in ROIC (with goodwill) is decreasing from almost 14 percent in 2011 to 5.61 percent in 2015. The WACC starts above 7 percent in 2011 and only slightly decreases to 5.66 percent in 2015. We can see the effect of this in the EVA graph in figure 21. The economic value added (with goodwill) by Statoil's operations go from above NOK 40 billion in 2011 and actually dips down to destroying

value (NOK -45 million) in 2015. If we remove the effect of acquisitions, we find that Statoil is still creating value in 2015, although very little.

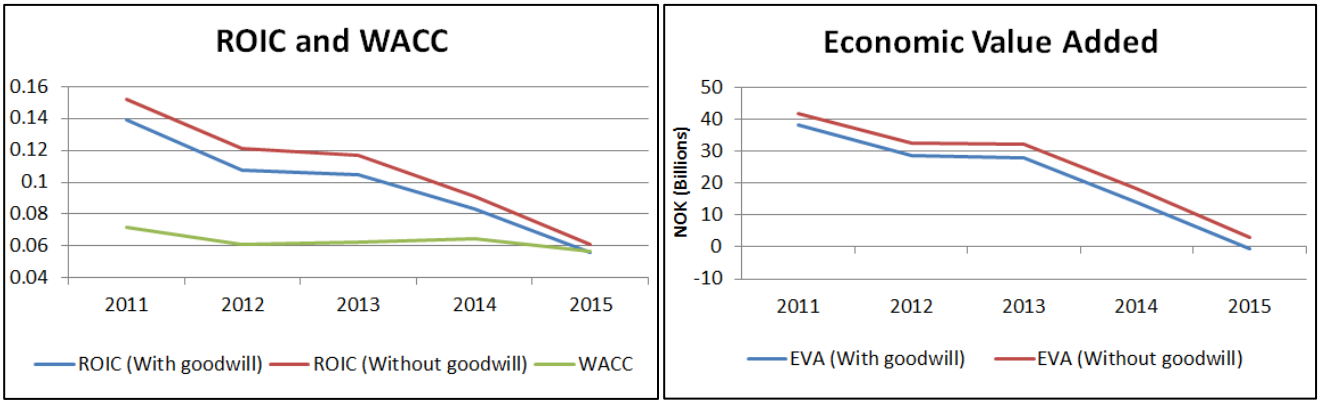

Figure 21: ROIC, WACC & EVA (Own production)

In contrast to ROIC, which only gives information on the operating performance of the firm we can look at ROE. This indicates the total performance of the firm while taking financial leverage into account. ROE is a measure that is sometimes considered less interesting when it comes to evaluating the firm performance as it accounts for variables that are not considered part of the value creating aspects of the firm. However, some investors will arguably not care how the return is generated, whether it is core operations or financial leverage. In 2011, Statoil enjoyed a ROE of more than 30 percent only to see it fall to a negative 10 percent by 2015. This is not a surprise as Statoil reports a negative net income in 2015.

4.3.4 Growth Analysis

Calculating the sustainable growth rate from equation 3.7 (in section 3.3.2 Growth) we find that Statoil's growth rate changes a lot over the years. The sustainable growth rate is a measure of ROIC, financial leverage and dividend policy. In recent years, Statoil has had a decreasing ROIC while maintaining a steady dividend policy. Consequently, the sustainable growth rate has been fairly low in all recent years. Statoil has announced that it is prepared to go to great lengths to maintain its dividend policy, despite the current down-period of the entire industry (TDN Finans, 2015). Statoil is in fact one of the few Norwegian companies within its sector to maintain the same levels of dividends as it did in the more profitable years. This has caused a lot of debate in business-Norway as investors and analysts are divided on whether or not Statoil should have reduced its dividends when not turning a profit. Anyhow, the dividend policy is a signal to investors that Statoil expects the market to turn and that it will start making a profit again in the coming future. Also, it signals that Statoil does

not wish to re-invest all earnings. If we look back at the EVA calculations made in the previous section, we find that increased investments at the current state of the industry are not necessarily likely to add value. Instead, Statoil is focusing on optimising its existing operations to increase ROIC.

As we will come back to when we forecast the future performance of Statoil, we have looked into the previous growth of Statoil's production rates. Based on the expected technological developments and knowledge, we have applied a growth rate of 2% to the production rates of existing and future reservoirs of Statoil. Thus, we find that most of Statoil's growth is expected to come from optimising existing operations in the future rather than expensive re-investments of its earnings. That being said, we also find that Statoil's production levels in Norway are decreasing while the international production levels are expected to increase.

4.3.5 Liquidity Risk

We present our calculations of Statoil's financial ratios in figure 22. The development can be seen in figure 23. From this we see that the short-term liquidity risk is decreasing between 2011 and 2015. In that timeframe, the current ratio goes from 1.16 to 1.83. While the current liabilities in 2015 dropped back to 2011 levels from 2014, the current assets increase almost by 70% in the same period. From 2011 and up to 2015 cash and cash equivalents also increase a lot, which in turn explains the seemingly healthy quick ratio towards the end of the period. The cash burn rate is also increasing, indicating that Statoil could last longer without more debt or equity injected. In 2015 the cash burn rate jumped to an astonishing 9.37. Ultimately, we see that the short-term liquidity risk of Statoil is not a worry in itself, right now. However, this is highly related to the current market situation, which has caused Statoil to have a much lower payable tax (due to losses) and trade payables while inventory, cash and cash equivalents and current financial investments remain high. Conclusively, the short-term risk of Statoil is low, but this is the effect of an undesirable cause.

Statoil Financial Ratios					
	2011	*2012*	*2013*	*2014*	*2015*
Current ratio	1.16	1.12	1.43	1.42	1.83
Quick ratio	0.88	0.87	1.02	0.96	1.03
Cash burn rate	0.71	0.69	1.09	1.57	9.37
Financial leverage	1.34	1.23	1.30	1.41	1.52
Solvency ratio	0.43	0.45	0.43	0.42	0.40
Long term credit ratings:					
Moody's	Aa2	Aa2	Aa2	Aa2	Aa2*
S&P	AA-	AA-	AA-	AA-	A+

* On review for downgrade

Figure 22: Statoil financial ratios (Own production)

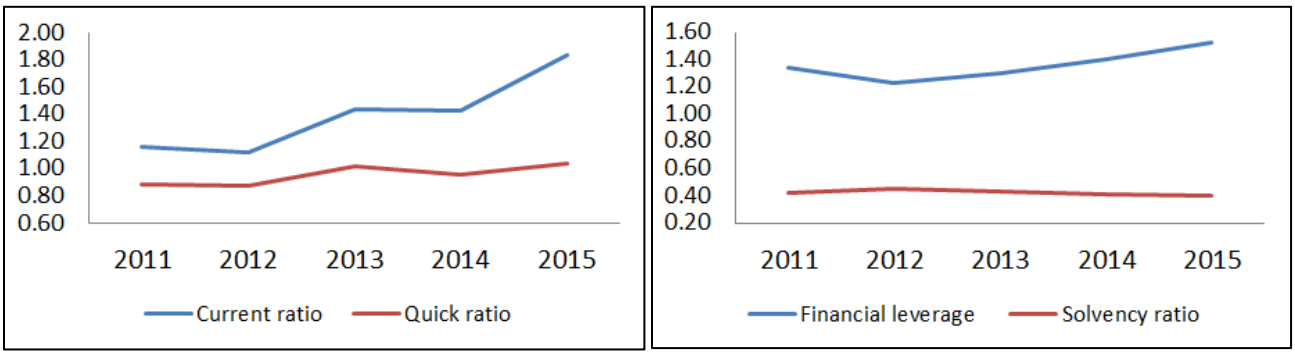

Figure 23: Financial ratios (Own production)

In a long-term perspective, Statoil has an average financial leverage of 1.36 over the last five years. However, it has been increasing over the last three years. This is also apparent in the solvency ratio which has decreased in the same period of time. The increase in financial leverage from 2014 to 2015 comes from non-operating and non-current liabilities. The current operating liabilities are, as mentioned, decreasing while the most significant increase in total liabilities comes from finance debt. Although the financial leverage is at a satisfactory level, it seems to be an upwards trend. The long-term consequences of lower commodity prices and continued investments in new projects such as renewables can put pressure on Statoil's financial leverage. Nevertheless, Statoil seem to be in a healthy position terms of financial leverage as of now.

The weakness of measuring liquidity risk based on the abovementioned ratios is that they are solely of a historical character (Petersen & Plenborg, 2012). Consequently, they provide little information on how the future development will be ahead. Statoil gives information on their long-term credit ratings provided by Moody's and Standard & Poors. These long-term ratings remained unchanged in every year up to 2014. However, in 2015 S&P downgraded Statoil's credit from AA- to A+. Moody's has indicated Statoil and other peer companies in the same segment will be reviewed for a downgrade early in 2016 (Statoil ASA, 2016a). We don't have any information on the actual result of this revision, but given that the oil and gas industry in total has been subject to credit downgrades we expect the same for Statoil. Mostly, the oil and gas firms are being downgraded as a result of the recent lower oil prices (Statoil ASA, 2016a). Ultimately, as we will come back to in our forecast, we expect that the oil and gas market is currently stabilizing and that commodity prices will start to pick up over the next years. The liquidity effect of this is unknown, but according to Statoil itself, the aim is to maintain a fairly stable financial leverage in the years to come.

4.4 Peer Companies

To truly understand the performance of Statoil we examined five peer companies that are representable for the industry and the segments Statoil operates within. These companies are British Petroleum, Chevron, Conoco Phillips, Exxon Mobil and Royal Dutch Shell. The companies are not completely equivalent to Statoil in terms of market capital and revenue. However, they provide a fairly good image of the oil and gas industry from the perspective of international oil companies, like Statoil. All companies are involved in activities both offshore and onshore in many different countries. Many of Statoil's production sharing agreements are in fact made with some of these peer companies. When it comes to the size of the companies in terms of revenue we find that Conoco Phillips is quite similar to Statoil, only a little smaller in terms of revenue. Royal Dutch Shell is slightly larger than Statoil measured in revenue, whereas the remaining three companies (British Petroleum, Chevron and Exxon Mobil) are significantly bigger.

We re-organized the income statement and balance sheets of the peers based on the same assumptions made for Statoil. Given that all the companies operate within the same industry, we find that the financial reporting is presented quite similarly for all firms. To give a better picture of Statoil's performance, we will compare Statoil's ROIC measure to that of the peer companies. This helps give a better impression of whether or not Statoil is performing above, below or on par the overall oil and gas industry. A list of all performance ratios for all can be found in appendix 8.

4.4.1 Comparing Return on Invested Capital

Like Statoil, all the peers seem to perform quite well in the early years but with a declining ROIC towards 2015. First we start by comparing the performance of the companies by including goodwill. As mentioned earlier, this measure does not remove the effect of mergers and acquisitions made in the industry.

In 2011, Chevron outperforms Statoil while British Petroleum, Exxon Mobil and Royal Dutch Shell performs approximately equivalent to Statoil. Conoco Phillips, however, performs worse than all the peers in 2011, but is the only company with increasing ROIC in 2012. In 2012 Statoil has the second to lowest ROIC of all the peers, while only British Petroleum performed worse. As for British Petroleum, some of this low operating performance may be explained by the aftershocks of the 2010 BP Deepwater Horizon oil spill[10]. The same cannot be said for Statoil. By 2013 the ROIC of both BP and Conoco Phillips increased while all the other

[10] The Deepwater Horizon (referring to the name of an oil rig) oil spill is considered the second largest oil spill and the largest marine oil spill in history. The aftershocks of this are still visible in BP's annual reports.

companies continued to face a decline. By 2015 all companies experienced their lowest ROIC in the 2011-2015 timespan. Statoil has the second highest ROIC, only passed by Royal Dutch Shell while both Conoco Phillips and BP has a negative ROIC.

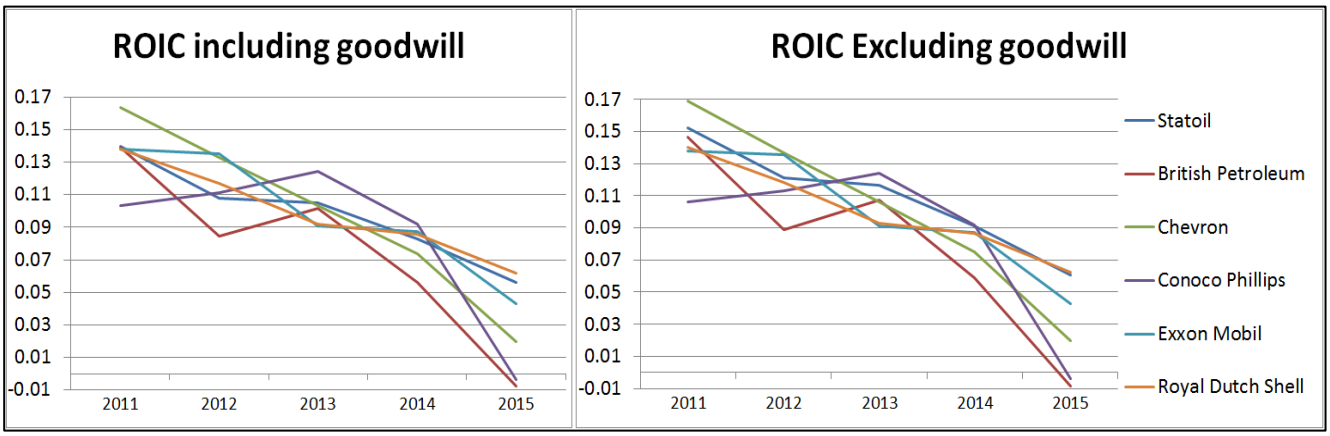

Figure 24: ROIC peer companies (Own production)

Looking at the ROIC excluding goodwill, we see that Statoil performs better in comparison to its peers than it did by including the goodwill. In fact, Statoil ranked second in 2011, third in 2012 and second in all following years. By 2015 Statoil had a ROIC excluding goodwill of 6.1 %, only surpassed by Royal Dutch Shell's 6.2 % ROIC. As discussed earlier, most of the fall in ROIC seems attributable to the falling oil prices. Comparing Statoil to the two worst and best performers in figure 25, we see that Statoil and Royal Dutch Shell have seemingly managed its revenue and expenses better than British Petroleum and Conoco Phillips. Statoil saw a total decline of 24% in net revenue between 2014 and 2015 whereas BP and Conoco Phillips had a 37% and 44% decrease respectively. This has resulted in a larger decline in NOPLAT for both BP and Conoco Phillips compared to Statoil.

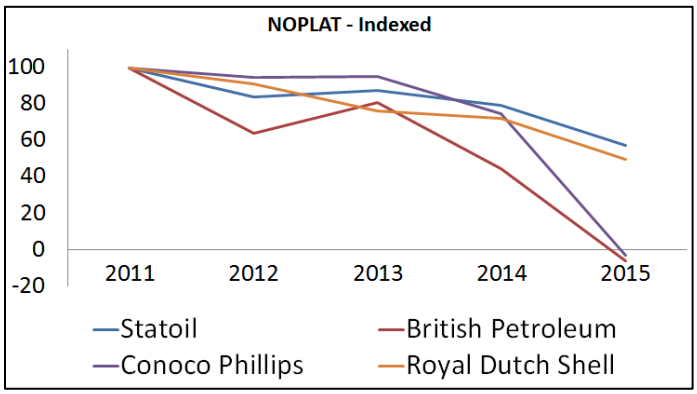

Figure 25: NOPLAT indexed (Own production)

Although Statoil has managed to maintain the highest NOPLAT in 2015, its invested capital is also among the highest. One of the reasons for Statoil performing better than its peers in terms of revenue may be attributed to the currency effect of NOK/USD when the oil price is falling. As we will show later, there is a high negative correlation between the oil price and the exchange rate between Norwegian kroner and United States dollars. The effect is that lower oil prices are offset by a more expensive NOK, making a barrel of oil sold more worth to Statoil than companies operating only in USD. Nevertheless, we find that Statoil performs quite well compared to the rest of the industry both with and without goodwill. Statoil has managed to maintain a fairly good operating performance given the current market conditions compared to most of its peers. One of the risk-factors may be that the invested capital continues to increase at a more rapid pace; something that could prove problematic should the oil prices not shift upwards and the profit margin does not increase along with it.

4.4.2 Comparing Return on Equity

ROIC only compares the operating aspects of the performance. If we take a brief look at how Statoil and its peers are doing while taking the financial leverage of the firms into account, we find a slightly different result than before. In 2011 Statoil was the best performer measured in ROE. However, this measure has been decreasing rapidly in all years until 2015. By 2015 Statoil actually has the lowest ROE of all firms with a negative 10%. This puts Statoil below both British Petroleum and Conoco Phillips which perform quite bad in both the ROIC and ROE measures.

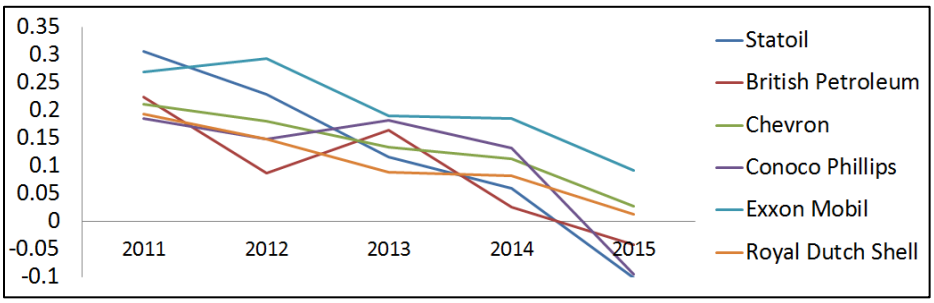

Figure 26: ROE all peers (Own production)

Given that Statoil performs well in terms of operating profitability, the low ROE tells us that Statoil's financial leverage and net borrowing cost has a negative impact on Statoil. The middle performers measured in ROIC which were Exxon Mobil and Chevron are actually the top performers when it comes to ROE. One explanation to this may be the size of the companies. Both Exxon Mobil and Chevron are larger in terms of market capitalization and revenue than all the others. They also rank quite well in credit ratings, which in turn is likely to provide them with favourable financial conditions.

4.5 Conclusion

Summing up the financial analysis of Statoil, we find that it is doing quite good in terms of operating performance. The overall trend in the oil and gas industry shows a downwards moving trend which is highly related to overproduction and falling oil prices world-wide. Consequently, most firms face a lower operating performance due to falling profit margins and/or lower sales volumes. Given that Statoil has the second highest operating performance of the companies in our industry comparison, we conclude that Statoil has managed the lower oil prices quite well. Even though the operating performance has declined; Statoil has managed to continue to create value from its operations, although closing in on value destruction in 2015.

When it comes to growth, we find it likely that Statoil's forward growth comes from optimising existing operations through technological development rather than investing in a lot of new projects. Statoil has maintained a steady dividend policy even in times of uncertainty, which indicates that Statoil is a maturing company and not expecting to grow at a very quick pace in the future. The liquidity risk of Statoil seems satisfactory, although this is highly related to a period of lower activity. The short-term liquidity risk has been decreasing a lot due to less working capital. The long-term liquidity risk is healthy, but financial leverage is increasing. This indicates that Statoil may face a more stringent financial future should the commodity prices not rebound to higher levels.

Part V: Forecasting

Before we can valuate Statoil, it is necessary to forecast and budget Statoil's income statement, balance sheet and cash flow. This will be done up to the point where the company is assumed to have reached a steady state. Steady state is when the company's free cash flows are growing at a constant rate (Koller, Goedhart, & Wessels, 2010). This naturally requires some drivers to be predicted, and for a company like Statoil there are naturally many such drivers. However, as Koller et al. (2010) argues, an overly detailed prediction also introduces a higher risk of mistakes. Mainly, the revenue will for most firms be the most important driver to determine future growth and performance of a company. Many of the other items in a forecasted income statement and balance sheet can be derived from the revenue. As a result, we devote most attention to predicting the growth in revenue.

The revenue is naturally composed of the price and quantity of the goods sold, which in this case is mainly crude oil, natural gas and refined products. We have chosen to break this into a twofold approach where we analyse Statoil's proved reserves, production and ongoing development projects both in Norway and internationally to determine the expected production volumes in the coming years. Thereafter we will determine future prices of oil and gas for calculating the revenue. Earlier, we mentioned that Statoil is exposed to the risk of currency fluctuations. Given that the exchange rate of NOK/USD is very negatively correlated with the oil price, we have predicted a forward development of the exchange rate based on how the oil price forecast.

5.1 Production of Oil and Gas

As of 2015 approximately 68% of Statoil's entitlement production comes from operations on the NCS and the remaining 32% from international operations. We will now estimate the future production volumes that Statoil is expected to realize from both its Norwegian and international operations.

5.1.1 Production on the Norwegian Continental Shelf

Only on NCS Statoil is active on more than 45 different oil fields and six new fields are under development. To determine the production on NCS we use the proven reserves and the average annual production of each reserve to determine the amount of oil and gas produced from each year. The amount of production on each reservoir is calculated using the 2015 quantities with an annual growth rate of 2%. The growth rate is based on the historical growth of production and that future technological improvements will continue to improve efficiency.

Each reserve has an expiration date determined by either the amount of recoverable oil or the length of the license given to operate on that particular reserve. As shutting down and opening up production wells is a costly affair, we do not expect Statoil to plug up and leave once the license expires, given that there is still more recoverable oil in the reserve. Consequently, we assume that once a license for a healthy well expires, Statoil is granted a new one. On the international arena this is in fact the case as many of the licenses are granted without a time limit as long as the operator continues to produce from the reserve. Essentially, this means that we expect all reserves to be continuously operated until the reserve is empty. For calculations, see appendix 10.

Now, another important issue is when we can expect a reserve to be empty. All fields are as of today measured in a quantity of proved reserves. This means that the amount of recoverable oil and gas in that particular field is measured given the current technology and capabilities of Statoil. As discussed earlier, Statoil has developed a lot of technology for improved oil recovery (IOR) and has set a target of 60% recovery rate on the NCS (Statoil ASA, 2014b). Currently Statoil's recovery rate is an average of 50%, and we assume that the proved reserves are based on this measure. For our forecasted production we assume that the IOR is increased to 60% and thus we have increased the proved reserves accordingly. Also, the proved reserves are presented in barrels of oil equivalent (BOE). This means that oil and gas is not explicitly distinguished, but presented as a combined value under the same denomination. As most reserves produce both commodities, we distinguish between oil and gas when calculating the actual revenue using a five-year average ratio of oil and gas amount from Statoil's historical entitlement production.

Statoil also have developing projects expecting to start production in the coming years. Big fields such as Johan Sverdrup and Goliat will be going on stream and generate important revenue for the next 20-50 years. As these fields do not yet have an annual production rate, we base the yearly production output from these fields on Statoil's own prediction and/or in comparison with similar existing and operational fields.

5.1.2 Production International

Production from the international operations are more difficult to forecast as there is less information available on the size of the reserves or how much Statoil is entitled to. However, Statoil do disclose the average daily production and the expiration date of their licensed operations. Similar to production on NCS, we assume a steady growth in expected production volumes as technology advances. When it comes the expected lifetime of the licenses, we find that in many of the countries such as the U.S., Canada and U.K., the licenses have no

expiration date but rather a perpetuated lease agreement where the production can continue as long as oil and gas quantities that are produced is generating profits. We also know that Statoil frequently enters new agreements and sells off rights to other agreements in the international market. As we do not have sufficient information to determine what new projects Statoil will enter in abroad, we assume that those projects with a defined expiration date is continued for the remainder of our forecast. As we know very little about new projects internationally, we assume all existing fields continue operations throughout our forecast to be a fair offsetting measure for what new projects Statoil might take on. For calculations on international production, see appendix 10.

5.1.3 Total Production

In the past years, the total production has averaged between 600 and 650 MMBOE per year. Production on NCS has declined from 530 MMBOE to 440 MMBOE per year in the period 2009 to 2015. The decline in production on NCS has been offset by an increase in international production, making the total production on average increase slightly over the years. From figure 27, we see this developing trend from 2009 to 2015 continue into the forecasted production levels up until 2040. The overall production seems to close in on an average slightly above 700 MMBOE per year in the future.

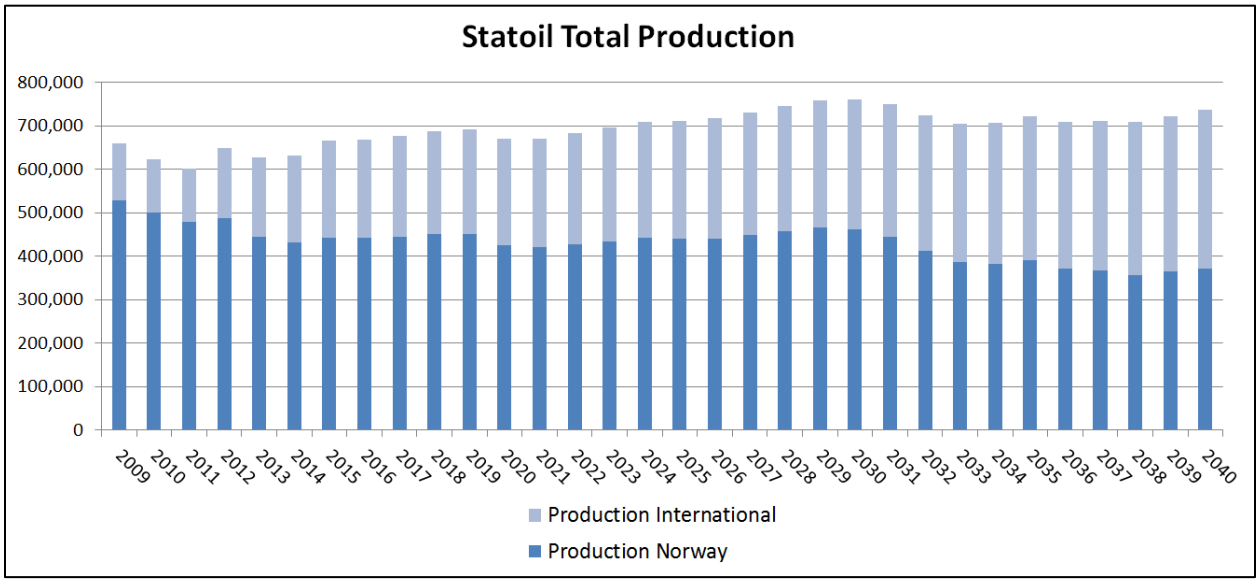

Figure 27: Total Production (Own production)

5.2 Approach to Forecasting the Oil and Gas Price

Earlier we discussed the main drivers of oil and gas prices explained by the supply and demand framework and the informal approach. Energy in all its forms and purposes is a truly extensive and vast topic that affects both political and private aspects in all countries of the world. This explains why so many organizations, institutions, businesses and political entities are involved in aspects that relate to energy. Hence, there are almost an indefinite amount of factors at play that affects the development of energy supply and demand. Considering the amounts of determinants affecting oil and prices, there is no clear definite model or framework that can predict the future prices, at least with a high certainty nonetheless. Nevertheless, as oil and gas are the main drivers of revenue, they need to be forecasted. This task can be done in a number of different ways that are either quantitative or qualitative in character. Preferably, a forecasting model should incorporate aspects of both approaches. Behmiri and Manso (2013) discussed a range of studies performed on forecasting crude oil prices and found that qualitative models were the least used approach. This seems natural as extensive qualitative analysis is quite demanding and time-consuming. Also, it is practically close to impossible to consolidate all available information into one model; as a result qualitative analysis may even result in too much information being considered.

Considering the quantitative approaches, Behmiri and Manso (2013) discussed both time-series models and financial models. The European Central Bank (2014) compared a number of different quantitative approaches to oil price forecast, among others; stochastic models, benchmarking with non-oil related commodities and futures-based forecasting. Their conclusion was that although the models perform well on their own for specific time horizons, none of the models truly managed to forecast the oil price for a longer period of time alone. This implies that a better forecast could be made by combining a set of different quantitative approaches. Nevertheless, we find it too extensive for this paper to use a lot of different models. The most frequently used techniques for forecasting oil prices are time-series econometrics (Behmiri & Manso, 2013). This has much to do with time-series not being too complicated and time-consuming. For the purpose of deciding future revenues, we aim at using a time-series model that allows us to generate a forecasted average of the oil and gas price for each year. Also, given our knowledge of oil, gas, supply, demand and forward looking trends compared to that of trained analytics, it becomes clear that our knowledge is inferior. As a result, we partly rely on analytical work done by agencies and institutions such as the International Energy Association (IEA) and analysts from financial institutions. Using this, we will supplement our time-series forecast by aligning the input parameters with the analytical information.

5.2.1 Geometric Brownian motion

There is a lot of information about future market events and the magnitude of possible events that we do not have. Taking this into account, we can arguably think of both the oil and gas price as being stochastic variables as their future is uncertain (Hull J. C., 2012a). Given this, we can make predictions about the future oil and gas prices based on a Geometric Brownian motion (GBM). GBM is essentially a stochastic process for asset prices where the logarithm of the underlying variable in time *t* has a normal distribution with mean and variance both proportional to *t* (Hull J. C., 2012a). GBM is commonly used in option literature when the asset price is assumed to be stochastic. Essentially, GBM is a Markov process in the way that it assumes only the current value of a variable is relevant for predicting the future. As Taylor (2005) argues, GBM might be thought of as a bit unrealistic given the fact that future prices depend on the recent history of prices. Despite this, the long-run development of the oil price can still be argued to follow a Brownian motion as the underlying variables are not known. Therefore GBM serves as a useful approximation for determining the future oil price (Taylor, 2005).

The change in price S is given by equation 1.1. We let μ be the drift rate of the oil price over time *t*. The standard deviation is denoted by σ and the term $\epsilon\sqrt{\Delta t}$ is the stochastic component of the return (Wiener process). When forecasting forward, the stochastic component of return will be simulated using Monte Carlo sampling, giving a normally distributed number between 0 and 1.

$$\Delta S = \mu \Delta t + \sigma S \epsilon \sqrt{\Delta t} \qquad (1.1)$$

While an arithmetic Brownian motion has a positive probability for a negative outcome, the GBM ensures only positive outcomes (Taylor, 2005). This seems natural as we don't expect the prices of commodities to ever go below zero. Nevertheless, the GBM will consequently predict prices to move towards zero or infinity. Yet again, we don't regard extremely low nor high values to be plausible scenarios for oil and gas prices. To avoid this, we can add upper and lower limits to the price prediction. This will stop the GBM to predict any prices above or below a given number.

5.2.2 Volatility

One of the input variables for the GBM calculation is the volatility of the oil price. Volatility is a measure of how much the oil price fluctuates over a period of time (Taylor, 2005). Naturally, like oil and gas prices itself, we cannot know the future volatility. The history of returns may give useful insight into the volatility of oil price. Realized volatility or historical volatility may be calculated by formula 1.2:

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(r_{t-i} - \overline{r})^2} \quad (1.2)$$

This is a fairly common approach to volatility which sums up the squared excess return of the price for each period of *n* periods. Additionally, one might also smooth out the historical data by calculating historical volatility of a moving average of returns to remove the volatility of extremely positive and negative returns. However, a plain forward historic volatility measure does not capture the fact that the oil price does not have a constant variation over time. This is referred to as heteroscedasticity, which means that the next period's volatility will depend on the recent volatility (Behmiri & Manso, 2013). In effect, this tells us that a high volatility will often be followed by a similar high volatility and likewise for low volatility. If we look at the volatility of oil and gas price for a five year period as displayed in figure 28, we see that this seems apply very well. Consequently, we need to find a volatility measure that does not underestimate the oil price fluctuations.

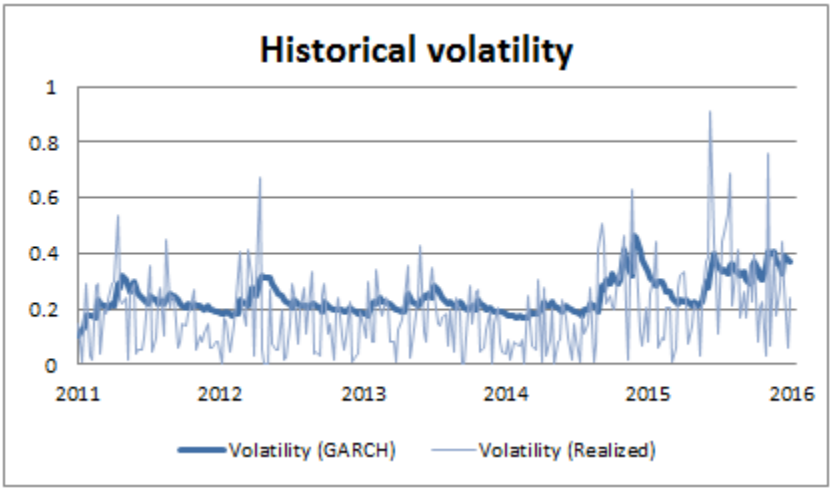

Figure 28: Historical volatility (Own production)

Behmiri and Manso (2013) pointed out the commonly used autoregressive conditional heteroscedasticity (ARCH) type models to estimate the volatility measure of the oil price. The most common ARCH-type model is the general autoregressive conditional heteroscedasticity (GARCH) model. The GARCH model has gained popularity for its simplicity to use given that there are only four variables that have to be determined (μ, α, β and *w*) (Taylor, 2005). The GARCH model is denoted by equation 1.3 where the variation in time *t* depends on the return and volatility in time *t-1* and three variables (α, β and *w*).

$$h_t = w + \alpha r_{t-1}^2 + \beta h_{t-1} \quad (1.3)$$

$$z_t = \frac{r_t - \mu}{\sqrt{h_t}} \quad (1.4)$$

$$l_t = -0{,}5 * [\ln(2\pi)) + \ln(h_t) + z_t] \quad (1.5)$$

$$\mathrm{Var}(\mathrm{r_{r+n}}|\mathrm{r_t}, \mathrm{r_{t-1}}, \dots) = \sigma^2 + (\alpha + \beta)^{\mathrm{n-1}}(\mathrm{h_{t-1}} - \sigma^2) \quad (1.6)$$

$$\sigma^2 = \frac{\mathrm{w}}{1 - \alpha - \beta} \quad (1.7)$$

One of the benefits of using the GARCH model compared to other stochastic volatility models is that it is easier to determine the maximum likelihood for obtaining the observed data (Taylor, 2005). The maximum likelihood is presented by the function l_t (1.5). Consequently, the four unknown parameters are determined by maximizing the sum of the likelihood measure for the dataset.

The forecasted volatility is given by equation 1.6 for conditional variances in year *t*. The unconditional variance is denoted by σ^2 and can be written as in equation 1.7. Interestingly, the forecasted variance given by the GARCH model will in the long-run converge towards the unconditional variance.

5.3 Forecasting the Oil and Gas Prices

The following sections include our oil and gas price forecast. We have chosen to structure the following presentation as shown in figure 29.

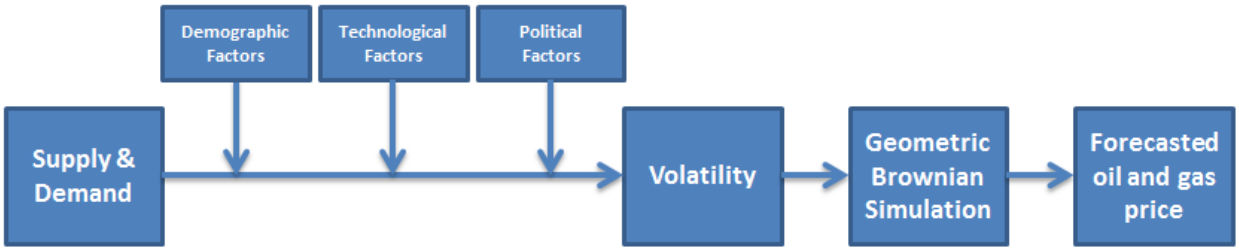

Figure 29: Oil and gas forecast (Own production)

5.3.1 Supply & Demand

Determining future supply and demand is a difficult task, and even seasoned analysts struggle to make good justified predictions. We will now discuss some of the observed and expected aspects relating to future supply and demand.

5.3.1.1 Demographic & Economic Factors

There is almost no doubt that the demand for energy in one form or another will rise in the coming future. The question relates more to how this demand will be met. Historically, much of the world's demand for energy has been provided coal, oil, gas and nuclear energy. In a forward looking report, IEA (2014) discusses the expectations of future supply and demand for energy. By 2040, it is expected that the total world energy demand will range between 16 000 to 20 000 million tonnes of oil equivalent (MTOE) depending on different scenarios. For comparison, todays primary energy demand is about 14 000 MTOE. Even though the share of fossil fuels in the overall primary fuel mix forecast is decreasing, it will still be by far the largest contributor to the total energy supply. Out of all fossil fuels, oil is and will make up the single largest source of energy in the years to come. Gas is expected to increase to become the second-largest fuel in the global energy mix, along with coal.

As mentioned earlier, demand for oil and gas is largely driven by economic growth. The net growth in oil demand is expected to come entirely from non-OECD countries such as China, India and Nigeria. In fact, India and Nigeria is expected to have the highest rates of oil demand growth in the years to come. Also, the majority of the growth in demand is expected to come from two sectors, namely transport and petrochemicals. This is because these sectors are the most challenging ones to find substituting alternatives for (IEA, 2014).

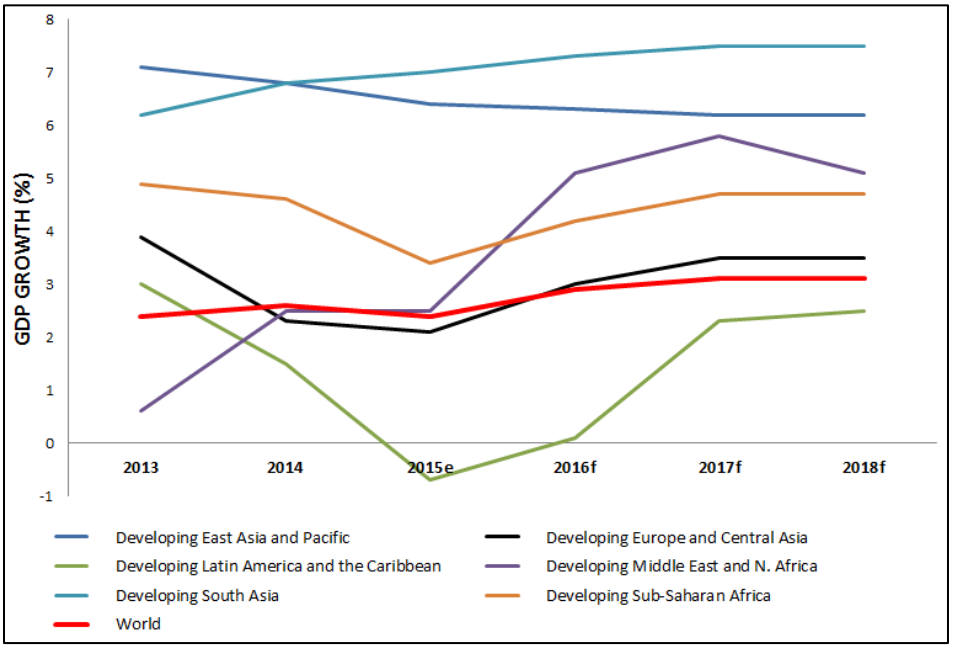

Figure 30: Economic growth in percent (The World Bank, 2016)

If we look at the recent and forecasted development of GDP presented in figure 30, provided by The World Bank (2016), we see a recent decline in growth. This growth rate is expected to increase in the coming years. This supports, a steady increase in future demand of both oil and gas (IEA, 2014)

5.3.1.2 Technological & Production Factors

As technology for alternative and renewable energy is being developed, the isolated effect of this is expected to decrease demand for oil. However, in the lack of any immediate cost efficient alternatives, the outlooks for the oil and gas industry still seems to remain quite bright for a number of years to come. The fact is that most oil producing countries does not have enough incentive to put their oil and gas industries to a halt, even when taking the environmental concerns into account. The total amount of remaining recoverable fossil fuels exceeds several hundred years of current day production. Thus remaining resources of fossil fuels are easily sufficient to meet demand in the coming future (IEA, 2014). Additionally, IEA (2014) predicts that there will be an increase in recoverable resources as companies continues to search for more resources and technology allows for an increased recovery ratio of existing reserves. It has also been argued that OPEC may even want to limit its production rates (or at least growth rate) to preserve resources for a longer term (IEA, 2014). The fact is that the low prices and high volumes are also burning up OPEC's resources along with yielding a lower return than what could be expected in the future.

On the current production side, we also see that eventually, there should be an effect on the supply of oil and gas. The amount of oil and gas rigs that are operating moves in cycles, as shown in figure 31. From 2011 and up to end of 2014, the upper and lower numbers of this cycle were around 3700 and 3200 oil and gas rigs, worldwide. Currently, the total operating oil and gas rigs in the world is closing in on 1700 (Patterson, 2016). This is because many of the oil reservoirs in the world are not profitable at the current prices we are seeing. Interestingly though, is that Saudi Arabia, Iraq and Kuwait still maintains the same levels of operating rigs as before the recent plunge in oil price. Nevertheless, considering the fact that the total operating oil and gas rigs in the world have almost been cut in half, there is a chance that we will eventually see an effect on the supply side.

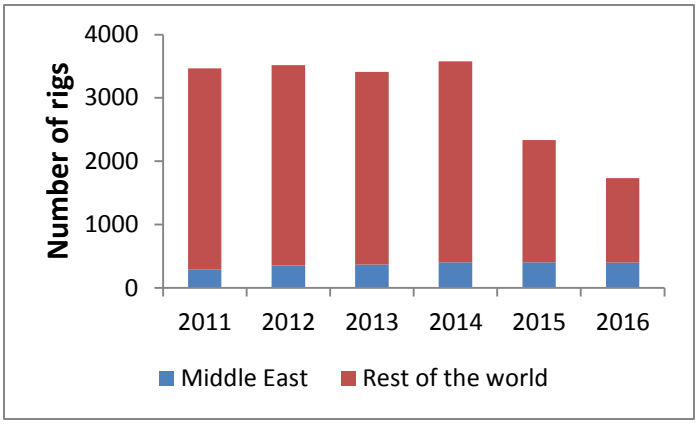

Figure 31: Rig count (Patterson, 2016)

5.3.1.3 Political Factors

In the PESTLE analysis we discussed some of the political factors that may affect Statoil. This involves for example rules and regulations, political interests and the rigidity of a political system. The reason for this posing a risk for Statoil relates to licences and concessions as well as cooperation with firms in other countries. However, the political aspect can also affect the commodity prices. There are several important political issues that are currently occurring.

Production Freeze and Iran

It is no doubt that the recent plunge in oil price relates mostly to an oversupply in the market. As previously discussed, this oversupply is largely related to producing countries not being willing to cut their production. Nevertheless, recently some of the world's largest oil producing countries has initiated discussions for a production freeze. To be clear, a production freeze is under no circumstances a cut in production, but rather an agreement to maintain production at a current level. A successful production freeze would mean that the inventory levels of oil at least would not increase at the same pace.

Currently, several countries like Saudi Arabia, Russia, Venezuela and Qatar have agreed to freeze production (Sergie, Smith, & Blas, 2016). Although, analysts argue that unless Iran and Iraq, which are two of the world's largest producers, do not agree on a production freeze, the effect will diminish.

This brings us to another aspect relating to production freeze. Iran has been under a number of sanctions by the United Nations related to its nuclear program. Recently, Iran succeeded in meeting its nuclear commitments which in turn led to the U.S. lifting its nuclear-related sanctions on Iran (U.S. Department of the Treasury, 2016). These sanctions had constrained Iran's output in the oil market. Now that the sanctions have been lifted analysts has indicated that it will be difficult to get Iran onboard for a production freeze ((Smith, 2016) (Saltvedt T. M., 2016b)).

These factors are root to some of the recent daily volatility of the oil price. Mostly, the market responds to the expectations of the outcome of a possible production freeze. At this point, there are no certain outcomes that would give any clear expectations to the short-term oil price. In the long-term we do find it likely that some sort of agreement will be made that stabilizes the oil price. This is despite the fact that a production freeze is argued to have less effect as most of the larger oil producers are already producing relatively close to their max capacity. This argument is supported by the decline of Saudi Arabia's spare capacity.

The Paris Agreement

Another hot topic of the political world today is the emission of greenhouse-gasses. In many countries political forces are working the angle of reducing pollution. This is often done either by providing incentives or by imposing laws and regulations that cause businesses and consumers to act in a more environmentally friendly manner.

In December 2015 a total of 195 countries of the world adopted the world's first legally binding global climate deal (European Comission, 2016). In short, this is a commitment to; 1) keep global temperature well below 2 degrees Celsius, 2) aim at increasing this limit to 1.5 degrees Celsius, 3) ensure global emissions to peak as soon as possible and 4) rapidly reduce emissions thereafter. The Paris Agreement states that the signing members are to start working towards these targets in the year 2020. Now, the current status of the agreement is still not set in stone as it will open for signature on April 22, 2016 (United Nations, 2016). The legal character of the agreement has also been up for discussion as not all provisions of the agreement creates legal obligation (Harvey, 2015). Nevertheless, the agreement is said to have implications for countries and businesses within those countries involved.

The International Energy Agency (2015) discussed actions each country must take in order to fulfill its obligations. Essentially, the aim is to reduce carbon emission. To achieve this, governments need to phase out subsidies to fossil-fuel by 2030. Also, there needs to be an increase in investments in renewables (IEA, 2015). The effect of these two actions may have adverse effect on the oil price. First of all, phasing out fossil fuel subsidies to end users may in itself pull towards higher oil and gas prices. However, higher prices will also shift the consumers towards other alternatives. Second, the increased investments in renewables are likely to increase the output of price-competitive alternatives to fossil fuels. Thereby possibly reducing demand for fossil fuel, this in turn speaks for a lower oil price. Ultimately, it boils down to how the Paris Agreement will affect the supply and demand variables in the long-run. Given that most countries are not expected to take substantial actions until after 2020, the short-term oil outlook is still more likely to be driven by other cyclical factors (Sjolin, 2015).

To sum up the Paris Agreement, it seems as the short-term implications are not relatively upsetting in regards to oil and gas prices. However, the long-term effect is that political lawmaking, regulations and incentives will make it less desirable for consumers to consume petroleum products.

5.3.1.3 Other Topics

There are of course numerous political topics that could be discussed relating to the future state of oil and gas supply and demand. Naturally, we can't cover all, and there is really no point in discussing everything. However, we would like to point out increased instability in the Middle East, sanctions against Russia and China as a large consumer.

With the rise of the terrorist group known as the Islamic State (IS), the world has seen an increasing level of unrest and instability, particularly in the Middle East. This in turn has caused an increase in oil price fluctuations as the oil output levels from these regions may vary based on the movements of groups such as IS. If the situation in the Middle East continues to destabilize, it seems almost inevitable that the oil and gas supply from this region will suffer (Egan, 2016).

In 2014 the political tension in the world went up quickly as Russia annexed the Crimea. The Crimean Peninsula was or is considered Ukrainian territory, depending on what country you ask. Some countries have yet not recognized Crimea as Russian. Following the annexation, the European Union, the U.S., Canada and several other countries including Norway imposed a series of sanctions on Russia. The majority of these sanctions relate to freezing assets of important individuals such as public officials, members of government, large shareholders and other types of business-related people. Effectively, this has no significant effect on the supply and demand of oil and gas. However, such events increases political tension and could very well cause unexpected actions and results.

5.3.1.4 Summary

To sum up the supply and demand aspects relating to oil and gas we have discussed how the demographic, economic, technological, production and political factors will develop. In the demographic and economic aspects, we find that the demand for oil and gas is expected to increase along with economic growth. In the technological and productive factors we argued that there are no immediate cost-efficient substitutes that can directly affect the supply and demand for oil and gas. Also, production output is expected to grow at a slower pace as the number of oil rigs has decreased drastically. The political aspects are probably the aspects that cause the most uncertainty in regards to the supply and demand. Mainly this relates to the production freeze agreement and the long-term effect of the Paris Agreement.

5.3.2 Volatility

For the oil price we applied the GARCH model to a fifteen year historical dataset of weekly Brent crude oil prices (ICIS Pricing, 2016). Historical data for a longer period is available, though we chose to use a fifteen year

period as we believe this timeframe is sufficient to capture how the oil price responds to surrounding factors in both pace and magnitude. For the gas price, we applied the GARCH model to a fifteen year historical dataset of monthly gas import prices in Europe (The World Bank, 2016). Historical gas prices actually proved more difficult to find than the oil prices. Essentially, we picked a dataset of monthly prices due to the quality of the dataset available.

As mentioned earlier in the PESTLE analysis, the exchange rate for NOK/USD is very sensitive to changes in the oil price. When analyzing the past five years, the NOK/USD and oil price has a correlation of -0.97. In the fifteen year dataset, we see that the correlation is down to approximately -0.75. Essentially, this has a huge implication for Norwegian export as NOK becomes cheaper when oil prices fall. Statoil itself recognizes that the declining revenues in 2014 and 2015 have been offset by a positive currency effect on the NOK/USD (Statoil ASA, 2016a). Consequently, the effect of oil price changes affects Statoil differently than it would a company that only operates in USD. To correct for this currency effect, we have calculated the volatility of the oil and gas price based on currency adjusted prices. This effect would apply for companies that do not trade in oil as well.

The standard deviation for year 2016 was calculated given that we know the oil and gas prices up until March 18. 2016. As a result, we see that the forecasted standard deviation is lower for 2016 than the coming years. This is naturally due to the fact that a quarter of the year has already passed. For example, the full annual volatility of 2016 for oil would have been 35%. After 2016, the annual volatility converges back to the unconditional variance (standard deviation) for both prices. For calculations, see appendix 11.

Average Annual Volatility			
	2016*	2017	2018
Oil price	0.2999	0.3327	0.3327
Gas price	0.2371	0.2347	0.2344
** Forecasted for the remainder of 2016 - not annualized*			

Figure 32: Average Annual Volatility (Own production)

5.3.3 Forecasted Oil Price

When forecasting the oil price, we use the following input variables for the Geometric Brownian model: μ = 11.6%, Δt= 1, σ= forecasted volatility. The return is based on the absolute value of historic returns for the last fifteen years. Given the earlier mentioned aspects of supply and demand we find it likely that the oil price will increase in the coming future. It is also expected that the oil price will have a more sharp increase in the coming period compared to the long-run movement. Given the high volatility of the oil price, the relatively high drift factor seems justifiable. Also, Taylor (2005) indicated that the best forecast of μ given a history of returns is a constant mean for all positive forecast horizons.

To align our forecast with the analytical aspects discussed earlier, we applied a lower and upper limit of 15 and 286 USD per barrel of oil in nominal terms. As discussed in section 2.3 Crude Oil and Natural Gas, there are only a few types of oil that can be produced at levels below 20 USD. Should prices fall this low and remain there, the majority of oil producers world-wide would produce at a loss. Such a low limit would require a scenario of oversupply and very little demand. Some countries can produce at lower prices, and thus prices below would be possible. However, we don't think any supply-demand equilibrium will be established below 15 USD per barrel of oil for any significant amount of time. The upper limit is based on the International Energy Association's prediction of an upper scenario of 286 USD (nominal) per barrel of oil by 2040. This is a likely scenario only if development within renewable energy is slow and that rules and regulations towards fossil fuels are weak.

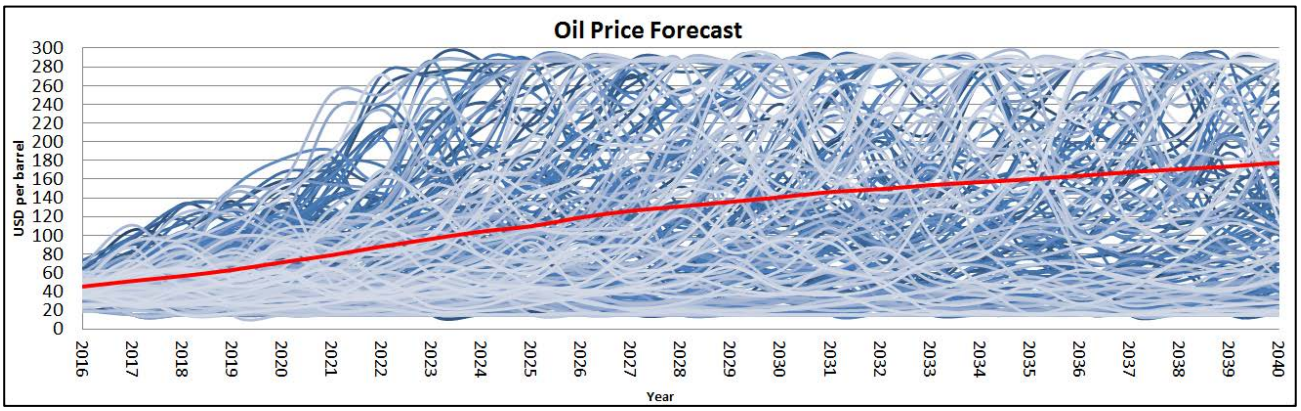

Figure 33: Oil Price Forecasted (Own production)

Just like for the volatility of 2016, we have taken into account that the oil price up until March 18. 2016 is known. Consequently, we take a weighted average of the known oil price and the forecasted for 2016. Figure 33 shows 250 simulated events, with the red line stipulating the average of a 1000 simulated events. This average is our forecasted oil price. For calculations, see appendix 13.

5.3.4 Forecasted Gas Price

Like the oil price, we forecasted the gas price using the GBM model. The input variables used are μ = 8%, Δt= 1, σ= forecasted volatility. Unlike for the oil price where the return is based on the absolute value of historic returns of gas for the last fifteen years, we used a slightly higher rate of 8%. This is because the historic return of the gas price is quite low, whereas the demand for gas is expected to increase substantially more than oil and coal in the coming future.

The gas forecast is initially denominate in USD per million British thermal unit ($/MMBTU). The upper and lower limits have been set to 40 and 2.5 USD in nominal terms. These limits also relate to IEA (2014)'s upper and lower scenarios as explained in the oil forecast.

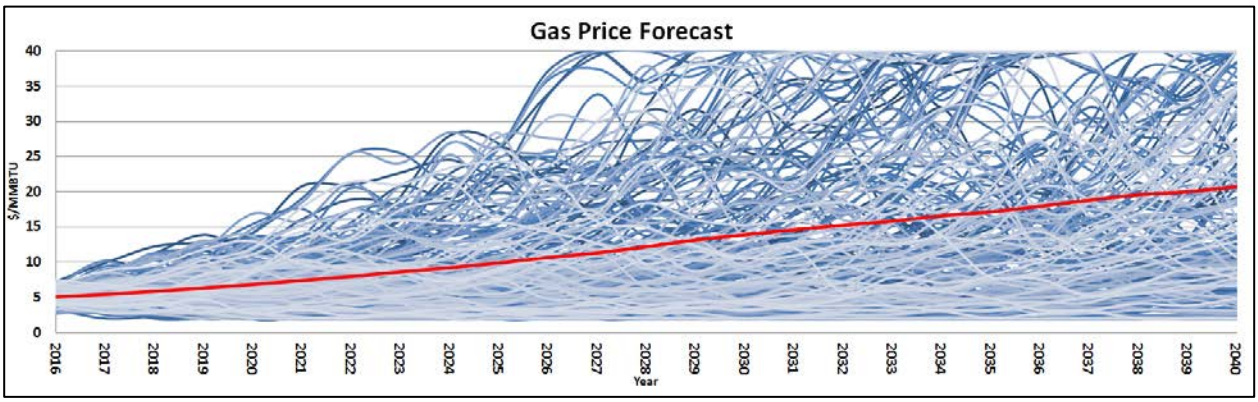

Figure 34: Gas Price Forecast (Own production)

Just like for the oil price and volatility of 2016, we have taken into account that the gas price up until February 01. 2016 is known. Consequently, we take a weighted average of the known gas price and the forecasted for 2016. Figure 34 shows 250 simulated events, with the red line stipulating the average of a 1000 simulated events. This average is our forecasted gas price. For calculations, see appendix 13.

5.3.5 Renewable Energy

As we discussed earlier, we expect Statoil's future revenue to consist of income from crude oil and natural gas, but also from renewable energy. Essentially, to make fully proper revenue forecast, we should include an expected income from this segment. We have chosen to exclude this from our forecast based on the fact that we have virtually very little data or estimates to base our forecast on. Currently, Statoil has no revenue from wind- or tidal power. Consequently, we are rather assuming that the revenue generated from renewable energy will not start before several years ahead and that a possible decrease in petroleum revenue would be offset by the increase in renewable revenue.

5.4 Forecasted Financial Statements

To avoid overly complicating the forecast, we do not forecast all income, expenses and balance posts. Instead, we base the forecast on a number of selected forecasts that represent the overall development of the firm. These are revenue, EBITDA-margin, Depreciation, Corporation tax/effective tax, net financial expenses,

operating working capital, property, plant and equipment, equity and equity equivalents and net-interest-bearing debt.

5.4.1 Revenue

Generally, Statoil's revenue is made up of income from sale of crude oil, natural gas, liquid natural gas (LNG), refined products and a share of other income. Interestingly, Statoil does not only market and trade its own production, but also third party volumes and volumes owned by the Norwegian State. These volumes have been set to 24.5 percent and 28 percent respectively of total combined oil and gas volumes based on 2015 levels (Statoil ASA, 2016a). Consequently, we add another 52.5 percent on top of the forecasted production volumes. The third party and Norwegian State volumes have been higher in the past, but decreasing. As a result we did not use an average. For calculations, see appendix 9.

In the past, income from total sales of crude oil, natural gas and liquid natural gas makes up about 80 percent of total operating revenue excluding other income. Now we are referring to the total volumes including that of third parties and the Norwegian State. The remaining 20 percent of revenue excluding other income comes from sale of refined products. When forecasting the oil and gas revenue we do not distinguish between natural gas and LNG, mostly because LNG is just pressurized and cooled down natural gas. Our calculation is therefore made by dividing the forecasted production levels, third party and Norwegian State volumes into a share of crude oil and natural gas, then multiplying the quantities with their respected prices and the average exchange rate of the year. Additionally, refined products are expected to continue to make up 20 percent of total revenue each year in the forecast period.

Other income has historically made up around 2 percent of total revenue. In our re-organized income statement we recognize that most of this other income is in fact from sale of production licenses and projects. As have considered this part of Statoil's expertise and operations, we add a 2 percent other income to the total forecasted revenues.

At last, it is worth mentioning that we do not consider the renewable segment to generate any profit in the foreseeable future. Despite Statoil investing in renewables, the segment does not generate any significant income as of yet, and we know very little about how Statoil will perform in this segment. Consequently, we do not devote attention to this in our forecast.

5.4.2 Other Forecasted Variables

EBITDA-Margin: The EBITDA-margin describes how well the company is managing their expenses. One might argue that the expected increased production will give a faster growth in operating expenses. However, Statoil has undergone extensive cost-cutting measures in the recent years (Statoil ASA, 2016a). We expect the recent market events to be a wake-up call for the industry and that growth in operating expenses will be kept at a moderate level in the future. For 2016 and 2017 we made individual estimates for all the different expenses affecting the EBITDA margin. Cost of goods sold (purchases) had a significant drop from 2014 to 2015. With the expected stabilized oil price, we believe the purchases to increase slow and steady already from 2016. For the operating expenses, we forecasted a further decline as we believe Statoil will continue to cut reduce the operating costs. Suppliers to Statoil are accepting renegotiated contracts and lower rates, which in turn helps Statoil reduce its expenses. The selling, general and administrative expenses are kept close to previous levels, without too much increase. Exploration expenses are also kept a little below 2015 levels as we expect Statoil to be careful with its exploration expenses in the coming years. From 2018 and up to terminal period we followed the argument of Koller (2010) to set the EBITDA as a percentage of revenue. Thus this is set to 34% of total revenue, as this is close to what Statoil has experienced previously during increasing commodity prices.

Depreciation: There are several methods for forecasting depreciation. To reduce risk of errors due to lumpy capital expenditure we use a constant rate of depreciation. This is equal to Statoil's previous depreciation rates.

Corporation Tax and Effective Tax: The statutory tax rate for Statoil will as of 2016 and forward be 25 percent. The effective tax rate depends on several different factors such as the statutory tax rate, special uplift and petroleum income tax. We find the effective tax rate by calculating a historical average excluding the effective tax rate of 2015. In 2015, the effective tax rate was significantly different than from previous years, particular due to large losses. Excluding 2015, we find that the average effective tax rate is 70.76 percent. Even though the Norwegian statutory tax are has been reduced from 27% to 25% in 2016, the petroleum tax was increased from 51% to 53%. Thus, we believe the effective tax rate in future profitable years to be similar to that of recent previous profitable years.

Net Financial Expenses: The net financial expenses are based on last year's NIBD and are multiplied with the borrowing cost. The tax shield is calculated by using the corporate statutory tax rate of 25%.

Operating Working Capital: As the operating working capital includes inventories, receivables and payables we estimate the future development with revenue as driver (Koller, Goedhart, & Wessels, 2010). This seems like a good benchmark as these factors are usually directly linked to operations and are likely to increase as revenue increases.

Property, Plant & Equipment: As the non-current assets in total have been increasing every year since 2010 with the exception of 2015, we see that the non-current assets compared to revenue vary a lot. Property, plant and equipment account for a big share of non-current assets and we chose to forecast PP&E separately. For this particular post, we forecasted the two first years individually. We expect PP&E to decrease slightly in 2016 as commodity prices are still low. In 2017, we expect PP&E to increase back to 2015 levels. From 2018 and on, we estimated the PP&E to be a percentage of production levels. We find this to be a good measure as PP&E is expected to follow the growth in production rather than the growth in revenue. For 2018 and up 2020 we expect PP&E to be 50% of production levels, while increasing to 55% in the terminal period as the commodity price recovery is starting to mature.

Equity and Equity Equivalents: Using revenue as a driver for equity is not a very good measure. In the past we see that the ratio of equity compared to revenue is very different each year. Instead we use last year' equity and add this years' net earnings deducted for dividends.

Net Interest-Bearing Debt: This post is calculated as 39% of invested capital. This is mainly due to no clear ratio or trend when comparing NIBD to revenue and therefore we find invested capital to provide a better measure.

Not Forecasted: There are some aspects that we chose not to forecast, mainly to reduce the potential for errors. Other income is calculated into the revenue as a percentage of total revenue. The net income from associated companies, however, is almost zero each year. Hence, we do not devote any attention to this. Goodwill and acquired intangibles are kept constant at the current level for the first two years. We don't expect Statoil to perform any large acquisitions that will positively affect goodwill. From 2018 and on we do not forecast goodwill separately as we assume this to be included in the overall invested capital forecast. This is in line with Koller (2010) arguing that there is little empirical data indicating a clear relation to value creation of acquisitions. Also deferred tax assets and liabilities are not calculated as they are subject to many different factors such as revenue, pensions, financial instruments, and losses. Consequently, estimating the deferred tax is not expected to add any information to the perception of value of Statoil. Rather this is assumed included in the forecasted NIBD.

5.5 Scenarios

To account for the impact of unrecognized trends and future development, it is possible to analyse the firm's sensitivity to changes by applying different scenarios. This is referred to as scenario planning and is a widely used tool for facilitating decision making under uncertainty (Miller & Waller, 2003). For valuation purposes, scenario planning can be used in predicting the financial projections under different assumptions. Collectively, the scenarios should reflect the different assumptions about the economic development in the industry, world economic outlook, internal development, as well as competitors' response to such developments. Essentially, the aim of the scenarios is to capture which factors will have the most impact on the firms business and its future value creation (Koller, Goedhart, & Wessels, 2010).

5.5.1 The Different Scenarios

The use of scenarios is intended to reflect the future possible development in Statoil's financial growth. We use different scenarios to illustrate the consequences of changes in different surrounding variables. The scenarios we simulated reflect two extreme outcomes and one base case that have more realistic assumptions. Based on a comparison to the earlier discussed strategic aspects; we will assign the extreme scenarios a smaller probability than the base case. We have previously discussed commodity prices to be one of the main revenue drivers for Statoil. As a result, we use scenario planning to test the effect of higher and lower commodity prices. Apart from the first two years, we have chosen to maintain the ratios for other variables constant and equal to the stochastic forecast to better isolate for the effect of price changes. Also, all three; base-, bullish- and bearish scenario are calculated with a static oil price from year 2016. Now we will explain our choice of commodity prices in the different scenarios. The result from these scenarios will be presented in the valuation section of the thesis.

Base Case Scenario

The base case scenario is supposed to reflect the middle-ground between the bearish and bullish scenario. As a result we have chosen oil and gas prices that are at an average of the bearish- and bullish scenario. All other variables are as mentioned kept constant at the same levels as in the stochastic forecast. The average between the bearish and bullish scenario is USD 85 for crude oil and USD 50 for natural gas. These are the nominal prices that the stochastic model expects in the early years of 2022 and 2023 respectively. For comparison to present day, these prices would be USD 74 and USD 43 assuming a 2% annual inflation. For calculations, see appendix 16.

Looking back at the aspects of the strategic analysis, we find this to be a good estimate for the base case scenario. Mainly, this is because the oil price is expected to rise in the coming future, and we find this to be a modest increase that reflects the economic outlooks discussed earlier.

Bearish Scenario

A bearish scenario is when the expected future stock price will decline (Clarke & Statman, 1998). The intent of the bearish scenario is to analyse the outcome of a less positive event than one would usually expect. Given the recent years of low commodity prices we have chosen to set the bearish scenario to the commodity prices of our cut-off date, 18-03-2016. These are USD 41.6 and USD 28.55 for oil and gas respectively. The other forecasted variables for the first two years are in this scenario set lower than in the base case scenario as capital investments and expenses are expected the align with the lower commodity prices. For calculations see appendix 15.

The reason for this choice is that the present day prices are at a very low level. The demand for oil and gas is expected to increase in the coming years while the production levels are expected to find new supply-demand equilibrium as many producers are currently producing at a loss. Consequently, a scenario of continuous present day prices seems very unlikely.

Bullish Scenario

A bullish scenario is the opposite of the bearish scenario as it reflects an expected increase in future stock price. The intent of this scenario is to analyse the effect of a more extreme and rather unlikely price scenario, although still a possible one. For the bullish scenario we used USD 131 and USD 73 for oil and gas respectively. In our stochastic model, these prices would not be seen until 2028 and 2029. For comparison to present day, these prices would be USD 101 and USD 55 assuming a 2% annual inflation. Opposite from the bearish scenario, the other forecasted variables for the first two years are in this scenario set higher than in the base case scenario. For calculations, see appendix 17.

Although commodity prices are expected to increase in the future, we deem this scenario rather unlikely as it would require a rather significant increase in prices. Demand for oil and gas is expected to increase with economic growth. Along with the rise of substituting products there is little reason for the oil price to ever make any large sustained jumps in a short period of time. This price level would also correspond as an aggressive price development in relation to IEA's (2014) predictions.

Part VI: Valuation

In this section, we will present our valuation of Statoil, the different scenarios and a sensitivity analysis. In this section we will present our approach to finding Statoil's weighted average cost of capital. Before that, we will present our calculations and reasoning for Statoil's cost of capital.

6.1 Cost of Capital

When a company generates a ROIC that is less than the weighted average cost of capital (WACC), the company is destroying value rather than creating value. Essentially, this means that the WACC is equivalent to the lowest return a company should accept when assessing new investments. The WACC is a measure of how much the company's capital costs, including both equity and debt. This is done by measuring both the debt holders' and equity holders' required rate of return and weighting them compared to the capital structure of the firm. In turn, the WACC can then be used to discount the future cash flows for valuation purposes.

$$WACC = \frac{NIBD}{(NIBD + E)} * r_D * (1 - t) + \frac{E}{(NIBD + E)} * r_E \qquad (6.1)$$

Source: (Petersen & Plenborg, 2012)

As we can see, the WACC consists of the debt to total capital ratio multiplied by a tax adjusted cost of debt and the equity to total capital ratio multiplied by the required rate of return by owners.

6.1.1 Capital Structure

The capital structure is important to find as it indicates how big influence the opportunity cost of owners and cost of debt has on Statoil's overall cost of capital. According to Koller (2010), the cost of capital should be based on target weights rather than current weights as it may not reflect the expected level that will be represented over the life time of the business. Most companies, particularly mature ones, are often already close to their target capital structure. Statoil do not disclose its exact target levels, but indicates that it aims at keeping the financial structure close to the present day levels. Hence, we assume that the capital structure of 2015 reflects Statoil's target levels.

To find the actual capital structure, we calculate the market value of the debt and equity of the firm. In order to calculate the market value of the equity, we multiply the share price at December 31, 2015 with the outstanding shares. This gives a market value of 393.3 billion NOK. The market value of debt can be calculated by measuring the market value of each claim against the enterprise value, however there is not enough information disclosed to perform such an analysis. Consequently, we use the net interest-bearing debt as a

measure. This amounts to NOK 336.2 billion at the end of 2015. Put together, these two measures give us a capital structure of 53.9 % equity and 46.1% debt.

6.1.2 Cost of Debt

The interest rate on debt is the required rate of return lenders require to provide loans to the firm. Firms like Statoil issue corporate bonds to raise debt. Koller (2010) argues that in cases of less certainty that the companies will pay all its coupons, the yield to maturity is a poor proxy for the interest rate on debt. However, companies with an investment-grade debt (BBB or above) are considered to have a very low probability of default. As Statoil's credit rating is far above BBB, the yield to maturity is a good measure for interest rate. However, Statoil has disclosed a weighted average annual interest for both current and non-current financial debt. In order to estimate the cost of debt, we calculated a weighted average of these interest rates based on the amount of debt they apply to. Consequently, we find that Statoil's cost of debt as of 2015 is 3.28%. For calculations, see appendix 19.

$$r_d = 3,28\,\% \tag{6.2}$$

6.1.3 Tax Rate

As an oil and gas producing firm, Statoil is subject to different tax regulations due to both onshore and offshore businesses. In Norway, the petroleum tax was as high as 51% in 2015 and increasing to 53% in 2016. Also, oil and gas companies are often granted a special allowance or tax uplift of 5.5% per year. Essentially the uplift is based on the original capitalized cost of offshore production installations and can be deducted from taxable income for a period of four years.

When it comes to calculating the WACC, the tax is used to incorporate the effect of the tax shield. The petroleum tax and tax uplift does not affect debt and consequently, we only need the statutory tax rate of 25%. This tax rate is also assumed to stay constant in the future years as it has recently been reduced from 28% to 27% in 2014 and from 27% to 25% in 2015.

6.1.4 Owners Required Rate of Return

Owners required rate of return consists of the risk-free rate, market risk premium and a company specific risk known as the beta. There are several models that can be used to estimate the cost of equity such as Fama-French and Arbitrage Pricing Theory. However, based on the recommendation of Koller (2010), we will use the Capital Asset Pricing Model (CAPM) to estimate the required rate of return on equity. The CAPM is given by equation 6.3.

$$r_E = r_f + \beta_i * \left[E(r_{m)} - r_f\right] \quad (6.3)$$

Source: (Petersen & Plenborg, 2012)

6.1.5 The Risk free rate

The risk free rate (r_f) can be defined as the return on a portfolio that has no covariance with the market and has a CAPM beta equal to zero. Implicitly, constructing a zero-beta portfolio to find a risk-free rate is time-consuming and complex. Koller (2010) recommend using governmental bonds with a 10-year maturity. This is because government bonds are considered practically risk-free as governments do not default on its debt. Considering that the majority of Statoil's operations are in Norway, and that Statoil is exposed to NOK in both income and expenses, we use the Norwegian 10-year government bonds as a proxy for the risk-free rate. This gives us a risk-free rate of 1.21%.

6.1.6 The Market Risk Premium

The market risk premium is given by equation 6.4, and can be defined as the extra premium that investors demand in order to take on the additional risk of investing in the market. This is the difference between the market return and the risk free rate.

$$\text{Risk premium} = \left[E(r_{m)} - r_f\right] \quad (6.4)$$

Source: (Petersen & Plenborg, 2012)

As we can see from equations 6.3, the risk premium is incorporated into the CAPM model mentioned earlier. However, this in itself does not necessarily yield a true measure of risk premium in the market. Even though researchers have proposed several methods to estimate the market risk premium, there is no universally accepted model (Lewellen, 2004) (Fama & French, 1988). Evidence indicates that structural shifts in the underlying volatility process suggest that the historical average of market returns overstate the market risk premium (Mayfield, 2004). In the absence of a single definite model, we base our risk premium measure on a study performed by PwC on the Norwegian stock market. Their survey indicates that analysts and economists with experience from the Norwegian stock exchange point towards a risk premium trend of around 5% in Norway (PwC, 2015).

6.1.7 Beta

The beta measure is the company's systematic risk and measures how much the stock and the market move together. According to CAPM theory, a stock's return is driven by the beta. If the beta is lower (higher) than 1, the company has a lower (greater) systematic risk than the overall market (Petersen & Plenborg, 2012). Given that the beta value of a firm cannot be observed directly, it must be estimated. This can be done using historical market data and/or more qualitative methods where the risk is analysed. In the following, we will present both aspects and move on to present a beta value by combining the two approaches.

6.1.7.1 Company and Market Returns

Estimating beta can be done by comparing the company's historical performance to the market return. To find the beta, one can perform a regression analysis on the stock's performance compared to the market. As a rule of thumb, such a comparison should use a sample size of historical returns of at least five years, of monthly observations (60 observations). The reason for using monthly rather than weekly returns is to avoid zero-returns from illiquid stocks and minimizing the effect of bid-ask bounce. Initially, the market return should reflect the whole market both traded stocks and those that are not traded. However, the entire market is not observable and thus needs a proxy to find a valid measure. Most analysts rely on a value weighted index that comprise of large stocks. Koller (2010) argues that most well diversified indices are highly correlated, so the choice of index does not make too much of a difference as long as it includes larger stocks of the market.

When choosing a market index to compare Statoil to, it would seem natural to use the Norwegian Stock Exchange. However, given the fact that Statoil is the largest company in Norway as well as the largest company on the Norwegian index, the Norwegian Stock Exchange will to a certain extent be reflected by how the stock price of Statoil develops. This will bias the beta measure as the stock return compared to the market actually makes up a certain portion of that very same market. Also, the Norwegian Stock Exchange has historically been very much exposed to the energy sector altogether. This would also make this index a biased index for measuring beta as it does not capture how the market truly moves. To avoid these biases we have chosen to use the S&P 500 index as a market proxy and base our beta estimates of Statoil compared to this index.

6.1.7.2 The Regression Analysis

Our regression on the five year monthly return of Statoil and the S&P 500 indicates a beta of 0.75. Essentially, this tells us that the systematic risk of Statoil is lower than the market. If we account for only the development of the last year, we find the one-year beta to be higher than one, meaning that Statoil experienced a higher

systematic risk in 2015. This is assumed to relate to the falling oil prices and the corresponding reduction in stock price.

In our regression analysis, we find that R^2 is 0.44, meaning that the model can only explain 44% of the variations in the returns, at best. We find that the beta ranges between [0.61 – 2.25] with a 95% certainty. Conclusively to that measure, we find that this is not a very precise beta value. To find a more reliable beta, we can use a smoothening technique and re-lever the betas.

Company	Beta
British Petroleum	1.92
Chevron	1.18
Conoco Phillips	1.11
Exxon Mobil	0.9
Royal Dutch Shell	1.33
Average of peers	**1.29**
Statoil one-year	*1.43*
Statoil five-year	**0.75**

Figure 35: Regression betas (Own production)

6.1.7.3 Re-levered Betas

An important factor to consider is the leverage of the company. As companies usually have debt, they are subject to both operating risk as well as financial risk. As the leverage of a firm increases the beta estimate will also increase. A way of improving the beta estimates is by computing the industry betas and compare. First, the beta of each firm is un-levered using equation 5.5 to find the operational risk of that firm. Then we calculate the industry median beta and re-lever the betas with each company's individual debt-to-equity ratio.

$$\beta_e = \beta_u * \left(1 + \frac{D}{E}\right) \tag{6.5}$$

Source: (Petersen & Plenborg, 2012)

The result of re-levering the betas indicate that each of the peer companies achieve significantly different betas. Statoil's re-levered beta is quite different from that of the initial regression analysis, which was 0.75. The re-levered beta estimated to 1.51. See appendix 18.

6.1.7.4 Mascoflapec – A Forward Looking Beta

Considering the significance levels in our regression analysis to find the beta, it is highly likely that we have found in the previous section is imprecise. Fernández (2004) discussed how historical betas can change dramatically from one period to another, thus making it impossible to calculate a truly meaningful beta. Although Koller et. al (2010) argued that most diversified indexes are highly correlated, Fernández (2004) found that different choices of stock index as a market reference can significantly influence the beta value found. Partly, the weaknesses of using historical returns to find the beta are that they are historical. Looking at Statoil's past, there is little reason to believe that the future will impact the returns in the same way. Also, for

example, consider British Petroleum. The returns are highly affected by the Deepwater Horizon oil spill, which may bias the beta compared to the industry and market.

To avoid the flaws of historical data, Fernández (2004) presented a framework called MASCOFLAPEC. This framework consists of risk factors that are graded from 1-5 on how much they contribute to the overall risks of the firm. These factors are management, asset, strategy, country risk, operational leverage, financial leverage, liquidity of investment, access to sources of funds, partners, exposure to other risks and cash flow stability. Each factor is given a weight where the sum of weights equal 1. Also, as we saw from the historical calculations of beta, the betas of the peers range in values from 0.9 to 1.92. Consequently, we set the variance interval of the MASCOFLAPEC to 0.5, meaning that the beta can have a range between 0 and 2.5. For calculation of the MASCOFLAPEC, see appendix 18.

Management

The management is composed of highly educated professionals with diversified background. Among others we find engineers, people with long experience within the company as well as those with background from investment banking and consulting in the management. Based on this we assume that the management has a strong foundation and knowledge about the industry and surrounding factors to help them make good, calculated decisions for Statoil. Looking at the governance aspects, Statoil presents a set of guidelines in its initiative program. For example, the Chief Operating Officer (COO) is accountable for ensuring that the management framework and tools needed for safe and efficient operations are in place. Also, all head of business areas are accountable to provide valid and governing documentation for their own business areas (Statoil, 2016). In addition to this, the Norwegian government impose strict governance policies on Norwegian firms. Considering that the Norwegian government's high ownership share in Statoil, a high level of transparency in operations has become quite necessary. Since a serious corruption incident in early 2000's, Statoil has not been involved in any similar issues of equal magnitude.

Summing up, we find that the risk associated with the management is relatively small as the governance mechanisms seem to work well to ensure transparent, safe and honest operations. This gives a low weight in management risk.

Asset

As discussed in the resource based view, we find that Statoil possesses a lot of assets that can pose a risk to the firm. Among others, access to natural resources, human capital and technology are all important assets. Given that Statoil does not possess too many assets that are considered decisive in terms of competitive advantage, we know that Statoil must compete to attain the best human resources and invest a lot in R&D to develop competitive technology. Accordingly, we find that Statoil has an average risk exposure to the assets of the firm.

Strategy

In the up-stream segment, Statoil has a strategy that focuses on strengthening their position on the NCS by prolonging the lifetime of their operational fields as well as increasing their share in ongoing projects. Also, Statoil aims at increasing their investments in oil and gas opportunities outside of Norway to enhance their portfolio. In the mid- and down-stream segment Statoil performs activities related to processing, marketing and transportation of commodities to the end market. Currently, Statoil is the second largest supplier of gas to the European market and aims at maintaining/improving this position in the future.

Statoil devotes considerable resources to technological improvements such as carbon capture, low carbon energy and renewable energy. All of these areas may pose a threat as the strategy is divergent from existing core business areas. Nevertheless, Statoil still devotes most of its resources to the core-segments and is likely to continue to do so in the coming future as well. Historically, the strategy has been successful and generated profits for the investors. We see little reason for the strategy to impose more than a low level of risk.

Country Risk

The majority of Statoil's operations are located in Norway. The Norwegian economy has been strong in the past few decades with low unemployment rates and a stable economic growth. However, as we can see from the recent developments in the oil and gas industry, Norway is not any more a safe haven for companies than any other country. Recently the unemployment rate has increased rapidly as the economic outlook for Norway seems less bright in a world of lower oil prices (Euler Hermes, 2016).

Also a substantial portion of Statoil's operations are spread across more than 30 different countries world-wide. As discussed earlier, some of Statoil's risks relate to policies, law-making, political instability and security measures in the countries that Statoil operate within. Consequently, we find that Statoil has a high country risk.

Operational Leverage

When looking at the short-term liquidity risk in the financial analysis, we found that Statoil is not particularly exposed. The working capital in all years is negative, meaning that there are more operating liabilities than operating assets. However, Statoil has also improved their cost-efficiency in the recent years, indicating that there is no immediate risk of too much capital tied up in short-term operating assets or liabilities. Nevertheless, we do see that with falling revenue, the invested capital increases in relation to the NOPLAT, which in turn reduces the ROIC. Consequently, we deem operational leverage to pose an average risk to the firm.

Financial Leverage

Over the course of the last five years, the financial leverage has increased slightly. However, even though the current market conditions have put more pressure on the firm, Statoil recognizes that it is able to and intends to maintain a financial leverage close to the levels we have seen earlier (Statoil ASA, 2016a). As discussed in the long-term financial risk section, Statoil seems to be in a healthy position in terms of financial leverage. The most prominent downside risk relates to a prolonged period of very low prices, which could put tension on Statoil's ability to meet its debt obligations. This risk and its effect is quite high and thus we find the financial leverage to be a substantial risk to the firm.

Liquidity of Investments

The oil and gas industry requires large investments over a long period of time. Consequently, most projects are considered rather capital intensive. The effect of this is that Statoil has relatively large sums of capital tied to its operations. These investments are not particularly liquid and if the company should come into a period of distress, liquidation of assets could prove to be quite difficult. As a result, we find that the risk related to this topic is high.

Access to Sources of Funds

The access to sources of funds is ultimately determined by the credit ratings the company receives from Moody's and S&P. Statoil has maintained a steady and consistent rating over the last five years. However, in 2015 S&P downgraded Statoil and Moody's signalled a possible downgrade (Statoil ASA, 2016a). This indicates that funding by debt could become less accessible to Statoil (Hull J. C., 2012). Nevertheless, Statoil still enjoys a fairly good credit rating and does not seem to have trouble in funding its operations. This is evident when considering that Statoil maintains its dividend policy even in times of lower oil prices and falling revenues (Statoil ASA, 2016a). Thus, we consider the access to sources of funds to be low.

Partners

Statoil's partners are those they enter into business agreements and cooperate with, such as joint ventures and associates. Some of the risk related to the partners are naturally captured by the country risk as partner agreements are subject to political factors in the country which the partnership takes place. Most partnerships are made with companies that can be considered relatively stable and predictable partners. For example Statoil is co-operating a number of different oil fields in Norway with Shell, BP, Conoco Phillips and Exxon Mobil. However, historically we have seen effects of partnerships that have caused troubles for Statoil. We mentioned earlier that as recently as in 2014, an arbitration settlement was made with the Algerian oil company – Sonatrach. This shows that partnering with foreign companies entail a relatively high risk of misinterpretation and conflict of interests. Thus we have rated the risk of partners to be substantial.

Exposure to Other Risks (Currencies)

Mainly the exposure to other risks refers to the currency risks of a company. For Statoil, oil and gas is mostly traded in USD and Euro to the end market and other income involves exposure to GBP, DKK and SEK as well. Much of Statoil's operating expenses, taxes and dividends are paid in NOK which makes Statoil's net profit relatively exposed to the exchange rate of the different currencies. To reduce some of this risk, Statoil actually has a corporate risk committee that trades derivative contracts to manage how Statoil is exposed to commodity prices, foreign currencies and their respective interest rates (Statoil ASA, 2016a). Eventually, however, the currency effect will have implications on the net income in a year. Consequently, we deem the exposure to currency as a high risk.

Cash Flow Stability

Statoil's cash flow is mainly a result of the revenues generated by sale of oil and gas. Consequently, the oil and gas prices are the main drivers of the cash flow. As we have discussed earlier, the volatility of these prices is quite high and they fluctuate a lot. As a result, we find Statoil's cash flow stability to be a very high risk factor for Statoil.

6.1.7.5 Statoil's Beta

It is important to notice that the MASCOFLAPEC approach, like the regression analysis, also suffers from potential errors. The framework is based on subjective assumptions and thus two analysts faced with identical information can arrive at two very different betas. The framework does not explicitly differentiate between systematic and unsystematic risk. To find a justifiable beta value, we used the historical regressed beta value and betas presented by other analyses (NASDAQ, NYSE, Norwegian Stock Exchange) as a guideline when determining the MASCOFLAPEC values.

Overall, the different beta measures for Statoil and our discussion of the MASCOFLAPEC factors has given us a beta value of 1.37. This is naturally influenced by recent developments and the current outlooks of the market. In our opinion, this beta measure reflects those factors that the MASCOFLAPEC framework attempts to highlight. In comparison to the re-levered betas, we find that this beta is equal to the average of all the peer companies and Statoil. This again, also supports the validity of our measure.

6.1.8 Determining WACC

Summing up the risk free rate, beta and the risk premium we can calculate the owners required rate of return (6.6).

$$r_E = 1,21\% + 1.37 * [5\ \%] = 8,06\% \quad (6.6)$$

$$\frac{D}{Enterprise\ value} = 46.1\% \quad (6.7)$$

$$\frac{E}{Enterprise\ value} = 53,9\% \quad (6.8)$$

$$r_d = 3,28\ \% \quad (6.9)$$

$$Tax\ rate = 25\ \% \quad (6.10)$$

$$WACC = 46,1\ \% * 3,28 * (1 - 25\ \%) + 53,9\ \% * 8,06\% \quad (6.11)$$

$$\underline{WACC = 5,48\%}$$

6.2 Valuation of Statoil

6.2.1 Stochastic Case

Now, with the budgeted financial statements discussed in the forecasting section, the free cash flow and the Statoil's WACC we are ready to perform the valuation. As discussed in the methodology section, we will base our valuation on the DCF model. The value of Statoil is then calculated by discounting the free cash flow at Statoil's WACC to find the enterprise value and subtracting the net-interest-bearing debt. This gives us the estimated market value of equity, as presented in figure 36. This valuation is based on the stochastic forecasted crude oil and natural gas commodity prices and gives a share price of 118.08 NOK, as of 31.12.2015.

VALUATION - STOCHASTIC CASE							
Statoil ASA	Forecast period					Terminal period	
DCF - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
FCFF	21,406	12,121	52,109	27,248	61,434	-41,746	28,679
WACC	5.48%	5.48%	5.48%	5.48%	5.48%	5.48%	5.48%
Discount factor	0.95	0.90	0.85	0.81	0.77	0.73	
Present value of FCFF	20,294	10,894	44,402	22,012	47,050	-30,311	
Present value of FCFF in forecasting horizon	114,342						
Present value of FCFF in terminal period	598,368						
Estimated market value of firm (aka enterprise	712,710						
Net interest-bearing debt	-336,188						
Estimated market value of equity	376,522						
Market cap	376,522,080,492						
Outstanding shares	3,188,647,103						
Price	kr. 118.08						

Figure 36: Valuation - Stochastic case (Own production)

6.2.2 Scenarios

As mentioned earlier, to establish a stronger foundation for Statoil's valuation we have also calculated a base-, bearish- and bullish scenario based on adjusted oil- and gas prices. All other variables are kept constant and same as in the stochastic model. This way we have isolated for the effect of change in commodity prices, which are arguably the strongest drivers of Statoil's revenue.

As we can see from the figure 37, the bearish case returned a negative share price. Essentially, this means that as far as we can see, Statoil cannot sustain an event of continuous present day prices. The base case scenario indicates a company value that is relatively close to the stochastic scenario, which is the most likely scenario. The bullish scenario indicates a very high company value as Statoil would generate a lot of profit it prices were

to reach these levels. The result from the different scenarios supports our argument that the commodity prices have a large effect on the performance of Statoil.

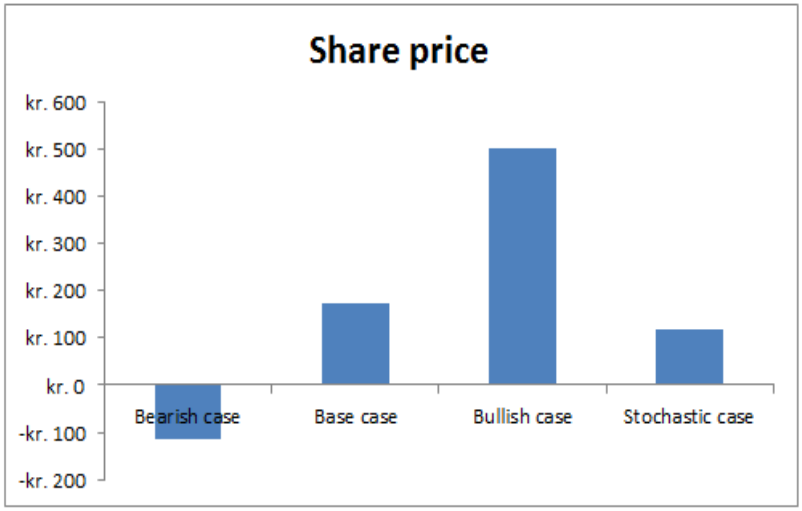

Figure 37: Share price, scenarios (Own production)

6.3 Sensitivity Analysis

Although we have established that Statoil's value is very sensitive to commodity prices, we can also perform a sensitivity analysis to determine how Statoil is affected by changes in other factors such as the WACC, volatility of oil price isolated, the volatility of gas price isolated, the NOK/USD exchange rate and the growth rate of production. In figure 38, we have presented the share price sensitivity to changes in WACC and the volatility of the oil price isolated. See appendix 21 for our findings on sensitivity to WACC and volatility of gas price, WACC and exchange rate and growth rate of production.

	Volatility oil price	Optimistic		Realistic	Pessimistic	
WACC		**29,00%**	**31,50%**	**33,28%**	**35,00%**	**37,50%**
Optimistic	**4,9%**	160,81	150,10	142,23	136,35	128,53
	5,3%	157,75	145,36	139,31	132,96	122,16
Realistic	**5,5%**	148,57	136,66	118,08	114,40	105,52
	5,7%	123,13	113,61	101,03	97,02	91,16
Pessimistic	**6,0%**	97,99	87,53	93,92	78,36	71,44

Figure 38: Sensitivity: WACC and Volatility of oil price (Own production)

Volatility of Oil Price and WACC:

When isolating the share price for changes in WACC and the volatility of the oil price. A more volatile oil price indicates a pessimistic development as the oil price will increase less compared to a lower volatility. From these findings we see that both the WACC and oil price have a great impact on the firm value. If we look at different values of WACC while keeping the volatility constant, we find that WACC also has a large impact alone.

Volatility of Gas Price and WACC:

When isolating the share price for changes in the volatility of gas price and WACC, we see that the gas price has a moderate impact on the firm value. This indicates that even though a large portion of Statoil's revenue comes from natural gas, Statoil's share value is not as exposed to changes in gas prices as it is to oil prices.

Exchange Rate and WACC

When isolating the share price sensitivity to changes in WACC and the NOK/USD exchange rate, we find that Statoi's share price very sensitive to changes in exchange rate.

Production Growth*

When isolating the share price sensitivity to changes in production growth in Norway and internationally, we find that lower production growth has very little impact on Statoil's share price. This may relate to the earlier discussed factor that many of Statoil's oil and gas reserves are mature fields.

**Only change in production growth, not the total production levels.*

Part VII: Conclusion & Discussion

7.1 Conclusion

One of the main reasons for this choice of thesis relates to Norway's dependency on crude oil and natural gas. As a result we chose to perform a full strategic and financial valuation of Statoil ASA, which is the largest firm in Norway and a main contributor of income to the Norwegian government (Norsk Petroleum, 2016). To recap our main problem statement and sub-questions:

Main problem statement:

- **What is the fair value of Statoil ASA as of 31.12.2015?**

Sub-questions:

- How is Statoil ASA strategically positioned to compete in the future energy markets?
- Is Statoil ASA financially sustainable in a prolonged period of energy prices at the current levels?

In regards to our first sub-question, we find that Statoil is seemingly well positioned in relation to its industry and business environment. We argue that with a vertically integrated firm structure Statoil maintains a strong and business that can compete at an international level. This can be linked to Statoil's strong technological position both in exploration, production and developing segments. Also, Statoil has a strategy that allows for diversification into segments that utilizes Statoil's technological and company knowledge. As discussed earlier, should the value of a resource start to decline, the resource can be re-deployed and regain its competitive advantage (Barney, 2007). Currently, Statoil is investing in two renewable energy segments, namely offshore wind power and tidal power. Statoil seems like a strong contestant for these two renewable segments due to its strong offshore position. We argue that these investments are good ways for Statoil to reduce the risk of its knowledge and technology becoming obsolete. Conclusively, we find think Statoil has a satisfactory strategic position to compete in the future energy markets.

From our financial analysis and comparison to industry peers, Statoil performs quite well in terms of operating performance, while the return on equity is decreasing at a much higher rate than all of its peers. This indicates that Statoil has a high cost of debt or too much financial leverage. In our valuation section we performed a series of sensitivity analyses to assess how Statoil's equity value responds to different commodity prices. Our scenario analysis indicates that Statoil is very sensitive to changes in commodity prices. From our bearish

scenario we see that Statoil has a negative share value if commodity prices remain at present day levels. Conclusively, we find that Statoil will struggle to remain financially sustainable in a prolonged period of energy prices at the current levels.

To answer the overall problem statement, we have applied our strategic and financial discussions of Statoil to forecast a main scenario that we find most likely to occur. Then we valuated Statoil using a DCF model and arrived at a share price of 118.08 NOK at December 31. 2015. Conclusively, this is our estimate of the fair value of Statoil ASA. The publicly traded share price of Statoil ASA was at this date 123.70 NOK (Statoil ASA, 2016a), which indicates that Statoil was traded at close to fair value at this point.

7.2 Discussion

This thesis is comprised of four main topics, namely the strategic analysis, financial analysis, forecast and the valuation. In this section we aim to discuss our choice of models and frameworks used in these four sections of the thesis. This allows us to recognize possible flaws and shortcomings of our valuation.

7.2.1 Discussion of the Strategic Analysis

The first part of our valuation consisted of a strategic analysis of Statoil. This was done mainly using the PESTLE, Porters five forces and resource based view frameworks. These frameworks are arguably not without flaws. First, in regards to the PESTLE analysis one can argue that the user is exposed to the risk of oversimplifying information and aspects related to the strategy. Second, we find that while the PESTLE seeks to gather information on a number of different issues. The result may be that the user ends up overanalysing and assigning too much importance to relatively unimportant issues (Free Management Ebooks , 2016). Looking back at our analysis of Statoil, we have attempted to reduce the number of topics in the PESTLE factors to the most pressing and important issues. Nevertheless, we recognize that the framework can bring in issues that are of less importance to Statoil.

If we consider Porter's five forces, we also find limitations to this framework. Gundy (2006) argued that this framework tends to over-stress macro analysis and oversimplify the industry value chains. Also, the Porter's five forces framework assumes that all products are substitutes, while traditional economic theories acknowledge that products can often be complementary as well (Dorman, 2014). For the oil and gas industry, we are aware that the industry value chains may be extremely complex. Thus, our analysis of suppliers and buyers is naturally very exposed to the argument of oversimplified value chains. To avoid this, we could have also performed a value chain analysis, which describes the activities within and around a company and relating

them to an assessment of the competitive strength of a company relative to its peers (Petersen & Plenborg, 2012). Also, the fact that the framework assumes all products to be substitutes is not quite true. In fact, as we have seen with Statoil, many of the companies are in fact buyers and suppliers of each other. Nevertheless, we do find this framework to establish a good impression and overview of the industry.

The final model, the resource based view, aims all focus at internal aspects of the firm. A number of different issues have been pointed out to criticise this framework as well. Mainly, the critique is aimed at that the RBV is too limited in use and that sustainable competitive advantage is not possible to achieve (Kraaijenbrink, Soebder, & Groen, 2009). The implications for these arguments would be that Statoil's competitive advantage cannot be determined based only on the internal aspects of the firm.

Arguably, these models contain flaws in performing a strategic valuation. This is also why some authors have argued that the models should not be used alone, but rather in combination (Gundy, 2006). To strengthen our strategic analysis, we attempted to add another dimension by assessing Statoil's stated strategy in regards to its vertical integration and diversification. This allowed us to better analyse Statoil's strategy in regards to our problem statement and sub questions.

7.2.2 Discussion of Financial Analysis

The second part of our valuation consists of re-organizing the financial statements, assessing the historical performance and liquidity risk based on a set of performance measures before eventually comparing Statoil to a chosen set of peer companies.

As with the strategic analysis, the financial analysis is also not free from pitfalls. When it comes to re-organizing the income statement we recognize that there is a risk of misinterpreting the numbers presented by the company. For instance, we may wrongly consider a financial post to be operating or non-operating. If this is done to many or significant posts in the income statement, it may alter or affect the perceived performance of the firm (Koller, Goedhart, & Wessels, 2010).

Second, we have used a set of performance ratios that we find informative to discuss Statoil's performance, both in terms of profitability, growth and financial liquidity risk. Peterson and Plenborg (2012) discussed the shortcomings of these measures relating to the fact that they are all historical. Particularly when it comes to financial risk, the historical ratios are less applicable in estimating the future state of the firm.

Third and last we find that comparing Statoil to a set of peer companies also carries a risk of misinterpreting numbers. First, for a good comparison to be made, the accounting policies of all the firms must be the same over time. If a firm changes accounting policies or different firms use different accounting measures, the performance ratios will not represent the firms on an equal basis. This in turn may cause us as analysts to misinterpret the actual performance compared to the industry (Petersen & Plenborg, 2015). Second, the choice of peers can also naturally affect the comparison. For valuation using multiples, Koller (2010) argued that the peers must be identical in as many aspects as possible. Although the oil and gas industry is quite large with many players, it is difficult to find truly comparable firms. For historical performance measures, we found it sufficient to use companies of different sizes that are mainly exposed to the same business areas. Arguably this gives a good view of how the industry in total has been performing, although the companies differ.

7.2.3 Discussion of Forecast

Mainly, the pitfalls of the forecast are the correct choice of value drivers. Mainly these can be divided into strategic and financial value drivers (Petersen & Plenborg, 2015). To start with the strategic value drivers we find that if the analyst neglects to properly use the findings of the strategic analysis to forecast the financial statements, the forecast is more likely to be off (Petersen & Plenborg, 2012). Naturally, we have attempted to utilize the strategic analysis as best as possible given the amount of valuable information we have gathered about world economic factors, the industry and Statoil itself.

When it comes to the financial value drivers our assumption has been that the revenue is the main financial driver and that the commodity prices are the main revenue drivers. Looking back at the financial analysis, this seems to fit quite well. Now, if we start digging deeper into the possible pitfalls of our approach, there will also arguably be flaws with the GARCH- and Geometric Brownian models. For instance, do the commodity prices really follow a random walk? Behmiri and Manso (2013) argued that more models are needed to make a good prediction of future commodity prices. Nevertheless, as it seems difficult to truly predict the commodity prices (IEA, 2014), our forecast functions quite well for our purpose. As we have discussed earlier, the forecasted commodity prices are fairly well aligned with that of professional analysts such as Saltvedt (2015/2016) and IEA (2014).

7.2.4 Discussion of Valuation

The fourth and last part of our valuation relates to the actual valuation of Statoil. Essentially, this section consists of a calculation of the weighted average cost of capital and valuation using the DCF model, scenarios and sensitivity analysis.

When calculating the cost of capital, we find that there are several aspects that can bias the result of the valuation. First of all, the choice of risk free rate. Essentially, the risk free rate should be based on currency which the majority of the firm's cash flow is denominated in (Koller, Goedhart, & Wessels, 2010). In this relation it is worth mentioning that Statoil has a large portion of debt in other currencies such as Euro, GBP and USD. Despite this, Statoil recognizes a high level of risk relating to currency fluctuations (Statoil ASA, 2016a). Using this argument we chose the Norwegian 10 year government bonds as a proxy for risk free rate. Second, the beta value can also be a relatively difficult measure to find. Initially, the common approach is to compare the firm performance to a market index. The downside to this is that this only yields a beta based on historical values and not a forward-looking estimate. As a result, we chose to incorporate the historical regressed beta value with a framework called MASCOFLAPC. However, this also adds the risk of omitting or downplaying what affects operating and financial risk. Also, the MASCOFLAPEC is a very subjective framework, which in turn can bias the outcome.

Our choice of valuation model was based on the argument that the DCF model is of the most common models as it values the company based on the actual cash flows the firm generates (Koller, Goedhart, & Wessels, 2010). However, this choice is also not without risk of making mistakes. First of all, the DCF model assumes perpetuity in future cash flows. Essentially, we see that this is not a true assumption for oil and gas. Nevertheless, it should be mentioned that the oil and gas industry has not been given an expiry date yet. Also, we don't believe that a large firm like Statoil is going to shut down its operations and liquidate its assets at a specific date. Instead, we have discussed the implications of Statoil's strategic choices of entering the renewable segment. Consequently, we assume that a possible future decline in the oil and gas operations of Statoil will be partly offset by an increase in alternative business areas.

The scenario and sensitivity analysis aims at presenting how sensitive Statoil is to changes in different variables of the valuation. First of all, an extensive valuation could include a much larger sample of scenario analyses and concluding on a valuation based on assigning probabilities to each scenario (Koller, Goedhart, & Wessels, 2010). Second, our sensitivity analysis only accounts for changes in a given number of variables. To truly find all the aspects that Statoil is sensitive to, we would have to apply changes to a larger number of variables. Nevertheless, considering that our valuation is a master thesis and a combination of strategic and financial analysis, we find it too extensive for us to calculate a larger number of scenarios. Also, we do find our approach to give a sufficient and valuable impression of how sensitive Statoil is to different variables.

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Table of Appendices

Appendix 1: Financial Statements of Statoil ASA

CONSOLIDATED STATEMENT OF INCOME						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Revenues	465,3	606,8	619,4	705,7	645,6	526,7
Net income from associated companies	-0,3	-0,3	0,1	1,7	1,3	1,1
Other income	17,8	16,1	17,8	16,0	23,3	1,8
Total revenues and other income	**482,8**	**622,7**	**637,4**	**723,4**	**670,2**	**529,6**
Purchases [net of inventory variation]	-211,2	-301,3	-307,5	-363,1	-319,6	-257,4
Operating expenses	-84,5	-72,9	-75,0	-64,0	-60,4	-57,5
Selling, general and administrative expenses	-7,5	-7,3	-9,2	-11,1	-13,2	-11,1
Depreciation, amortisation and net impairment losses	-133,8	-101,4	-72,4	-60,5	-51,4	-50,6
Exploration expenses	-31	-30,3	-18,0	-18,1	-13,8	-15,8
Net operating income	**14,9**	**109,5**	**155,5**	**206,6**	**211,8**	**137,2**
Net financial items	-10,6	0,0	-17,0	0,1	2,1	-0,4
Income before tax	4,3	109,4	138,4	206,7	213,8	136,8
Income tax	-41,6	-87,4	-99,2	-137,2	-135,4	-99,2
Net income	**-37,3**	**22,0**	**39,2**	**69,5**	**78,4**	**37,7**
Attributable to equity holders of the company	-37,5	21,9	39,9	68,9	78,8	38,1
Attributable to non-controlling interests	0,2	0,1	-0,6	0,6	-0,3	-0,4
Basic earnings per share (in NOK)	-11,8	6,9	12,5	21,7	24,8	11,9
Diluted earnings per share (in NOK)	-11,8	6,9	12,5	21,6	24,7	11,9

CONSOLIDATED BALANCE SHEET						
(in NOK billion)	2015	2014	2013	2012	2011	2010
ASSETS						
Property, plant and equipment	546,2	562,1	487,4	439,1	407,6	348,2
Intangible assets	83,3	85,2	91,5	87,6	92,7	39,7
Investments in associated companies	7,3	8,4	7,4	8,3	9,2	13,9
Deferred tax assets	17,8	12,9	8,2	3,9	5,7	1,9
Pension assets	11,3	8,0	5,3	9,4	3,9	5,3
Derivative financial instruments	23,8	29,9	22,1	33,2	32,7	20,6
Financial investments	20,6	19,6	16,4	15,0	15,4	15,4
Prepayments and financial receivables	8,5	5,7	8,5	4,9	3,3	4,5
Total non-current assets	**718,8**	**731,7**	**646,8**	**601,4**	**570,5**	**449,4**
Inventories	22,0	23,7	29,6	25,3	27,8	23,6
Trade and other receivables	58,8	83,3	81,8	74,0	103,8	77,2
Derivative financial instruments	4,8	5,3	2,9	3,6	6,0	6,1
Financial investments	86,5	59,2	39,2	14,9	19,9	11,5
Cash and cash equivalents	76,0	83,1	85,3	65,2	40,6	30,3
Total current assets	**248,1**	**254,8**	**238,8**	**183,0**	**198,1**	**148,7**
Assets classified as held for sale	-	-	-	-	-	44,9
Total assets	**966,9**	**986,4**	**885,6**	**784,4**	**768,6**	**643,0**
EQUITY AND LIABILITIES						
Shareholders' equity	354,7	380,8	355,5	319,2	278,9	219,5
Non-controlling interests	0,3	0,4	0,5	0,7	6,2	6,9
Total equity	**355,0**	**381,2**	**356,0**	**319,9**	**285,1**	**226,4**
Finance debt	264,0	205,1	165,5	101,0	111,6	99,8
Deferred tax liabilities	65,4	71,5	71,0	81,2	82,5	78,1
Pension liabilities	26,2	27,9	22,3	20,6	27,0	22,1
Provisions	109,4	117,2	101,7	95,5	87,3	67,9
Derivative financial instruments	11,3	4,5	2,2	2,7	3,9	3,4
Total non-current liabilities	**476,3**	**426,2**	**362,7**	**301,0**	**312,3**	**271,3**
Trade and other payables	82,2	100,7	95,6	81,8	94,0	73,6
Current tax payable	24,1	39,6	52,8	62,2	54,3	46,7
Finance debt	20,5	26,5	17,1	18,4	19,8	11,7
Dividends payable	6,2	5,7	-	-	-	-
Derivative financial instruments	2,3	6,6	1,5	1,1	3,0	4,2
Total current liabilities	135,3	179,0	166,9	163,5	171,1	136,1
Libilities directly associated with assets classified as held for sale	-	-	-	-	-	9,2
Total liabilities	611,6	605,2	529,6	464,5	483,4	416,6
Total equity and liabilities	966,6	986,4	885,6	784,4	768,5	643,0

Consolidated cash flow statement						
	2015	2014	2013	2012	2011	2010
Income before tax	**4,3**	**109,4**	**138,4**	**206,7**	**213,8**	**136,8**
Depreciation, amortisation and net impairment losses	133,8	101,4	72,4	60,5	51,4	50,7
Exploration expenditures written off	17,1	13,7	3,1	3,1	1,5	2,9
(Gains) losses on foreign currency transactions and balances	-0,4	-3,1	4,8	3,3	4,2	1,5
(Gains) losses from dispositions	-17,3	-12,4	-17,6	-21,9	-27,4	-1,1
(Increase) decrease in other items related to operating activities	19,8	3,9	6,6	-7,4	-0,7	-2,2
(Increase) decrease in net derivative financial instruments	9,2	-2,8	11,7	-1,1	-12,8	-0,6
Interest received	2,9	2,1	2,1	2,6	2,7	2,1
Interest paid	-3,6	-3,4	-2,5	-2,5	-3,1	2,6
Taxes paid	-65,7	-96,6	-114,2	-119,9	-112,6	-92,3
(Increase) decrease in working capital	8,9	14,2	-3,3	4,6	1,9	-10,6
Cash flows provided by operating activities	**109,0**	**126,5**	**101,3**	**128,0**	**119,0**	**80,8**
Additions through business combinations	-3,5	0,0	0,0	0,0	-25,7	0,0
Capital expenditures and investments	-124,7	-122,6	-114,9	-112,4	-92,3	-83,4
(Increase) decrease in financial investments	-19,8	-12,7	-23,2	-12,1	3,8	4,1
(Increase) decrease in other non-current items	-0,3	0,8	0,6	-1,9	-0,5	0,9
Proceeds from sale of assets and businesses	33,2	22,6	27,1	29,8	29,8	1,9
Cash flows used in investing activities	-115,1	-112,0	-110,4	-96,6	-84,9	-76,5
New finance debt	32,2	20,6	62,8	13,1	10,1	15,6
Repayment of finance debt	-11,4	-9,7	-7,3	-12,2	-7,4	-3,3
Dividend paid	-22,9	-33,7	-21,5	-20,7	-19,9	-19,1
Net current finance debt and other	-5,5	-0,3	-7,3	1,6	4,5	0,8
Cash flows provided by (used in) financing activities	**-7,5**	**-23,1**	**26,6**	**-18,2**	**-12,7**	**-0,9**
Net increase (decrease) in cash and cash equivalents	-13,6	-8,6	17,5	13,2	21,4	3,4
Effect of exchange rate changes on cash and cash equivalents	7,1	5,7	2,9	-1,9	-0,2	0,5
Cash and cash equivalents at the beginning of the period (net of overdraft)	82,4	85,3	64,9	53,6	32,4	25,3
Cash and cash equivalents at the end of the period (net of overdraft)	**75,9**	**82,4**	**85,3**	**64,9**	**53,6**	**29,1**

Appendix 2: Reorganized Income Statement

ANALYTICAL INCOME STATEMENT							
(in nok billion)	*Note*	2015	2014	2013	2012	2011	2010
Revenue	*1*	468,4	610,7	622,9	709,4	649,5	529,7
Net income from associated companies		-0,3	-0,3	0,1	1,7	1,3	1,1
Other income	*2*	15,0	11,3	16,5	7,5	22,7	0,3
NET REVENUE		**483,1**	**621,7**	**639,5**	**718,6**	**673,5**	**531,1**
Purchases [net of inventory variation]	*3*	-207,3	-296,3	-307,4	-361,8	-318,9	-257,4
Implied interest expense - Operating Leases	*4*	5,4	4,0	3,7	3,1	2,5	2,2
Operating expenses		-84,5	-72,9	-75,0	-64,0	-60,4	-57,5
Selling, general and administrative expenses	*5*	-7,5	-10,8	-9,2	-11,1	-13,2	-11,1
Exploration expenses	*6*	-15,6	-19,0	-16,8	-17,7	-14,1	-15,5
EBITDA		**173,6**	**226,7**	**234,8**	**267,1**	**269,4**	**191,8**
Depreciation	*7*	85,9	74,4	65,3	59,1	50,2	46,1
EBITA		**87,7**	**152,3**	**169,5**	**208,0**	**219,2**	**145,7**
Corporation tax	*8*	42,6	90,1	100,8	142,0	140,7	99,6
NOPLAT		**45,1**	**62,2**	**68,7**	**66,0**	**78,5**	**46,1**

Appendix 3: Notes to Reorganized Income Statement

Note 1 - Revenue - Provisions (ARO)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Starting reserve	93,7	107,4	89,5	89,0	82,5	61,9
Reported provisions	-	-	17,9	0,5	6,5	20,6
Decommissioning payout	-	-13,7	-	-	-	-
Cost of debt	3,28%	3,59%	3,88%	4,17%	4,74%	4,84%
Interest cost	3,1	3,9	3,5	3,7	3,9	3,0
ARO expense	**-3,1**	**-3,9**	**14,4**	**-3,2**	**2,6**	**17,6**
Revenue	465,3	606,8	619,4	705,7	645,6	526,7
Total revenue	**468,4**	**610,7**	**622,9**	**709,4**	**649,5**	**529,7**

Note 2 - Other income						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Sale of interests in the Gudrun Field and acquisition of interests in Eagle Ford	1,2					
Sale of interests in the Trans Adriatic Pipeline AG	1,4					
Sale of interests in the Shah Deniz project and the South Caucasus Pipeline	12,4					
Sale of interests in the Shah Deniz project and the South Caucasus Pipeline		5,4				
Sale of interests in licences on the NCS		5,9				
Sale of interests in exploration and production licenses on the NCS to Wintershall			6,4			
Sale of interests in exploration and production licenses on the NCS and the United Kingdom continenta			10,1			
Sale of interests in exploration and production licenses on the NCS				7,5		
Sale of interests in Gassled					8,4	
Sale of interests in Kai Kos Dehseh					5,5	
Sale of interests in Peregrino asset					8,8	
Sale of Swedegas						0,3
Other income (recurring/operating)	**15**	**11,3**	**16,5**	**7,5**	**22,7**	**0,3**
Sale of head office building	1,5					
Sale of office buildings	0,6					
Sonatrach Arbitration Settlement		2,8				
Divestment of shares in Statoil Fuel & Retail ASA				5,8		
Other income (explicit, non-recurring/non-operating)	2,1	2,8	0	5,8	0	0
Other income (non-explicit, non-recurring/non-operating)	0,7	2,0	1,3	2,7	0,6	1,5
Total other income	*17,8*	*16,1*	*17,8*	*16,0*	*23,3*	*1,8*

Note 3 - Purchases (net of inventory)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Write down of inventory	3,9	5,0	0,1	1,3	0,7	-
Purchases	-211,2	-301,3	-307,5	-363,1	-319,6	-257,4
Total purchases excluding inventory write down	**-207,3**	**-296,3**	**-307,4**	**-361,8**	**-318,9**	**-257,4**

Note 4 - Implied interest - Operating Leases						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Asset value	173,1	173,8	127,7	117,4	99,4	81,2
Cost of secured debt	3%	3%	3%	3%	3%	3%
Implied interest	**5,4**	**4,0**	**3,7**	**3,1**	**2,5**	**2,2**

Note 5 - Selling, general and administrative expenses						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Selling, general and administrative expenses	-7,5	-7,3	-9,2	-11,1	-13,2	-11,1
Curtailment gain	-	-3,5	-	-	-	-
Total selling, general and administrative expenses	-7,5	-10,8	-9,2	-11,1	-13,2	-11,1

Note 6 - Exploration expenses						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Impairment, net of reversals	15,4	11,3	1,2	0,4	-0,3	0,3
Exploration expenses	-31,0	-30,3	-18,0	-18,1	-13,8	-15,8
Total exploration expense	**-15,6**	**-19,0**	**-16,8**	**-17,7**	**-14,1**	**-15,5**

Note 7 - Depreciation						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Depreciation	85,9	74,4	65,3	59,1	50,2	46,1

Note 8 - Operating taxes						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Calculated income tax at statutory rate	-8,5	31,2	42,4	62,9	64	43,1
Calculated Norwegian Petroleum tax	33,4	62,8	71,7	87,4	84,9	61,5
Tax effect uplift	-6,8	-6,4	-5,2	-5,3	-5,1	-5
Tax effect of permanent differences regarding divestments	-3,7	-6,2	-12	0	0	0
Tax effect of permanent differences caused by functional currency d	-5,8	-5,1	-0,4	0	0	0
Tax effect of other permanent differences	-0,2	2,2	-3,7	-6,3	-5,7	0,7
Change in unrecognised deferred tax assets	28,2	8,7	3,9	-3	-3,1	0
Change in tax regulations	0,7	0,1	0,1	2,3	0	0
Prior period adjustments	1,1	-1,7	0,9	-0,5	0	-0,7
Other items including currency effects	3,2	1,7	1,5	-0,3	0,4	-0,4
Sum income tax expense	41,6	87,3	99,2	137,2	135,4	99,2
Effective tax rate	*969,30%*	*79,90%*	*71,70%*	*66,40%*	*63,30%*	*72,50%*
Reported taxes - Operating only	**42,6**	**90,1**	**100,8**	**142**	**140,7**	**99,6**

Appendix 4: Reorganized Balance Sheet

ANALYTICAL BALANCE SHEET							
(in NOK billion)	*Note*	*2015*	*2014*	*2013*	*2012*	*2011*	*2010*
Operating current assets							
Operating cash (2% of revenue)	*1*	*9,3*	12,1	12,4	14,1	12,9	10,5
Trade and other receivables	*2*	*52,3*	76,4	79,3	73,0	102,2	75,3
Inventories		*22,0*	23,7	29,6	25,3	27,8	23,6
Operating current assets		**83,6**	**112,3**	**121,3**	**112,4**	**142,9**	**109,4**
Non-interest-bearing debt							
Trade and other payables	*3*	*82,2*	100,6	95,6	81,8	94,0	73,6
Current tax payable		*24,1*	39,6	52,8	62,2	54,3	46,7
Total operating current liabilities		**106,3**	**140,2**	**148,4**	**144,0**	**148,3**	**120,2**
Operating working capital		**-22,7**	**-27,9**	**-27,1**	**-31,6**	**-5,3**	**-10,8**
Non-current operating assets							
Property, plant and equipment	*4*	719,3	735,9	615,1	556,5	507,0	429,4
Prepayments and non-current receivables	*5*	1,8	2,0	4,1	2,4	1,7	2,2
Intangible assets	*6*	34,6	24,9	22,5	20,6	21,8	16,1
Investment in associates		*7,3*	8,4	7,4	8,3	9,2	13,9
Asset classified as held for sale		0,0	0,0	0,0	0,0	0,0	44,9
Non-current operating assets excluding goodwill		**763,0**	**771,2**	**649,1**	**587,8**	**539,8**	**506,5**
Goodwill and acquired intangibles	*6*	*59,4*	65,5	69,1	63,4	71,2	23,9
Invested capital excluding goodwill		**740,3**	**743,3**	**622,0**	**556,3**	**534,4**	**495,6**
Invested capital including goodwill		**799,7**	**808,8**	**691,1**	**619,7**	**605,6**	**519,5**
Interest-bearing assets							
Cash and cash equivalents (excess cash)	*1*	*66,7*	71,0	72,9	51,1	27,7	19,8
Derivative financial instruments	*7*	28,6	35,2	25,0	36,8	38,7	26,7
Financial investments	*8*	107,1	78,8	55,7	29,9	35,3	26,9
Trade and other receivables	*2*	6,5	6,9	2,4	1,0	1,6	1,9
Prepayments and financial receivables	*5*	6,7	3,7	4,5	2,5	1,6	2,3
Deferred tax asset (non-operating)	*9*	38,8	31,0	10,6	0,0	1,4	2,8
Pension assets		11,3	8,0	5,3	9,4	3,9	5,3
Interest-bearing assets		**265,7**	**234,6**	**176,2**	**130,7**	**110,1**	**85,6**
Interest-bearing liabilities							
Pension liabilities		26,2	27,9	22,3	20,6	27,0	22,1
Debt equivalent operational lease	*4*	173,1	173,8	127,7	117,4	99,4	81,2
Libilities directly associated with assets classified as held for sale		0,0	0,0	0,0	0,0	0,0	9,2
Finance debt	*10*	284,5	231,6	182,5	119,4	131,4	111,5
Provisions	*11*	*103,5*	107,4	89,5	89,0	82,5	61,9
Derivative financial instruments	*12*	*13,6*	11,1	3,7	3,8	6,9	7,5
Deferred tax liability (non-operating)	*9*	-	-	-	-1,8	-	-
Interest-bearing liabilities		*600,9*	*551,8*	*425,8*	*348,4*	*347,3*	*293,5*
Equity and equity equivalents							
Deferred tax liabilities netted (operations	*9*	86,4	89,7	73,4	75,5	78,2	79,0
Dividends payable		*6,2*	5,7	0,0	0,0	0,0	0,0
Upward-adjusted goodwill	*6*	*10,9*	5,2	0,0	0,0	0,4	0,4
Other provisions	*11*	*6,0*	9,8	12,3	6,5	4,8	6,0
Equity		*355,0*	381,2	356,0	319,9	285,1	226,4
Equity and equity equivalents		**464,5**	**491,6**	**441,7**	**401,9**	**368,5**	**311,7**
Net-interest-bearing debt		**335,2**	**317,3**	**249,5**	**217,8**	**237,1**	**207,9**
Invested capital		**799,7**	**808,9**	**691,2**	**619,7**	**605,6**	**519,6**

Appendix 5: Notes to Reorganized balance sheet

Note 1 - Cash and cash equivalents						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Operating cash percentage of sales	2%	2%	2%	2%	2%	2%
Operating cash	**9,3**	**12,1**	**12,4**	**14,1**	**12,9**	**10,5**
Financial cash and cash equivalents	**66,7**	**71,0**	**72,9**	**51,1**	**27,7**	**19,8**
Total cash and cash equivalents	*76*	*83,121*	*85,266*	*65,2*	*40,59*	*30,3*

Note 2 - Trade and other receivables						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Trade receivables	39,3	57,8	64,9	55,3	86,4	63,2
Current financial receivables	6,5	6,9	2,4	1	1,6	1,9
Joint venture receivables	5,1	8,5	7,8	6,9	5,9	4,2
Assosiated companies and other related party receivables	0,5	0,5	0,4	0,5	0,7	0,5
Non-financial trade and other receivables	7,4	9,6	6,2	10,3	9,2	7,3
Total operating reveivables	**52,3**	**76,4**	**79,3**	**73**	**102,2**	**75,3**
Total nonoperating receivables (interest-bearing)	**6,5**	**6,9**	**2,4**	**1**	**1,6**	**1,9**
Total receivables	*58,8*	*83,3*	*81,7*	*74*	*103,8*	*77,2*

Note 3 - Trade and other payables (current)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Trade payables	18,1	21,8	28,3	25,9	31,1	23,2
Non-trade payabales and accrued expenses	20,8	25,2	19,0	17,1	21,5	24,1
Join venture payables	22,8	28,9	22,4	19,8	19,8	13,6
Associated companies and other related party payables	5,5	6,6	9,5	9,4	10,9	10,0
Current portion of provisions and other payables	15,0	18,1	16,4	9,6	10,5	2,7
Trade and other payables (operational)	**82,2**	**100,6**	**95,6**	**81,8**	**94,0**	**73,6**

Operating Leases						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Lease payments	32,6	28,4	21,2	20	16	13,8
Lease pmt received	4,9	5,5	3,8	2,4	2,4	1,5
Net rental expenditures	27,7	22,9	17,4	17,6	13,7	12,4
Cost of secured debt (Kd)	3,11%	3,10%	3,20%	3,57%	3,80%	4,00%
Property, Plant & Equipment (PP&E) - carrying amount, end year	546,2	562,1	487,4	439,1	407,6	351,6
Depreciation	85,9	74,4	65,3	59,1	50,1	45,7
Asset life (Koller, pg 605)	6,35856	7,55511	7,46401	7,42978	8,13573	7,69365
Asset value	**173,1**	**173,8**	**127,7**	**117,4**	**99,4**	**81,2**

Note 4 - Property, plant and equipment						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Property, plant and equipment	*546,2*	562,1	487,4	439,1	407,6	348,2
Operating leases	173,1	173,8	127,7	117,4	99,4	81,2
Total property, plant and equipment	**719,3**	**735,9**	**615,1**	**556,5**	**507,0**	**429,4**
We assume that book value is fair value						

Note 5 - Prepayments and financial receivables						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Financial receivables interest-bearing (financial)	6,7	3,7	4,5	2,5	1,6	2,3
Prepayments and other non-interest-bearing receivables (operational)	1,8	2,0	4,1	2,4	1,7	2,2
sum prepayments and financial receivables	8,5	5,7	8,5	4,9	3,3	4,5
** Prepayments and receivables are listed as non-current in annual report.*						

Note 6 - Intangible assets						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Exploration expenses	32,6	22,9	20,3	18,6	19,7	15,3
Acquisitions costs - oil and gas prospects	45,7	53,4	58,6	53,7	59,8	19,5
Goodwill	2,8	6,9	10,5	9,7	11,0	4,0
Accumulated depreciation and impariment losses	10,9	5,2	-	-	0,4	0,4
Other	2,0	2,0	2,2	2,0	2,1	0,8
Intangible assets excl. Goodwill and acquired intangibles	34,6	24,9	22,5	20,6	21,8	16,1
Goodwill and acquired intangibles	59,4	65,5	69,1	63,4	71,2	23,9
* We assume that all goodwill is recognized						

Note 7 - Derivative financial instruments (assets)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Non-current derivative financial instruments	23,8	29,9	22,1	33,2	32,7	20,6
Current derivative financial receivables	4,8	5,3	2,9	3,6	6,0	6,1
Total derivative financial instruments (assets)	**28,6**	**35,2**	**25,0**	**36,8**	**38,7**	**26,7**

Note 8 - Financial investments (interest-bearing)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Current financial investments	86,5	59,2	39,2	14,9	19,9	11,5
Non-current financial investments	20,6	19,6	16,4	15,0	15,4	15,4
Total financial investments (assets)	**107,1**	**78,8**	**55,7**	**29,9**	**35,3**	**26,9**
* Current financial investments consist of time deposits and interest-bearing securities						
* Non-current financial investments consist of bonds, listed securities and non-listed equity securities						

Note 9 - Deferred tax						
Deferred tax assets						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Tax losses carried forward	41,8	36,7	15,5	10,7	11,0	2,8
Property, plant and equipment	1,6	4,6	11,8	7,7	9,6	7,8
Intangible assets	-	-	-	-	-	-
ARO (Asset retirement obligation)	61,5	73,3	63,8	63,4	55,4	43,4
Pension	5,1	7,0	6,4	5,6	6,7	7,5
Derivatives	0,1	0,2	-	-	7,4	3,4
Other	7,0	13,4	12,2	9,6	2,6	3,3
Net operating deferred tax assets	70,1	91,3	87,8	80,7	67,6	54,4
Net financial deferred tax assets	47,0	43,9	21,9	16,3	25,0	13,7
sum deferred tax assets	117,1	135,2	109,7	97,0	92,6	68,1
Deferred tax liabilities						
Tax losses carried forward	-	-	-	-	-	-
Property, plant and equipment	-147,4	-172,6	-129,3	-127,5	-115,5	-103,5
Intangible assets	-	-	-26,8	-20,9	-28,5	-19,1
ARO (Asset retirement obligation)	-	-	-	-	-	-
Pension	-	-	-	-	-	-
Derivatives	-8,2	-12,9	-11,3	-18,1	-23,7	-10,9
Other	-9,1	-8,4	-5,1	-7,8	-1,8	-10,8
Net operating deferred tax liabilities	-156,5	-181,0	-161,2	-156,2	-145,8	-133,4
Net financial deferred tax liabilities	-8,2	-12,9	-11,3	-18,1	-23,7	-10,9
sum deferred tax liabilities	-164,7	-193,9	-172,5	-174,3	-169,4	-144,3
Netted operating deferred tax assets (libailities)	**-86,4**	**-89,7**	**-73,4**	**-75,5**	**-78,2**	**-79,0**
Netted financial deferred tax assets (liabilities)	**38,8**	**31,0**	**10,6**	**-1,8**	**1,4**	**2,8**

Note 10 - Finance debt						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Current financial debt	20,5	26,5	17,1	18,4	19,8	11,7
Non-current financial debt	264,0	205,1	165,5	101,0	111,6	99,8
Total finance debt	**284,5**	**231,6**	**182,5**	**119,4**	**131,4**	**111,5**

Note 11 - Provisions (non-current)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Asset retirement obligations	103,5	107,4	89,5	89,0	82,5	61,9
Claims and litigations	9,8	-	-	-	-	-
Other provisions	6,0	9,8	12,3	6,5	4,8	6,0

Note 12 - Derivative financial instruments (liabilities)						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Current derivative financial instruments	2,3	6,6	1,5	1,1	3,0	4,2
Non-current derivative financial instruments	11,3	4,5	2,2	2,7	3,9	3,4
Total derivative financial instruments	**13,6**	**11,1**	**3,7**	**3,8**	**6,9**	**7,5**

Appendix 6: Free Cash Flow Statement

FREE CASH FLOW							
(in nok billion)	*Note*	2015	2014	2013	2012	2011	2010
NOPLAT		45,1	62,2	68,7	66,0	78,5	46,1
Depreciation		85,9	74,4	65,3	59,1	50,2	46,1
Gross cash flow		131,0	136,6	134,0	125,1	128,7	92,2
Decrease (increase) in operating working capital		-5,2	0,8	-4,5	26,3	-5,5	
Investments in property, plant and equipment	1	-32,0	-101,7	-55,4	-32,9	-60,6	
Decrease (increase) operating leases		0,8	-46,1	-10,3	-18,0	-18,2	
Decrease (increase) in prepayments and non-operating receivables		*0,2*	*2,1*	*-1,7*	*-0,7*	*0,5*	
Investments in intangible assets (excl. Goodwill)		-9,7	-2,4	-1,9	1,2	-5,7	
Investments in associates		1,1	-1,0	0,9	0,9	4,7	
Assets classified as held for sale - sold		0,0	0,0	0,0	0,0	44,9	
Free cash flow excluding goodwill and acquired intangibles		**86,1**	**-11,7**	**61,2**	**101,8**	**88,7**	
Investments in goodwill and acquired intanbles	2	6,1	3,6	-5,7	7,8	-47,3	
Free cash flow including goodwill and acquired intangibles		**92,2**	**-8,1**	**55,5**	**109,6**	**41,4**	
Non-operating income	3	2,8	4,8	1,3	8,5	0,6	1,5
Net financial expenses	4	-10,6	0,0	-17,0	0,1	2,1	-0,4
Decrease (increase) in excess cash		4,3	1,9	-21,8	-23,4	-7,9	-19,8
Investments in derivative financial instruments		6,6	-10,3	11,8	1,9	-12,0	-26,7
Financial investments		-28,3	-23,1	-25,8	5,4	-8,4	-26,9
Trade and other receivables		0,4	-4,5	-1,4	0,6	0,3	-1,9
Prepayments and financial receivables		-3,0	0,8	-2,0	-0,9	0,7	-2,3
Changes in non-operating deferred tax assets		-7,8	-20,4	-10,6	1,4	1,4	-2,8
Pension assets		-3,3	-2,7	4,1	-5,5	1,4	-5,3
Pension liabilities		-1,7	5,6	1,7	-6,4	4,9	22,1
Debt equivalent operational lease		-0,8	46,1	10,3	18,0	18,2	81,2
Libilities directly associated with assets classified as held for sale		0,0	0,0	0,0	0,0	-9,2	9,2
Finance debt		52,9	49,0	63,1	-12,0	19,9	111,5
Provisions		-3,9	17,9	0,5	6,5	20,6	61,9
Derivative financial instruments		2,5	7,4	-0,1	-3,1	-0,6	7,5
Deferred tax liability (non-operating)		0,0	0,0	1,8	-1,8	0,0	0,0
Non-operating cash flow		**10,1**	**72,5**	**16,1**	**-10,8**	**31,9**	
Cash flow available to all investors (excluding goodwill and acquired intangibles)		**96,3**	**60,8**	**77,3**	**91,1**	**120,7**	
Cash flow available to all investors (including goodwill and acquired intangibles)		**102,4**	**64,4**	**71,6**	**98,9**	**73,4**	

Appendix 7: Notes to Free Cash Flow Statement

Note 1 - Investments in PP&E						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Property, plant & equipment	546,2	562,092	487,3937	439,1	407,6	348,2
Impairments	-47,9	-27,0117	-7,07295	-1,38959	-1,2	-4,5
Net PP&E	594,1	589,1037	494,4667	440,4896	408,8	352,7
Investment in PP&E	**-32,008**	**-101,71**	**-55,3667**	**-32,8896**	**-60,6**	

Note 2 - Investments in goodwill and acquired intangibles						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Goodwill	2,8	6,9	10,5	9,7	11	4
Acquired intangibles	45,7	53,4	58,6	53,7	59,8	19,5
Amortization and impairments	5,7	5,2	0	-0,4	0	0,4
Year end balance after amortization and impairm	48,5	60,3	69,1	63,4	70,8	23,5
Year end balance before amortization and impai	54,2	65,5	69,1	63	70,8	23,9
Investments in goodwill and acquired intangibles	**6,1**	**3,6**	**-5,7**	**7,8**	**-47,3**	**-23,9**

Note 3 - Non-operating income						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Non-operating other income	2,8	4,8	1,3	8,5	0,6	1,5

Note 4 - Tax shield, net financial expenses						
(in NOK billion)	2015	2014	2013	2012	2011	2010
Net foreign exchange gains (losses)	-2,1	-2,2	-8,6	0,8	0,4	-1,8
Interest income and other financial items	3,2	4,0	3,6	1,8	1,3	3,1
Interest and other finance expenses	-11,7	-1,8	-12,0	-2,5	0,4	-1,7
Net financial expenses	10,6	-	17,0	-0,1	-2,1	0,4
Marginal tax rate	*27%*	*27%*	*28%*	*28%*	*28%*	*28%*
Tax shield	**2,9**	**-**	**4,8**	**-0,0**	**-0,6**	**0,1**

Appendix 8: Performance ratios

ROIC - incl. goodwill	2011	2012	2013	2014	2015
Statoil	14,0%	10,8%	10,5%	8,3%	5,6%
British Petroleum	13,9%	8,4%	10,2%	5,6%	-0,8%
Chevron	16,4%	13,3%	10,4%	7,4%	1,9%
Conoco Phillips	10,3%	11,1%	12,4%	9,2%	-0,4%
Exxon Mobil	13,8%	13,5%	9,1%	8,7%	4,3%
Royal Dutch Shell	13,8%	11,7%	9,2%	8,6%	6,2%

ROIC - excl. goodwill	2011	2012	2013	2014	2015
Statoil	15,2%	12,1%	11,7%	9,1%	6,1%
British Petroleum	14,6%	8,9%	10,7%	5,9%	-0,8%
Chevron	16,9%	13,7%	10,6%	7,5%	2,0%
Conoco Phillips	10,6%	11,3%	12,4%	9,2%	-0,4%
Exxon Mobil	13,8%	13,5%	9,1%	8,7%	4,3%
Royal Dutch Shell	14,0%	11,8%	9,3%	8,7%	6,2%

Turnover rate of invested capital -	2011	2012	2013	2014	2015
Statoil	1,16	1,16	0,98	0,81	0,62
British Petroleum	1,59	1,53	1,50	1,36	0,91
Chevron	1,60	1,34	1,13	0,93	0,58
Conoco Phillips	0,54	0,57	0,60	0,53	0,31
Exxon Mobil	1,72	1,60	1,37	1,22	0,77
Royal Dutch Shell	1,86	1,72	1,54	1,42	0,94

Turnover rate of invested capital - excl.	2011	2012	2013	2014	2015
Statoil	1,27	1,31	1,08	0,89	0,67
British Petroleum	1,67	1,62	1,58	1,43	0,96
Chevron	1,65	1,37	1,16	0,95	0,59
Conoco Phillips	0,55	0,58	0,60	0,53	0,31
Exxon Mobil	1,72	1,60	1,37	1,22	0,77
Royal Dutch Shell	1,89	1,74	1,56	1,43	0,94

Profit margin	2011	2012	2013	2014	2015
Statoil	12%	9%	11%	10%	9%
British Petroleum	9%	6%	7%	4%	-1%
Chevron	10%	10%	9%	8%	3%
Conoco Phillips	19%	20%	21%	17%	-1%
Exxon Mobil	8%	8%	7%	7%	6%
Royal Dutch Shell	7%	7%	6%	6%	7%

ROE	2011	2012	2013	2014	2015
Statoil	31%	23%	12%	6%	-10%
British Petroleum	22%	9%	16%	3%	-4%
Chevron	21%	18%	13%	11%	3%
Conoco Phillips	19%	15%	18%	13%	-9%
Exxon Mobil	27%	29%	19%	19%	9%
Royal Dutch Shell	19%	15%	9%	8%	1%

Appendix 9: Revenue drivers – All scenarios

Stochastic modeling scenario

	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total oil and gas (MBOE)	1.401.567	1.409.588	1.423.904	1.446.093	1.458.067	1.411.577	1.413.649	1.439.604
Total oil and gas (BOE)	1.401.567.011	1.409.588.476	1.423.903.831	1.446.092.503	1.458.067.076	1.411.576.970	1.413.648.624	1.439.604.218
Attributable to crude oil and gas revenue (80%)	1.121.253.609	1.127.670.781	1.139.123.065	1.156.874.002	1.166.453.661	1.129.261.576	1.130.918.899	1.151.683.374
Oil price (USD/BOE)		45,27	51,22	56,52	63,05	71,22	78,95	88,11
Gas price (USD/BOE)		28,55	30,59	33,01	35,60	38,43	41,65	44,77
Exchange rate		8,50	8,08	7,67	7,29	6,92	6,86	6,86
Share of revenue								
Crude oil revenue (58% of attributable production)		251.648.398.828	273.273.865.640	290.915.549.502	310.844.784.254	322.954.582.322	355.232.819.721	403.726.623.349
Gas revenue (42% of attributabel production)		114.932.991.225	118.173.444.139	123.031.513.376	127.090.202.601	126.202.359.291	135.714.528.650	148.562.096.996
Refined and other products		91.645.347.513	97.861.827.445	103.486.765.719	109.483.746.714	112.289.235.403	122.736.837.093	138.072.180.086
Total revenue		**458.226.737.566**	**489.309.137.223**	**517.433.828.597**	**547.418.733.568**	**561.446.177.017**	**613.684.185.464**	**690.360.900.432**
Total revenue (NOK million)		**458.227**	**489.309**	**517.434**	**547.419**	**561.446**	**613.684**	**690.361**

Bearish scenario

	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total oil and gas (MBOE)	1.401.567	1.382.081	1.369.105	1.362.685	1.356.619	1.289.457	1.258.659	1.253.262
Total oil and gas (BOE)	1.401.567.011	1.382.081.192	1.369.104.926	1.362.685.263	1.356.619.126	1.289.456.703	1.258.659.364	1.253.262.105
Attributable to crude oil and gas revenue (80%)	1.121.253.609	1.105.664.953	1.095.283.940	1.090.148.211	1.085.295.301	1.031.565.362	1.006.927.492	1.002.609.684
Oil price (USD/BOE)		41,60	41,60	41,60	41,60	41,60	41,60	41,60
Gas price (USD/BOE)		28,55	28,55	28,55	28,55	28,55	28,55	28,55
Exchange rate		8,50	8,08	7,67	7,29	6,92	6,86	6,86
Share of revenue								
Crude oil revenue (58% of attributable production)		226.758.613.948	213.398.113.134	201.777.625.371	190.835.421.459	172.318.308.223	166.664.705.102	165.950.029.920
Gas revenue (42% of attributabel production)		112.690.141.976	106.050.496.816	100.275.569.932	94.837.723.533	85.635.444.143	82.825.825.019	82.470.659.469
Refined and other products		84.862.188.981	79.862.152.487	75.513.298.826	71.418.286.248	64.488.438.092	62.372.632.530	62.105.172.347
Total revenue		**424.310.944.905**	**399.310.762.437**	**377.566.494.128**	**357.091.431.239**	**322.442.190.458**	**311.863.162.651**	**310.525.861.736**
Total revenue (NOK million)		**424.311**	**399.311**	**377.566**	**357.091**	**322.442**	**311.863**	**310.526**

Base scenario

	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total oil and gas (MBOE)	1.401.567	1.409.588	1.423.904	1.446.093	1.458.067	1.411.577	1.413.649	1.439.604
Total oil and gas (BOE)	1.401.567.011	1.409.588.476	1.423.903.831	1.446.092.503	1.458.067.076	1.411.576.970	1.413.648.624	1.439.604.218
Attributable to crude oil and gas revenue (80%)	1.121.253.609	1.127.670.781	1.139.123.065	1.156.874.002	1.166.453.661	1.129.261.576	1.130.918.899	1.151.683.374
Oil price (USD/BOE)		85,00	85,00	85,00	85,00	85,00	85,00	85,00
Gas price (USD/BOE)		50,00	50,00	50,00	50,00	50,00	50,00	50,00
Exchange rate		8,50	8,08	7,67	7,29	6,92	6,86	6,86
Share of revenue								
Crude oil revenue (58% of attributable production)		472.550.440.650	453.482.044.355	437.521.215.685	419.086.963.379	385.438.255.796	382.474.509.883	389.497.013.889
Gas revenue (42% of attributabel production)		201.289.234.354	193.166.793.741	186.368.063.476	178.515.745.050	164.182.624.173	162.920.176.623	165.911.506.930
Refined and other products		168.459.918.751	161.662.209.524	155.972.319.790	149.400.677.107	137.405.219.992	136.348.671.626	138.852.130.205
Total revenue		**842.299.593.755**	**808.311.047.620**	**779.861.598.951**	**747.003.385.536**	**687.026.099.960**	**681.743.358.132**	**694.260.651.024**
Total revenue (NOK million)		**842.300**	**808.311**	**779.862**	**747.003**	**687.026**	**681.743**	**694.261**

Bullish scenario

	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total oil and gas (MBOE)	1.401.567	1.409.588	1.423.904	1.446.093	1.458.067	1.411.577	1.413.649	1.439.604
Total oil and gas (BOE)	1.401.567.011	1.409.588.476	1.423.903.831	1.446.092.503	1.458.067.076	1.411.576.970	1.413.648.624	1.439.604.218
Attributable to crude oil and gas revenue (80%)	1.121.253.609	1.127.670.781	1.139.123.065	1.156.874.002	1.166.453.661	1.129.261.576	1.130.918.899	1.151.683.374
Oil price (USD/BOE)		131,00	131,00	131,00	131,00	131,00	131,00	131,00
Gas price (USD/BOE)		73,00	73,00	73,00	73,00	73,00	73,00	73,00
Exchange rate		8,50	8,08	7,67	7,29	6,92	6,86	6,86
Share of revenue								
Crude oil revenue (58% of attributable production)		728.283.620.296	698.895.856.594	674.297.402.997	645.886.967.090	594.028.370.697	589.460.715.231	600.283.633.170
Gas revenue (42% of attributabel production)		293.882.282.157	282.023.518.862	272.097.372.675	260.632.987.773	239.706.631.292	237.863.457.870	242.230.800.118
Refined and other products		255.541.475.613	245.229.843.864	236.598.693.918	226.629.988.716	208.433.750.497	206.831.043.275	210.628.608.322
Total revenue		**1.277.707.378.067**	**1.226.149.219.320**	**1.182.993.469.590**	**1.133.149.943.579**	**1.042.168.752.486**	**1.034.155.216.376**	**1.053.143.041.610**
Total revenue (NOK million)		**1.277.707**	**1.226.149**	**1.182.993**	**1.133.150**	**1.042.169**	**1.034.155**	**1.053.143**

Appendix 10: Expected Production

Total Expected Production

PRODUCTION													
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Sum Norway	443.067	442.424	444.681	450.587	451.549	424.646	420.713	428.026	434.982	443.661	441.028	440.436	449.245
Sum International	222.677	227.131	231.673	236.307	241.033	245.853	250.770	255.786	260.902	266.120	271.442	276.871	282.408
Total production	**665.744**	**669.555**	**676.354**	**686.894**	**692.582**	**670.499**	**671.483**	**683.812**	**695.883**	**709.780**	**712.470**	**717.307**	**731.653**

Ratios: Sales volumes	
Statoil	47,50%
Third party	24,50%
Norwegian state	28,00%

Ratios: Revenue	
Crude oil	50,90%
Gas	27,31%
Refined and other products	21,79%

PRODUCTION													
Total own producti	665.744	669.555	676.354	686.894	692.582	670.499	671.483	683.812	695.883	709.780	712.470	717.307	731.653
Third party	343.384	345.349	348.856	354.293	357.226	345.836	346.344	352.703	358.929	366.097	367.485	369.979	377.379
Norwegian state	392.439	394.685	398.693	404.906	408.259	395.242	395.822	403.089	410.205	418.397	419.982	422.834	431.290
Total oil and gas	**1.401.567**	**1.409.588**	**1.423.904**	**1.446.093**	**1.458.067**	**1.411.577**	**1.413.649**	**1.439.604**	**1.465.017**	**1.494.275**	**1.499.937**	**1.510.120**	**1.540.322**

2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
458.230	465.537	462.039	445.298	412.839	387.256	383.107	390.769	371.534	367.366	357.764	364.919	372.217
288.056	293.818	299.694	305.688	311.802	318.038	324.398	330.886	337.504	344.254	351.139	358.162	365.325
746.286	**759.354**	**761.732**	**750.986**	**724.640**	**705.294**	**707.505**	**721.656**	**709.038**	**711.620**	**708.903**	**723.081**	**737.543**

746.286	759.354	761.732	750.986	724.640	705.294	707.505	721.656	709.038	711.620	708.903	723.081	737.543
384.927	391.667	392.894	387.351	373.762	363.783	364.924	372.222	365.714	367.046	365.645	372.958	380.417
439.916	447.619	449.021	442.686	427.156	415.752	417.056	425.397	417.959	419.481	417.880	426.237	434.762
1.571.129	**1.598.641**	**1.603.647**	**1.581.023**	**1.525.559**	**1.484.829**	**1.489.485**	**1.519.275**	**1.492.711**	**1.498.148**	**1.492.427**	**1.522.276**	**1.552.721**

Production Norwegian Continental Shelf

1barrel/sm^3	0,159

		Proved reserves			Average yearly production		Time	0	1	2	3	4	5	6	7	8	9	10	11	12
	Field	Thousand Sm	Mboe	60% reco	2015	Growth	License Expire date	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
1	ALVE	2.670	16.792	20.151	3.869	2%	2029	3.869	3.946	4.025	4.106	4.188	-	-	-	-	-	-	-	-
2	FRAM	14.640	92.075	110.491	6.169	2%	2024	6.169	6.292	6.418	6.546	6.677	6.811	6.947	7.086	7.227	7.372	7.519	7.670	7.823
3	FRAM H-NORD	300	1.887	2.264	840	2%	2024	840	856	568	-	-	-	-	-	-	-	-	-	-
4	GIMLE	100	629	755	949	2%	2034/2023	755	-	-	-	-	-	-	-	-	-	-	-	-
5	GRANE	41.400	260.377	312.453	16.717	2%	2030	16.717	17.051	17.392	17.740	18.095	18.457	18.826	19.203	19.587	19.978	20.378	20.785	21.201
6	GUDRUN	13.600	85.535	102.642	2.227	2%	2028	2.227	2.271	2.316	2.363	2.410	2.458	2.507	2.558	2.609	2.661	2.714	2.768	2.824
7	GULLFAKS	16.400	103.145	123.774	25.331	2%	2036	25.331	25.838	26.354	26.881	19.369	-	-	-	-	-	-	-	-
8	GULLFAKS SØR					2%				-										
9	GUNGNE	890	5.597	6.717	3.650	2%	2028	3.650	3.067	-	-	-	-	-	-	-	-	-	-	-
10	HEIDRUN	70.400	442.767	531.321	3.176	2%	2024/2025	3.176	3.239	3.304	3.370	3.437	3.506	3.576	3.648	3.721	3.795	3.871	3.948	4.027
11	HYME	5.180	32.579	39.094	2.263	2%		2.263	2.308	2.354	2.402	2.450	2.499	2.549	2.599	2.651	2.704	2.759	2.814	2.870
12	KRISTIN	66.290	416.918	500.302	8.943	2%	2027/2033	8.943	9.121	9.304	9.490	9.680	9.873	10.071	10.272	10.478	10.687	10.901	11.119	11.341
13	KVITEBJØRN	148.850	936.164	1.123.396	23.360	2%	2031	23.360	23.827	24.304	24.790	25.286	25.791	26.307	26.833	27.370	27.917	28.476	29.045	29.626
14	MIKKEL	58.110	365.472	438.566	5.220	2%	2020/2022	5.220	5.324	5.430	5.539	5.650	5.763	5.878	5.996	6.115	6.238	6.363	6.490	6.620
15	MORVIN	17.080	107.421	128.906	5.950	2%	2027	5.950	6.068	6.190	6.314	6.440	6.569	6.700	6.834	6.971	7.110	7.252	7.397	7.545
16	NJORD	56.840	357.484	428.981	2.227	2%	2021/2023	2.227	2.271	2.316	2.363	2.410	2.458	2.507	2.558	2.609	2.661	2.714	2.768	2.824
17	NORNE	104.370	656.415	787.698	2.154	2%	2029	2.154	2.197	2.241	2.285	2.331	2.378	2.425	2.474	2.523	2.574	2.625	2.678	2.731
18	OSEBERG	548.520	3.449.811	4.139.774	31.536	2%	2031	31.536	32.167	32.810	33.466	34.136	34.818	35.515	36.225	36.949	37.688	38.442	39.211	39.995
19	OSEBERG SØR					2%				-										
20	OSEBERG ØST					2%				-										
21	SLEIPNER VEST	13.430	84.465	101.358	17.958	2%	2028	17.958	18.317	18.684	19.057	19.438	7.904	-	-	-	-	-	-	-
22	SLEIPNER ØST	490	3.082	3.698	16.206	2%	2028	3.698	-	-	-	-	-	-	-	-	-	-	-	-
23	SNORRE	65.590	412.516	495.019	12.994	2%	2016/2024	12.994	13.254	13.519	13.789	14.065	14.346	14.633	14.926	15.225	15.529	15.840	16.156	16.480
24	SNØHVIT	220.610	1.388.742	1.666.491	17.192	2%	2035	17.192	17.535	17.886	18.244	18.609	18.981	19.360	19.748	20.143	20.545	20.956	21.375	21.803
25	STATFJORD	23.600	148.428	178.113	15.549	2%	2026	15.549	15.860	16.177	16.501	16.831	17.167	17.511	17.861	18.218	18.582	7.856	-	-
26	STATFJORD NORD	5.670	35.660	42.792	438	2%	2026	438	447	456	465	474	484	493	503	513	523	534	545	555
27	STATFJORD ØST	2.130	13.396	16.075	475	2%	2024/2026	475	484	494	504	514	524	534	545	556	567	578	590	602
28	SYGNA	1.100	6.918	8.302	292	2%	2024/2026	292	298	304	310	316	322	329	335	342	349	356	363	370
29	TORDIS	8.580	53.962	64.755	2.993	2%	2024	2.993	3.053	3.114	3.176	3.240	3.305	3.371	3.438	3.507	3.577	3.648	3.721	3.796
30	TROLL	950.780	5.979.748	7.175.698	81.541	2%	2030	81.541	83.172	84.835	86.532	88.263	90.028	91.828	93.665	95.538	97.449	99.398	101.386	103.414
31	TUNE	-1.200	-7.547	-9.057	694	2%	2020/2031/2032	694	-	-	-	-	-	-	-	-	-	-	-	-
32	TYRIHANS	61.900	389.308	467.170	18.104	2%	2029	18.104	18.466	18.835	19.212	19.596	19.988	20.388	20.796	21.212	21.636	22.069	22.510	22.960
33	URD	1.700	10.692	12.830	5.193	2%	2026	5.193	5.297	2.361	-	-	-	-	-	-	-	-	-	-
34	VALEMON	29.480	185.409	222.491	5.986	2%	2031	5.986	6.106	6.228	6.352	6.479	6.609	6.741	6.876	7.014	7.154	7.297	7.443	7.592
35	VESLEFRIKK	3.180	20.000	24.000	1.132	2%	2020/2031	1.132	1.154	1.177	1.201	1.225	1.249	1.274	1.300	1.326	1.352	1.379	1.407	1.435
36	VIGDIS	11.970	75.283	90.340	5.329	2%	2024	5.329	5.436	5.544	5.655	5.768	5.884	6.001	6.121	6.244	6.369	6.496	6.626	6.758
37	VISUND	66.190	416.289	499.547	17.703	2%	2034	17.703	18.057	18.418	18.786	19.162	19.545	19.936	20.335	20.741	21.156	21.579	22.011	22.451
38	VISUND SØR					2%														
39	VOLVE	500	3.145	3.774	3.650	2%	2028	3.650	124	-	-	-	-	-	-	-	-	-	-	-
40	ÅSGARD	90.040	566.289	679.547	33.617	2%	2027	33.617	34.289	34.975	35.674	36.388	37.115	37.858	38.615	39.387	40.175	40.978	41.798	42.634
										-										
41	ORMEN LANGE	146.600	922.013	1.106.415	17.447	2%	2040/2041	17.447	17.796	18.152	18.515	18.885	19.263	19.648	20.041	20.442	20.851	21.268	21.693	22.127
42	SKARV	49.720	312.704	375.245	17.082	2%	2029/2033	17.082	17.424	17.772	18.128	18.490	18.860	19.237	19.622	20.014	20.415	20.823	21.239	21.664
43	EKOFISK AREA	103.180	648.931	778.717	5.220	2%	2028	5.220	5.324	5.430	5.539	5.650	5.763	5.878	5.996	6.115	6.238	6.363	6.490	6.620
44	MARULK	4.170	26.226	31.472	4.818	2%	2025	4.818	4.914	5.013	5.113	5.215	5.319	1.079	-	-	-	-	-	-
45	VILJE	2.300	14.465	17.358	1.460	2%	2021	1.460	1.489	1.519	1.549	1.580	1.612	1.644	1.677	1.711	1.745	1.372	-	-
46	SIGYN	1.580	9.937	11.925	1.387	2%	2022	1.387	1.415	1.443	1.472	1.501	1.531	1.562	1.593	20	-	-	-	-
47	RINGHORNE ØST	4.500	28.302	33.962	621	2%	2030	621	633	646	658	672	685	699	713	727	742	756	772	787
48	EDVARD GRIEG	28.750	180.818	216.981	146	2%	2035	6.126	6.249	6.373	6.501	6.631	6.764	6.899	7.037	7.178	7.321	7.468	7.617	7.769
								443.067	442.424	444.681	450.587	451.549	424.646	420.713	428.026	434.982	443.661	441.028	440.436	449.245
							Total production	22.937.649												

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	REST VALUE
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.380	8.139	3.816	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.625	22.058	22.499	860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.880	2.938	2.997	3.057	3.118	3.180	3.244	3.308	3.375	3.442	3.511	3.581	3.653	3.726	3.800	3.876	3.954	4.033	4.114	4.170	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.108	4.190	4.274	4.359	4.446	4.535	4.626	4.719	4.813	4.909	5.007	5.108	5.210	5.314	5.420	5.529	5.639	5.752	5.867	5.984	6.104	6.226	6.351	366.213
2.927	2.945	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.568	11.799	12.035	12.276	12.522	12.772	13.028	13.288	13.554	13.825	14.101	14.383	14.671	14.965	15.264	15.569	15.880	16.198	16.522	16.853	17.190	17.533	17.884	35.342
30.219	30.823	31.439	32.068	32.710	33.364	34.031	34.712	35.406	36.114	36.836	37.573	38.325	39.091	39.873	40.670	41.484	42.313	43.160	44.023	44.903	1.327	-	-
6.752	6.887	7.025	7.165	7.309	7.455	7.604	7.756	7.911	8.069	8.231	8.395	8.563	8.734	8.909	9.087	9.269	9.454	9.643	9.836	10.033	10.234	10.438	167.181
7.636	7.850	8.007	8.167	8.331	1.513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.880	2.938	2.997	3.057	3.118	3.180	3.244	3.308	3.375	3.442	3.511	3.581	3.653	3.726	3.800	3.876	3.954	4.033	4.114	4.196	4.280	4.365	4.453	313.216
2.786	2.841	2.898	2.956	3.015	3.076	3.137	3.200	3.264	3.329	3.396	3.464	3.533	3.604	3.676	3.749	3.824	3.901	3.979	4.058	4.140	4.222	4.307	675.728
40.795	41.611	42.443	43.292	44.158	45.041	45.942	46.861	47.798	48.754	49.729	50.724	51.738	52.773	53.828	54.905	56.003	57.123	58.266	59.431	60.619	61.832	63.069	2.500.079
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.809	17.145	17.488	17.838	18.195	18.559	18.930	19.308	19.695	20.088	20.490	20.900	21.318	21.744	22.179	13.575	-	-	-	-	-	-	-	-
22.239	22.684	23.137	23.600	24.072	24.554	25.045	25.546	26.057	26.578	27.109	27.651	28.204	28.769	29.344	29.931	30.529	31.140	31.763	32.398	33.046	33.707	34.381	772.629
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
567	578	589	601	613	626	638	651	664	677	691	704	719	733	748	763	778	793	809	825	842	859	876	20.019
614	626	639	651	664	678	691	705	719	734	748	763	778	99	-	-	-	-	-	-	-	-	-	-
378	385	393	401	409	417	425	434	443	331	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.872	3.949	4.028	4.109	4.191	668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105.482	107.592	109.743	111.938	114.177	116.461	118.790	121.166	123.589	126.061	128.582	131.154	133.777	136.452	139.181	141.965	144.804	147.700	150.654	153.667	156.741	159.875	163.073	2.936.025
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.419	23.888	24.366	24.853	25.350	25.857	26.374	26.902	389	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.744	7.898	8.056	8.217	8.382	8.549	8.720	8.895	9.073	9.254	9.439	9.628	9.821	10.017	10.217	702	-	-	-	-	-	-	-	-
1.464	1.493	1.523	1.553	1.356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.894	5.215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.900	23.358	23.825	24.302	24.788	25.284	25.789	26.305	26.831	16.287	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.487	44.356	45.243	46.148	6.811	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.570	23.021	23.481	23.951	24.430	24.919	25.417	25.925	26.444	26.973	27.512	28.062	28.624	29.196	29.780	30.376	30.983	31.603	32.235	32.880	33.537	34.208	34.892	14.867
22.097	22.539	22.990	23.450	23.919	9.480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.752	6.887	7.025	7.165	7.309	7.455	7.604	7.756	7.911	8.069	8.231	8.395	8.563	8.734	8.909	9.087	9.269	9.454	9.643	9.836	10.033	10.234	10.438	507.332
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
803	819	835	852	869	886	904	922	940	959	978	998	1.018	1.038	1.059	1.080	1.102	1.124	1.146	1.169	1.193	1.217	1.241	1.700
7.925	8.083	8.245	8.410	8.578	8.749	8.924	9.103	9.285	9.471	9.660	9.853	10.050	10.251	462	-	-	-	-	-	-	-	-	-
458.230	465.537	462.039	445.298	412.839	387.256	383.107	390.769	371.534	367.366	357.764	364.919	372.217	378.966	376.450	364.741	357.473	364.623	371.915	379.327	382.661	345.839	351.403	8.310.332

		Proved reserves					
	FIELDS UNDER DEVELOPMENT	Thousand Sm^3	Mboe	60% recove	Yearly prod	Growth	Prod.start
50	AASTA HANSTEEN	46.400	291.824	350.189	17.000	2%	2018
51	JOHAN SVERDRUP	295.030	1.855.535	2.226.642	44.533	2%	2019
52	GINA KROG	35.170	221.195	265.434	9.500	2%	2017
53	IVAR AASEN	29.410	184.969	221.962	11.098	2%	2016
54	GOLIAT	28.500	179.245	215.094	10.755	2%	2016
55	MARTIN LINGE	31.650	199.057	238.868	11.943	2%	2016

Production International

Field	Proven reserves	Average entitlement production mboe			Expire date										
US		Daily	Yearly	Growth		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Bakken		49,3	17.995	2%	HBP	17.995	18.354	18.721	19.096	19.478	19.867	20.265	20.670	21.083	21.505
Eagle Ford		26,6	9.709	2%	HBP	9.709	9.903	10.101	10.303	10.509	10.720	10.934	11.153	11.376	11.603
Marcellus		96,9	35.369	2%	HBP	35.369	36.076	36.797	37.533	38.284	39.050	39.831	40.627	41.440	42.269
Tahiti		13,9	5.074	2%	HBP	5.074	5.175	5.278	5.384	5.492	5.602	5.714	5.828	5.944	6.063
Caesar Tonga		8,7	3.176	2%	HBP	3.176	3.239	3.304	3.370	3.437	3.506	3.576	3.648	3.721	3.795
St. Malo		7,6	2.774	2%	HBP	2.774	2.829	2.886	2.944	3.003	3.063	3.124	3.186	3.250	3.315
Jack		6,6	2.409	2%	HBP	2.409	2.457	2.506	2.556	2.608	2.660	2.713	2.767	2.823	2.879
Canada															
Leismer Demo		19,9	7.264	2%	HBP	7.264	7.409	7.557	7.708	7.862	8.019	8.180	8.343	8.510	8.681
Terra nova		5,4	1.971	2%	2022	1.971	2.010	2.051	2.092	2.133	2.176	2.220	2.264	2.309	2.356
Hibernia		4,8	1.752	2%	2027	1.752	1.787	1.823	1.859	1.896	1.934	1.973	2.012	2.053	2.094
South America															
Peregrino (Brazil)		43,5	15.878	2%	2034	15.878	16.195	16.519	16.849	17.186	17.530	17.881	18.238	18.603	18.975
Venezuela: Petrocedeno		11,6	4.234	2%	2033	4.234	4.319	4.405	4.493	4.583	4.675	4.768	4.864	4.961	5.060
Sub-Saharan Africa															
Angola, Block 17		113,9	41.574	2%	2022-2034	41.574	42.405	43.253	44.118	45.000	45.901	46.819	47.755	48.710	49.684
Angola, Block 15		22,6	8.249	2%	2026-2032	8.249	8.414	8.582	8.754	8.929	9.108	9.290	9.476	9.665	9.858
Angola, Block 31		19,0	6.935	2%	2031	6.935	7.074	7.215	7.359	7.507	7.657	7.810	7.966	8.125	8.288
Angola, Block 4/05		1,3	475	2%	2026	475	484	494	504	514	524	534	545	556	567
Nigeria: Agbami		41,0	14.965	2%	2024	14.965	15.264	15.570	15.881	16.199	16.523	16.853	17.190	17.534	17.885
North Africa															
Algeria: In Salah		30,6	22.000	2%	2027	22.000	22.440	22.889	23.347	23.814	24.290	24.776	25.271	25.777	26.292
Algeria: in Amenas		13,3	4.855	2%	2022	4.855	4.952	5.051	5.152	5.255	5.360	5.467	5.576	5.688	5.802
Libya: Mabruk		-	-	2%	2033		-	-	-	-	-	-	-	-	-
Libya:Murzuq		-	-	2%	2033		-	-	-	-	-	-	-	-	-
Europe and Asia															
Azerbaijan:ACG		24,2	8.833	2%	2024	8.833	9.010	9.190	9.374	9.561	9.752	9.947	10.146	10.349	10.556
Azerbaijan: Shah Deniz		10,0	3.650	2%	2041	3.650	3.723	3.797	3.873	3.951	4.030	4.110	4.193	4.277	4.362
Russia: Kharyaga		7,1	2.592	2%	2032	2.592	2.643	2.696	2.750	2.805	2.861	2.918	2.977	3.036	3.097
UK: Alba		2,5	913	2%	2018	913	931	949	968	988	1.007	1.028	1.048	1.069	1.091
UK: Jupiter		0,1	37	2%	HBP	37	37	38	39	40	40	41	42	43	44
Ireland: Corrib		-	-	2%	2031										
			Total production		7.497.736	222.677	227.131	231.673	236.307	241.033	245.853	250.770	255.786	260.902	266.120

2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
21.935	22.374	22.821	23.278	23.743	24.218	24.703	25.197	25.701	26.215	26.739	27.274	27.819	28.376	28.943	29.522
11.835	12.072	12.313	12.560	12.811	13.067	13.328	13.595	13.867	14.144	14.427	14.716	15.010	15.310	15.616	15.929
43.114	43.976	44.856	45.753	46.668	47.601	48.553	49.524	50.515	51.525	52.556	53.607	54.679	55.773	56.888	58.026
6.185	6.308	6.434	6.563	6.694	6.828	6.965	7.104	7.246	7.391	7.539	7.690	7.844	8.000	8.160	8.324
3.871	3.948	4.027	4.108	4.190	4.274	4.359	4.446	4.535	4.626	4.719	4.813	4.909	5.007	5.108	5.210
3.381	3.449	3.518	3.588	3.660	3.733	3.808	3.884	3.962	4.041	4.122	4.204	4.289	4.374	4.462	4.551
2.937	2.995	3.055	3.116	3.179	3.242	3.307	3.373	3.441	3.509	3.580	3.651	3.724	3.799	3.875	3.952
8.854	9.031	9.212	9.396	9.584	9.776	9.971	10.171	10.374	10.582	10.793	11.009	11.229	11.454	11.683	11.917
2.403	2.451	2.500	2.550	2.601	2.653	2.706	2.760	2.815	2.871	2.929	2.987	3.047	3.108	3.170	3.234
2.136	2.178	2.222	2.266	2.312	2.358	2.405	2.453	2.502	2.552	2.603	2.655	2.709	2.763	2.818	2.874
19.355	19.742	20.137	20.539	20.950	21.369	21.796	22.232	22.677	23.131	23.593	24.065	24.546	25.037	25.538	26.049
5.161	5.264	5.370	5.477	5.587	5.698	5.812	5.929	6.047	6.168	6.292	6.417	6.546	6.677	6.810	6.946
50.678	51.691	52.725	53.780	54.855	55.952	57.072	58.213	59.377	60.565	61.776	63.012	64.272	65.557	66.868	68.206
10.055	10.257	10.462	10.671	10.884	11.102	11.324	11.551	11.782	12.017	12.258	12.503	12.753	13.008	13.268	13.533
8.454	8.623	8.795	8.971	9.151	9.334	9.520	9.711	9.905	10.103	10.305	10.511	10.721	10.936	11.155	11.378
578	590	602	614	626	639	651	664	678	691	705	719	734	748	763	778
18.242	18.607	18.979	19.359	19.746	20.141	20.544	20.955	21.374	21.801	22.237	22.682	23.136	23.598	24.070	24.552
26.818	27.354	27.901	28.459	29.029	29.609	30.201	30.805	31.421	32.050	32.691	33.345	34.012	34.692	35.386	36.093
5.918	6.036	6.157	6.280	6.405	6.534	6.664	6.797	6.933	7.072	7.214	7.358	7.505	7.655	7.808	7.964
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.767	10.983	11.202	11.426	11.655	11.888	12.126	12.368	12.616	12.868	13.125	13.388	13.656	13.929	14.207	14.491
4.449	4.538	4.629	4.722	4.816	4.912	5.011	5.111	5.213	5.317	5.424	5.532	5.643	5.756	5.871	5.988
3.159	3.222	3.287	3.352	3.419	3.488	3.558	3.629	3.701	3.775	3.851	3.928	4.006	4.087	4.168	4.252
1.112	1.135	1.157	1.180	1.204	1.228	1.253	1.278	1.303	1.329	1.356	1.383	1.411	1.439	1.468	1.497
44	45	46	47	48	49	50	51	52	53	54	55	56	58	59	60
271.442	276.871	282.408	288.056	293.818	299.694	305.688	311.802	318.038	324.398	330.886	337.504	344.254	351.139	358.162	365.325

Appendix 11: Estimating the oil price volatility

DATE	NOK/USD	PRICE USD	PRICE - NOK	Return 15YR NOK	h(t)	Z(t)	Log density
29-12-2000	8,85	22,38	198,03	-0,0279			
05-01-2001	8,69	24,79	215,33	0,0838	0,0008	3,0001	-1,840831
12-01-2001	8,58	25,82	221,41	0,0278	0,0014	0,7501	2,093277
19-01-2001	8,75	28,03	245,32	0,1025	0,0013	2,8025	-1,538068
26-01-2001	8,90	27,35	243,33	-0,0082	0,0022	-0,1743	2,126793
02-02-2001	8,72	29,79	259,83	0,0656	0,0020	1,4682	1,110985

*** In excel, these cells have been hidden/minimized to save space in the appendix. The hidden cells include all of the numbers for the entire period and are included in the calculations.**

01-01-2016	8,77	35,7	312,99	-0,0401	0,0022	-0,8491	1,773746
08-01-2016	8,9135	32,26	287,55	-0,0848	0,0022	-1,8197	0,491989
15-01-2016	8,8038	29,8	262,35	-0,0917	0,0026	-1,7890	0,451574
22-01-2016	8,7606	31,7	277,71	0,0569	0,0031	1,0143	1,44755
29-01-2016	8,6854	34,3	297,91	0,0702	0,0031	1,2544	1,177306
05-02-2016	8,5400	34,56	295,14	-0,0093	0,0033	-0,1631	1,928397
12-02-2016	8,5830	32,9	282,38	-0,0442	0,0030	-0,8125	1,662285
19-02-2016	8,5939	33,19	285,23	0,0100	0,0029	0,1881	1,993528
26-02-2016	8,6539	36,31	314,22	0,0968	0,0026	1,9044	0,247014
04-03-2016	8,5533	38,27	327,33	0,0409	0,0032	0,7232	1,692673
11-03-2016	8,5086	40,58	345,28	0,0534	0,0030	0,9691	1,510658
18-03-2016	8,3439	41,61	347,19	0,0055	0,0030	0,1008	1,981082

Count	2349		273
Years	45,173077		5,25
Weeks			54,6
Average (weekly)	35,882031		-0,0017
Average (annual)			-0,085658
Var.s (weekly)			0,001204
St.dev (weekly)			0,034703
St.dev (annual)			0,250246

Parameters	
Mu	0,000
Omega	0,000
Alpha	0,091
Beta	0,887
Reparameterized	
Mu*1000	**0,002**
Alpha	0,091
Persistence	0,979
Variance*10 000	21,284
Log L	1409,055

Var (w)	0,002
Vol (w)	0,046
Vol (A)	0,333

Appendix 12: Estimating the gas price volatility

	gas, Europe ($/mmbtu)	NOK/USD	NOK/MME	NOK/BOE	Return in NOK 15yrs	h(t)	z(t)	Log Density
01-01-2001	4,65	8,7176	40,53684	227,726101	-0,0067	0,002824	-0,12614074	2,0078907
01-02-2001	4,59	8,8307	40,53291	227,70404	-9,69E-05	0,002535	-0,0019957	2,0698689
01-03-2001	4,57	8,8676	40,52493	227,659205	-0,000197	0,002306	-0,00417497	2,11707425
01-04-2001	4,48	9,0604	40,59059	228,028067	0,00162	0,002132	0,03501554	2,15589425
01-05-2001	4,36	9,1198	39,76233	223,375081	-0,020405	0,001998	-0,4565768	2,08461499
01-06-2001	4,33	9,4212	40,7938	229,169617	0,025941	0,00196	0,58589457	2,02688564
01-07-2001	3,75	9,2984	34,869	195,885555	-0,145238	0,00197	-3,27230009	-3,1580604
01-08-2001	3,79	8,9693	33,99365	190,968035	-0,025104	0,005132	-0,35047983	1,655774
01-09-2001	3,79	8,8455	33,52445	188,332172	-0,013803	0,004392	-0,20831697	1,77330354
01-10-2001	3,52	8,7522	30,80774	173,070407	-0,081036	0,003758	-1,32193696	0,99921299
01-11-2001	3,46	8,8541	30,63519	172,101019	-0,005601	0,004257	-0,08589739	1,80691533
01-12-2001	3,40	9,0277	30,69418	172,432433	0,001926	0,00363	0,03190104	1,88977782

*** In excel, these cells have been hidden/minimized to save space in the appendix. The hidden cells include all of the numbers for the entire period and are included in the calculations.**

01-06-2015	7,29	7,7126	56,22485	315,857545	0,022856	0,00682	0,27673435	1,53675292
01-07-2015	6,93	7,9575	55,14548	309,793857	-0,019198	0,005668	-0,25504654	1,6350132
01-08-2015	6,95	8,2354	57,23603	321,538086	0,03791	0,004762	0,54929368	1,60371782
01-09-2015	6,71	8,2038	55,0475	309,243446	-0,038237	0,004234	-0,58770158	1,64068727
01-10-2015	6,43	8,0524	51,77693	290,870202	-0,059414	0,003833	-0,95969104	1,40258685
01-11-2015	6,24	8,6607	54,04277	303,599117	0,043761	0,003846	0,70560568	1,61250634
01-12-2015	6,10	8,6238	52,60518	295,523098	-0,026601	0,003606	-0,44304245	1,79550205
01-01-2016	5,35	8,8878	47,54973	267,12281	-0,096102	0,003236	-1,68946959	0,52063258
01-02-2016	4,90	8,5453	41,87197	235,226536	-0,119407	0,00427	-1,82743797	0,13940081
01-03-2016	4,20	8,5453	35,89026	201,622745	-0,142857	0,005837	-1,86989788	-0,0954288

Parameters	
Mu	0,000
Omega	0,000
Alpha	0,154
Beta	0,766
Reparameterized	
Mu*1000	**0,004**
Alpha	0,154
Persistence	0,920
Variance*10 000	45,768
Log L	270,789

Raw data	Monthly	Annual
Variance	0,004017	0,048209
Volatility	0,063383	0,219566
Average	0,003603	0,044109

Var (w)	0,004577
Vol (w)	0,067652
Vol (A)	0,234353

Appendix 13: Forecasted commodity prices

Nominal Prices - Yearly Average												
	2016	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2027*
Oil price ($/BOE)	45,27	51,22	56,52	63,05	71,22	78,95	88,11	96,33	104,10	109,83	119,16	126,14
Gas price ($/BOE)	28,55	30,59	33,01	35,60	38,43	41,65	44,77	48,43	51,68	55,48	59,94	63,66
NOK/USD rate	8,50	8,08	7,67	7,29	6,92	6,86	6,86	6,86	6,86	6,86	6,86	6,86

2028	*2029*	*2030*	*2031*	*2032*	*2033*	*2034*	*2035*	*2036*	*2037*	*2038*	*2039*	*2040*
130,93	135,79	140,81	146,30	149,37	153,68	156,87	159,93	163,65	167,53	170,64	173,65	177,48
68,64	73,91	78,04	82,01	85,64	88,87	93,36	96,40	100,91	105,65	109,96	112,38	116,33
6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86	6,86

Oil price forecast with 1000 simulations (only 1-10 and 990-1000 are visible here)

Trial	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	t=0	1	2	3	4	5	6	7	8	9	10	11	12
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	44,60	56,19	72,40	61,80	66,08	89,25	129,24	208,00	286,00	286,00	229,89	192,55	226,23
2	62,40	99,47	118,60	152,33	165,76	209,39	268,99	258,33	286,00	235,01	275,42	199,76	173,69
3	51,50	47,77	51,29	64,20	62,30	46,81	66,75	90,42	51,24	46,94	72,48	109,46	195,16
4	40,83	75,44	125,22	163,71	242,42	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00
5	40,78	43,39	24,63	18,90	17,09	17,47	17,73	16,11	15,00	23,12	27,64	33,09	35,04
6	44,01	69,17	70,75	93,26	111,47	106,13	106,72	65,80	70,31	83,52	82,32	99,37	122,40
7	40,15	43,90	65,83	65,30	64,93	47,45	19,06	15,87	18,92	20,35	27,94	15,00	15,00
8	61,04	63,88	91,83	179,43	225,67	240,38	200,91	281,67	286,00	286,00	286,00	286,00	286,00
9	40,89	32,87	20,98	32,95	53,26	86,32	116,81	146,91	138,38	142,92	138,02	172,85	199,01
10	48,57	52,51	40,19	42,77	45,58	39,80	40,61	29,35	42,50	38,76	41,03	44,54	42,12
990	30,32	46,56	37,44	45,14	72,53	99,34	118,89	179,77	120,45	161,84	174,09	183,90	206,95
991	33,31	51,39	57,11	60,17	38,86	31,42	33,23	38,17	65,88	80,20	84,65	81,90	84,62
992	38,51	52,18	24,25	37,40	60,57	51,91	54,16	65,30	32,44	31,80	40,73	30,13	39,67
993	37,13	23,88	28,67	24,62	19,83	18,41	21,74	21,74	31,76	24,00	30,45	35,85	34,36
994	48,01	68,11	51,25	33,09	20,23	27,14	15,00	15,00	15,00	15,84	16,50	15,00	15,00
995	31,49	48,62	61,32	102,84	72,11	58,31	61,50	46,36	78,28	112,91	151,58	191,25	210,53
996	54,74	61,11	112,52	113,19	122,00	160,49	188,43	248,26	96,22	100,65	95,21	103,70	115,20
997	40,69	62,03	47,07	58,82	75,72	66,04	69,66	91,69	108,54	121,54	167,08	229,33	83,82
998	69,44	60,48	43,22	49,44	32,31	15,00	25,52	23,11	15,00	15,00	15,00	15,00	15,00
999	32,11	55,73	62,98	81,86	101,71	112,18	103,91	69,68	67,98	45,07	60,06	87,20	91,19
1000	55,23	60,12	38,08	47,98	63,58	38,38	34,98	32,86	44,45	41,62	60,75	49,49	64,89

2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
13	14	15	16	17	18	19	20	21	22	23	24
2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
267,32	274,13	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00
113,80	108,62	65,80	85,01	133,95	147,10	170,74	167,70	215,38	187,16	194,28	284,71
162,14	209,15	237,89	286,00	247,41	286,00	286,00	286,00	286,00	286,00	286,00	286,00
286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00
43,91	60,35	83,36	119,39	100,27	98,03	124,50	162,33	45,73	52,34	52,97	83,62
124,31	47,57	54,39	72,02	89,42	97,64	153,79	140,43	161,31	113,85	137,79	152,87
15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00	286,00
231,40	286,00	286,00	146,54	213,28	286,00	286,00	275,36	260,42	286,00	265,67	268,45
49,33	53,32	78,97	44,86	61,52	52,91	58,62	68,39	115,24	102,07	97,17	145,41
178,35	199,58	125,06	84,68	51,23	41,14	46,75	40,86	50,09	22,03	27,95	42,22
72,01	68,94	66,16	69,00	67,38	37,35	33,77	49,85	35,26	64,89	38,60	24,58
34,35	43,99	38,94	34,41	35,87	27,99	36,39	48,59	35,50	42,28	31,26	27,78
15,00	18,39	25,64	17,21	21,32	31,46	15,00	15,00	15,00	15,00	19,79	15,00
15,00	15,00	15,00	15,00	15,00	15,00	16,15	15,00	15,00	15,00	15,00	17,34
254,47	188,32	284,15	286,00	286,00	286,00	286,00	286,00	280,92	206,06	185,71	176,48
124,49	144,16	181,17	286,00	286,00	229,42	280,08	286,00	286,00	286,00	286,00	286,00
66,86	56,74	43,25	23,30	22,72	22,14	19,46	24,75	27,89	15,00	15,00	15,00
15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
116,12	136,90	176,70	146,22	155,43	55,53	69,57	67,47	109,07	124,20	153,80	162,51
74,52	69,87	60,98	55,82	49,60	69,18	91,58	110,08	145,83	203,28	155,83	201,11

Gas price forecast with 1000 simulations (only 1-10 and 990-1000 are visible here)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	t=0	1	2	3	4	5	6	7	8	9	10	11	12
1	4,66	4,85	4,78	3,36	3,23	3,60	5,06	3,59	3,37	2,63	3,20	2,00	2,98
2	3,46	2,94	2,44	2,57	2,78	2,73	2,40	2,00	2,00	2,00	2,00	2,00	2,00
3	5,75	7,38	8,95	11,27	14,96	18,37	25,74	31,34	37,96	39,07	29,43	38,79	40,00
4	4,58	4,71	5,04	6,38	7,50	9,28	10,94	11,07	8,13	8,49	10,90	11,70	12,06
5	4,78	4,09	5,62	6,53	6,43	7,88	7,07	10,53	9,28	10,09	9,59	8,49	9,66
6	5,56	5,83	5,73	5,87	7,56	5,50	5,05	3,58	2,93	3,50	4,73	4,20	2,67
7	4,98	5,93	3,22	4,53	3,85	4,94	4,33	3,81	3,95	3,32	4,26	3,83	3,53
8	5,57	5,69	7,38	6,28	7,92	7,11	6,61	7,41	7,19	3,47	3,66	3,59	3,91
9	5,33	6,25	7,78	10,51	11,77	7,79	7,23	4,50	5,79	6,31	7,43	6,52	7,64
10	5,74	5,13	7,47	7,83	7,05	7,55	9,14	9,61	12,32	12,85	15,49	16,25	18,13
990	5,22	6,52	5,99	7,74	8,32	6,21	5,24	6,45	7,48	6,01	7,21	6,00	5,33
991	3,79	3,74	3,20	4,22	5,24	5,30	6,15	5,58	3,64	3,81	3,40	3,15	4,72
992	4,06	4,83	6,84	6,92	9,05	8,05	11,13	13,42	11,99	9,47	9,99	9,43	15,01
993	5,71	7,29	6,68	7,09	8,00	9,44	10,29	10,93	11,42	11,98	11,21	8,20	13,25
994	5,40	6,82	4,65	4,89	5,05	5,55	5,88	6,01	9,60	8,98	5,66	4,82	4,14
995	3,73	4,01	4,02	4,59	6,15	4,91	4,52	4,95	5,89	6,37	6,75	6,67	7,18
996	5,37	5,06	5,15	3,92	3,41	3,00	3,57	4,02	4,01	4,36	5,10	7,07	8,14
997	6,66	8,96	10,03	12,72	18,64	22,16	29,97	23,19	21,56	17,06	19,41	21,52	19,45
998	6,01	5,47	5,80	8,51	8,47	10,22	10,17	10,39	13,45	15,68	14,21	13,07	15,79
999	6,58	6,20	5,17	6,76	6,52	6,06	5,80	8,56	8,97	9,71	11,79	15,26	18,01
1000	4,63	3,42	3,67	4,65	6,31	4,54	5,31	6,31	6,81	10,35	11,87	7,65	5,98

2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
13	14	15	16	17	18	19	20	21	22	23	24
3,75	3,79	3,08	4,03	4,07	4,88	5,72	4,12	4,90	5,93	5,83	6,76
2,00	2,00	2,06	2,00	2,00	2,00	2,00	2,08	2,00	2,01	2,00	2,00
40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00
10,73	7,37	7,55	5,36	4,29	3,96	4,38	5,21	5,91	4,78	5,35	5,96
9,52	8,92	12,12	15,31	21,28	32,71	40,00	40,00	40,00	39,88	26,87	34,96
2,84	2,29	2,99	2,86	2,25	2,79	2,24	2,32	2,00	2,00	2,00	2,00
5,34	4,94	6,75	4,92	5,20	6,57	7,02	7,09	5,65	7,43	8,37	10,02
2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
9,62	13,52	11,96	12,69	14,39	13,67	11,08	13,82	13,58	18,46	20,72	25,37
20,11	25,27	28,51	36,73	38,05	35,31	10,21	11,24	12,95	14,94	20,52	18,58
5,67	3,76	4,37	4,17	5,76	8,62	8,70	6,89	6,52	6,78	6,31	7,93
5,54	4,34	3,43	4,74	5,34	5,05	6,12	3,58	4,16	5,27	6,81	4,50
10,22	10,11	10,45	7,24	8,48	9,36	10,42	15,64	21,79	28,44	26,76	30,49
10,22	12,78	7,63	7,45	8,41	6,84	8,28	7,76	7,06	6,58	4,31	4,21
5,03	6,66	5,40	3,97	3,00	3,63	4,15	3,68	5,24	9,64	9,74	14,39
10,95	14,71	18,05	16,99	15,96	18,67	26,23	36,43	31,81	35,54	40,00	40,00
8,38	11,54	12,00	12,57	11,10	16,54	17,18	18,05	18,17	16,58	21,44	18,83
24,27	23,76	36,66	40,00	32,69	40,00	33,58	40,00	40,00	40,00	33,99	40,00
20,15	17,49	18,48	12,70	15,57	14,96	14,13	14,65	10,19	8,32	10,82	13,57
22,23	23,93	22,02	30,29	37,89	40,00	37,25	40,00	40,00	40,00	40,00	36,25
5,28	4,90	7,05	6,29	6,21	7,65	9,87	9,83	7,37	12,11	16,76	24,99

Appendix 14: Forecasted Financial Statements – Stochastic Modeling Scenario

BASE CASE SCENARIO									
		Budget period					Terminal period		
	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	
Revenue									
Purchases [net of inventory variation]		49%	49%	49%	49%	49%	49%	49%	
EBITDA - margin					34%	34%	34%	34%	
Depreciation and amortisation		-11%	-11%	-11%	-11%	-11%	-11%	-11%	
Net borrowing cost as a percentage of NIBD	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	
Corporate tax	25%	25%	25%	25%	25%	25%	25%	25%	
Effective operating tax rate		-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	
Inventories		4%	4%	4%	4%	4%	4%	4%	
Trade and other receivables		13%	13%	13%	13%	13%	13%	13%	
Non - current assets (PP&E/percentage)				90%	90%	90%	90%	90%	
Non-interest bearing debt as a percentage of revenue				23%	23%	23%	23%	23%	
Property, plant and equipment				50%	50%	50%	55%	55%	
Net interest bearing debt as a percentage of invested capital		39%	39%	39%	39%	39%	39%	39%	

Forecast income statement								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total revenue (NOK million)	469.000	458.227	489.309	517.434	547.419	561.446	613.684	690.361
Net income from associated companies	-300	-	-	-	-	-	-	-
Other income	15.000	-	-	-	-	-	-	-
Total revenue	**483.700**	**458.227**	**489.309**	**517.434**	**547.419**	**561.446**	**613.684**	**690.361**
Purchases [net of inventory variation]	207.300	224.531	239.761	253.859	268.570	275.452	301.080	338.699
Implied interest expense - Operating Leases	-5.248	-5.192	-5.500	-	-	-	-	-
Operating expenses	84.500	81.500	82.100	-	-	-	-	-
Selling, general and administrative expenses	7.500	8.065	8.612	-	-	-	-	-
Exploration expenses	15.600	14.200	14.300	-	-	-	-	-
Total costs	**309.652**	**323.104**	**339.273**	**341.506**	**361.296**	**370.554**	**405.032**	**455.638**
EBITDA	**174.048**	**135.123**	**150.036**	**175.928**	**186.122**	**190.892**	**208.653**	**234.723**
Depreciation	-85.900	-78.397	-79.200	-79.535	-80.194	-77.637	-85.934	-87.668
EBITA	**88.148**	**56.726**	**70.836**	**96.392**	**105.929**	**113.255**	**122.719**	**147.054**
tax on EBITA	42.600	-39.141	-48.877	-66.511	-73.091	-78.146	-84.676	-101.467
NOPLAT	**45.548**	**17.585**	**21.959**	**29.882**	**32.838**	**35.109**	**38.043**	**45.587**
Net Financial expenses	-10.441	-11.027	-10.173	-10.299	-10.015	-10.086	-9.750	-10.825
Tax shield (effective tax rate of financial expenses	2.610	2.757	2.543	2.575	2.504	2.522	2.438	2.706
Net income/net earnings	**37.717**	**9.315**	**14.329**	**22.158**	**25.327**	**27.544**	**30.730**	**37.468**

Forecast balance sheet								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Operating current assets								
Operating cash (2% of revenue)	9.674	9.165	9.786	10.349	10.948	11.229	12.274	13.807
Trade and other receivables	52.300	59.335	63.360	67.002	70.885	72.701	79.465	89.394
Inventories	22.000	19.784	21.126	22.341	23.635	24.241	26.496	29.807
Operating current assets	83.974	**88.284**	**94.273**	**99.691**	**105.468**	**108.171**	**118.235**	**133.008**
Non-interest-bearing debt								
Trade and other payables	82.200	80.400	83.000	-	-	-	-	-
Current tax payable	24.100	24.650	25.500	-	-	-	-	-
Total operating current liabilities	106.300	**105.050**	**108.500**	**118.031**	**124.871**	**128.071**	**139.987**	**157.477**
Operating working capital #####	**-22.326**	**-16.766**	**-14.227**	**-18.340**	**-19.403**	**-19.900**	**-21.751**	**-24.469**
Non-current operating assets								
Property, plant and equipment	720.282	712.700	720.000	723.046	729.034	705.788	781.219	796.986
Prepayments and non-current receivables	1.800	-	-	-	-	-	-	-
Intangible assets	34.600	34.600	34.600	-	-	-	-	-
Investment in associates	7.300	7.300	7.300	-	-	-	-	-
Goodwill and acquired intangibles	59.600	59.600	59.600	-	-	-	-	-
Asset classified as held for sale		-	-	-	-	-	-	-
Non-current operating assets 837789	823.582	**814.200**	**821.500**	**803.385**	**810.037**	**784.209**	**868.021**	**885.540**
Invested capital	801.256	**797.434**	**807.273**	**785.045**	**790.635**	**764.310**	**846.269**	**861.071**
Interest-bearing assets								
Cash and cash equivalents (excess cash)	66.694	-	-	-	-	-	-	-
Derivative financial instruments	28.600	-	-	-	-	-	-	-
Financial investments	107.100	-	-	-	-	-	-	-
Trade and other receivables	6.500	-	-	-	-	-	-	-
Prepayments and financial receivables	6.700	-	-	-	-	-	-	-
Deferred tax asset (non-operating)	38.800	-	-	-	-	-	-	-
Pension assets	11.300	-	-	-	-	-	-	-
Interest-bearing assets	265.694	-	-	-	-	-	-	-
Interest-bearing liabilities								
Pension liabilities	26.200	-	-	-	-	-	-	-
Debt equivalent operational lease	174.082	-	-	-	-	-	-	-
Libilities directly associated with assets classifi	-	-	-	-	-	-	-	-
Finance debt	284.500	-	-	-	-	-	-	-
Provisions	103.500	-	-	-	-	-	-	-
Derivative financial instruments	13.600	-	-	-	-	-	-	-
Deferred tax liability (non-operating)	-	-	-	-	-	-	-	-
Interest-bearing liabilities	601.882	-	-	-	-	-	-	-
Net-interest-bearing debt #####	336.188	**310.153**	**313.980**	**305.334**	**307.508**	**297.270**	**330.045**	**334.904**
Equity and equity equivalents								
Deferred tax liabilities netted (operations	86.400	-	-	-	-	-	-	-
Dividends payable	6.200	-	-	-	-	-	-	-
Upward-adjusted goodwill	10.900	-	-	-	-	-	-	-
Other provisions	6.000	-	-	-	-	-	-	-
Equity	355.000	-	-	-	-	-	-	-
Beginning of the year	491.619	465.068	487.281	493.293	479.711	483.126	467.040	516.224
Net earnings	37.717	9.315	14.329	22.158	25.327	27.544	30.730	37.468
Dividends	-64.221	12.898	-8.317	-35.740	-21.911	-43.631	18.454	-27.525
Equity and equity equivalents	**465.068**	**487.281**	**493.293**	**479.711**	**483.126**	**467.040**	**516.224**	**526.167**
Invested capital	**800.688**	**797.434**	**807.273**	**785.045**	**790.635**	**764.310**	**846.269**	**861.071**

Cash flow statement in million NOK	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT	17.585	21.959	29.882	32.838	35.109	38.107	45.587
Depreciation and amortization	78.397	79.200	79.535	80.194	77.637	85.726	87.668
Δ Net working capital	-5.560	-2.538	4.113	1.063	497	1.852	2.718
Net investments (non-current assets - intangble and tangible assets)	-69.015	-86.500	-61.420	-86.846	-51.809	-167.431	-107.294
Free cash flows to the firm (FCFF)	**21.406**	**12.121**	**52.109**	**27.248**	**61.434**	**-41.746**	**28.679**
New net financial liabilities	-26.035	3.827	-8.645	2.174	-10.239	31.954	5.680
Net financial expenses after tax	-8.270	-7.630	-7.724	-7.511	-7.565	-7.313	-8.099
Free cash flows to equity holders (FCFE)	-12.898	8.317	35.740	21.911	43.631	-17.105	26.260
Dividend	12.898	-8.317	-35.740	-21.911	-43.631	17.105	-26.260
Cash surplus	-	-	-	-	-	-	-

Appendix 15: Forecasted Financial Statements – Bearish Scenario

BEARISH CASE SCENARIO								
		Budget period					Terminal period	
	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Revenue								
Purchases [net of inventory variation]		49%	49%	49%	49%	49%	49%	49%
EBITDA - margin				34%	34%	34%	34%	34%
Depreciation and amortisation		-11%	-11%	-11%	-11%	-11%	-11%	-11%
Net borrowing cost as a percentage of NIBD	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%
Corporate tax	25%	25%	25%	25%	25%	25%	25%	25%
Effective operating tax rate		-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%
Inventories		4%	4%	4%	4%	4%	4%	4%
Trade and other receivables		13%	13%	13%	13%	13%	13%	13%
Non - current assets (PP&E/percentage)				90%	90%	90%	90%	90%
Non-interest bearing debt as a percentage of revenue				23%	23%	23%	23%	23%
Property, plant and equipment				50%	50%	50%	55%	56%
Net interest bearing debt as a percentage of invested capital		39%	39%	39%	39%	39%	39%	39%

Forecast income statement								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total revenue (NOK million)	469.000	424.311	399.311	377.566	357.091	322.442	311.863	310.526
Net income from associated companies	-300	-	-	-	-	-	-	-
Other income	15.000	-	-	-	-	-	-	-
Total revenue	**483.700**	**424.311**	**399.311**	**377.566**	**357.091**	**322.442**	**311.863**	**310.526**
Purchases [net of inventory variation]	207.300	207.912	195.662	185.238	175.193	158.194	153.004	152.347
Implied interest expense - Operating Leases	-5.248	-5.192	-5.500	-	-	-	-	-
Operating expenses	84.500	81.500	82.100	-	-	-	-	-
Selling, general and administrative expenses	7.500	7.468	7.028	-	-	-	-	-
Exploration expenses	15.600	14.200	14.300	-	-	-	-	-
Total costs	**309.652**	**305.888**	**293.590**	**249.194**	**235.680**	**212.812**	**205.830**	**204.947**
EBITDA	**174.048**	**118.423**	**105.721**	**128.373**	**121.411**	**109.630**	**106.033**	**105.579**
Depreciation	-85.900	-78.397	-79.200	-74.948	-74.614	-70.920	-75.457	-76.936
EBITA	**88.148**	**40.026**	**26.521**	**53.425**	**46.797**	**38.710**	**30.577**	**28.642**
tax on EBITA	42.600	-27.618	-18.299	-36.863	-32.290	-26.710	-21.098	-19.763
NOPLAT	**45.548**	**12.408**	**8.221**	**16.562**	**14.507**	**12.000**	**9.479**	**8.879**
Net Financial expenses	-10.441	-11.027	-10.195	-10.167	-9.487	-9.453	-8.993	-9.609
Tax shield (effective tax rate of financial expenses	2.610	2.757	2.549	2.542	2.372	2.363	2.248	2.402
Net income/net earnings	**37.717**	**4.138**	**575**	**8.937**	**7.392**	**4.910**	**2.734**	**1.673**

Forecast balance sheet								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Operating current assets								
Operating cash (2% of revenue)	9.674	8.486	7.986	7.551	7.142	6.449	6.237	6.211
Trade and other receivables	52.300	54.944	51.706	48.891	46.239	41.753	40.383	40.210
Inventories	22.000	18.320	17.241	16.302	15.418	13.922	13.465	13.407
Operating current assets	83.974	**81.750**	**76.933**	**72.744**	**68.799**	**62.123**	**60.085**	**59.827**
Non-interest-bearing debt								
Trade and other payables	82.200	75.200	78.000	-	-	-	-	-
Current tax payable	24.100	21.560	23.500	-	-	-	-	-
Total operating current liabilities	106.300	**96.760**	**101.500**	**86.126**	**81.456**	**73.552**	**71.139**	**70.834**
Operating working capital #####	**-22.326**	**-15.010**	**-24.567**	**-13.382**	**-12.657**	**-11.429**	**-11.054**	**-11.006**
Non-current operating assets								
Property, plant and equipment	720.282	712.700	720.000	681.343	678.310	644.728	685.969	699.422
Prepayments and non-current receivables	1.800	-	-	-	-	-	-	-
Intangible assets	34.600	34.600	34.600	-	-	-	-	-
Investment in associates	7.300	7.300	7.300	-	-	-	-	-
Goodwill and acquired intangibles	59.600	59.600	59.600	-	-	-	-	-
Asset classified as held for sale		-	-	-	-	-	-	-
Non-current operating assets 837789	823.582	**814.200**	**821.500**	**757.047**	**753.677**	**716.365**	**762.188**	**777.136**
Invested capital	801.256	**799.190**	**796.933**	**743.665**	**741.021**	**704.936**	**751.135**	**766.130**
Interest-bearing assets								
Cash and cash equivalents (excess cash)	66.694	-	-	-	-	-	-	-
Derivative financial instruments	28.600	-	-	-	-	-	-	-
Financial investments	107.100	-	-	-	-	-	-	-
Trade and other receivables	6.500	-	-	-	-	-	-	-
Prepayments and financial receivables	6.700	-	-	-	-	-	-	-
Deferred tax asset (non-operating)	38.800	-	-	-	-	-	-	-
Pension assets	11.300	-	-	-	-	-	-	-
Interest-bearing assets	265.694	-	-	-	-	-	-	-
Interest-bearing liabilities								
Pension liabilities	26.200	-	-	-	-	-	-	-
Debt equivalent operational lease	174.082	-	-	-	-	-	-	-
Libilities directly associated with assets classifi	-	-	-	-	-	-	-	-
Finance debt	284.500	-	-	-	-	-	-	-
Provisions	103.500	-	-	-	-	-	-	-
Derivative financial instruments	13.600	-	-	-	-	-	-	-
Deferred tax liability (non-operating)	-	-	-	-	-	-	-	-
Interest-bearing liabilities	601.882	-	-	-	-	-	-	-
Net-interest-bearing debt #####	336.188	**310.836**	**309.958**	**289.240**	**288.212**	**274.177**	**292.942**	**297.977**
Equity and equity equivalents								
Deferred tax liabilities netted (operations	86.400	-	-	-	-	-	-	-
Dividends payable	6.200	-	-	-	-	-	-	-
Upward-adjusted goodwill	10.900	-	-	-	-	-	-	-
Other provisions	6.000	-	-	-	-	-	-	-
Equity	355.000	-	-	-	-	-	-	-
Beginning of the year	491.619	465.068	488.354	486.975	454.425	452.809	430.759	458.192
Net earnings	37.717	4.138	575	8.937	7.392	4.910	2.734	1.673
Dividends	-64.221	19.148	-1.954	-41.487	-9.008	-26.960	24.699	8.287
Equity and equity equivalents	**465.068**	**488.354**	**486.975**	**454.425**	**452.809**	**430.759**	**458.192**	**468.152**
Invested capital	**800.688**	**799.190**	**796.933**	**743.665**	**741.021**	**704.936**	**751.135**	**766.130**

Cash flow statement in million NOK	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOLPAT	12.408	8.221	16.562	14.507	12.000	9.479	8.866
Depreciation and amortization	78.397	79.200	74.948	74.614	70.920	75.457	76.980
Δ Net working capital	-7.316	9.557	-11.184	-726	-1.228	-375	-47
Net investments (non-current assets - intangble and tangible assets)	-69.015	-86.500	-10.495	-71.244	-33.608	-121.280	-92.370
Free cash flows to the firm (FCFF)	**14.474**	**10.478**	**69.830**	**17.151**	**48.085**	**-36.719**	**-6.571**
New net financial liabilities	-25.352	-878	-20.718	-1.028	-14.035	18.766	5.207
Net financial expenses after tax	-8.270	-7.647	-7.625	-7.115	-7.090	-6.745	-7.206
Free cash flows to equity holders (FCFE)	-19.148	1.954	41.487	9.008	26.960	-24.699	-8.571
Dividend	19.148	-1.954	-41.487	-9.008	-26.960	24.699	8.571
Cash surplus	-	-	-	-	-	-	-

Appendix 16: Forecasted Financial Statements – Base Case Scenario

BASE CASE SCENARIO								
		Budget period					Terminal period	
	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Revenue								
Purchases [net of inventory variation]		49%	49%	49%	49%	49%	49%	49%
EBITDA - margin					34%	34%	34%	34%
Depreciation and amortisation		-11%	-11%	-11%	-11%	-11%	-11%	-11%
Net borrowing cost as a percentage of NIBD	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%
Corporate tax	25%	25%	25%	25%	25%	25%	25%	25%
Effective operating tax rate		-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%
Inventories		4%	4%	4%	4%	4%	4%	4%
Trade and other receivables		13%	13%	13%	13%	13%	13%	13%
Non - current assets (PP&E/percentage)				**90%**	**90%**	**90%**	**90%**	**90%**
Non-interest bearing debt as a percentage of revenue				23%	23%	23%	23%	23%
Property, plant and equipment				50%	50%	50%	55%	55%
Net interest bearing debt as a percentage of invested capital		39%	39%	39%	39%	39%	39%	39%

Forecast income statement								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total revenue (NOK million)	469.000	842.300	808.311	779.862	747.003	687.026	681.743	694.261
Net income from associated companies	-300	-	-	-	-	-	-	-
Other income	15.000	-	-	-	-	-	-	-
Total revenue	**483.700**	**842.300**	**808.311**	**779.862**	**747.003**	**687.026**	**681.743**	**694.261**
Purchases [net of inventory variation]	207.300	412.727	396.072	382.609	366.488	337.063	334.471	340.612
Implied interest expense - Operating Leases	-5.248	-5.192	-5.500	-	-	-	-	-
Operating expenses	84.500	81.500	82.100	-	-	-	-	-
Selling, general and administrative expenses	7.500	14.824	14.226	-	-	-	-	-
Exploration expenses	15.600	14.200	14.300	-	-	-	-	-
Total costs	**309.652**	**518.059**	**501.199**	**514.709**	**493.022**	**453.437**	**449.951**	**458.212**
EBITDA	**174.048**	**324.240**	**307.112**	**265.153**	**253.981**	**233.589**	**231.793**	**236.049**
Depreciation	-85.900	-78.397	-79.200	-79.535	-80.194	-77.637	-85.526	-87.012
EBITA	**88.148**	**245.843**	**227.912**	**185.618**	**173.787**	**155.952**	**146.267**	**149.036**
tax on EBITA	42.600	-169.632	-157.260	-128.076	-119.913	-107.607	-100.924	-102.835
NOPLAT	**45.548**	**76.211**	**70.653**	**57.542**	**53.874**	**48.345**	**45.343**	**46.201**
Net Financial expenses	-10.441	-11.027	-11.117	-11.083	-9.896	-9.996	-9.694	-10.742
Tax shield (effective tax rate of financial expenses	2.610	2.757	2.779	2.771	2.474	2.499	2.423	2.685
Net income/net earnings	**37.717**	**67.941**	**62.315**	**49.230**	**46.452**	**40.848**	**38.073**	**38.145**

Forecast balance sheet								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Operating current assets								
Operating cash (2% of revenue)	9.674	16.846	16.166	15.597	14.940	13.741	13.635	13.885
Trade and other receivables	52.300	109.069	104.667	100.984	96.729	88.962	88.278	89.899
Inventories	22.000	36.367	34.900	33.671	32.253	29.663	29.435	29.975
Operating current assets	83.974	**162.282**	**155.733**	**150.252**	**143.921**	**132.366**	**131.348**	**133.760**
Non-interest-bearing debt								
Trade and other payables	82.200	80.400	83.000	-	-	-	-	-
Current tax payable	24.100	24.650	25.500	-	-	-	-	-
Total operating current liabilities	106.300	**105.050**	**108.500**	**177.893**	**170.398**	**156.717**	**155.512**	**158.367**
Operating working capital ######	**-22.326**	**57.232**	**47.233**	**-27.641**	**-26.477**	**-24.351**	**-24.164**	**-24.607**
Non-current operating assets								
Property, plant and equipment	720.282	712.700	720.000	723.046	729.034	705.788	777.507	791.020
Prepayments and non-current receivables	1.800	-	-	-	-	-	-	-
Intangible assets	34.600	34.600	34.600	-	-	-	-	-
Investment in associates	7.300	7.300	7.300	-	-	-	-	-
Goodwill and acquired intangibles	59.600	59.600	59.600	-	-	-	-	-
Asset classified as held for sale		-	-	-	-	-	-	-
Non-current operating assets 837789	823.582	**814.200**	**821.500**	**803.385**	**810.037**	**784.209**	**863.896**	**878.912**
Invested capital	801.256	**871.432**	**868.733**	**775.744**	**783.561**	**759.859**	**839.733**	**854.304**
Interest-bearing assets								
Cash and cash equivalents (excess cash)	66.694	-	-	-	-	-	-	-
Derivative financial instruments	28.600	-	-	-	-	-	-	-
Financial investments	107.100	-	-	-	-	-	-	-
Trade and other receivables	6.500	-	-	-	-	-	-	-
Prepayments and financial receivables	6.700	-	-	-	-	-	-	-
Deferred tax asset (non-operating)	38.800	-	-	-	-	-	-	-
Pension assets	11.300	-	-	-	-	-	-	-
Interest-bearing assets	265.694	-	-	-	-	-	-	-
Interest-bearing liabilities								
Pension liabilities	26.200	-	-	-	-	-	-	-
Debt equivalent operational lease	174.082	-	-	-	-	-	-	-
Libilities directly associated with assets classifie	-	-	-	-	-	-	-	-
Finance debt	284.500	-	-	-	-	-	-	-
Provisions	103.500	-	-	-	-	-	-	-
Derivative financial instruments	13.600	-	-	-	-	-	-	-
Deferred tax liability (non-operating)	-	-	-	-	-	-	-	-
Interest-bearing liabilities	601.882	-	-	-	-	-	-	-
Net-interest-bearing debt ######	336.188	**338.933**	**337.884**	**301.717**	**304.757**	**295.538**	**327.496**	**332.272**
Equity and equity equivalents								
Deferred tax liabilities netted (operations	86.400	-	-	-	-	-	-	-
Dividends payable	6.200	-	-	-	-	-	-	-
Upward-adjusted goodwill	10.900	-	-	-	-	-	-	-
Other provisions	6.000	-	-	-	-	-	-	-
Equity	355.000	-	-	-	-	-	-	-
Beginning of the year	491.619	465.068	532.498	530.849	474.027	478.804	464.320	512.237
Net earnings	37.717	67.941	62.315	49.230	46.452	40.848	38.073	38.145
Dividends	-64.221	-511	-63.964	-106.052	-41.675	-55.332	9.844	-28.350
Equity and equity equivalents	**465.068**	**532.498**	**530.849**	**474.027**	**478.804**	**464.320**	**512.237**	**522.032**
Invested capital	**800.688**	**871.432**	**868.733**	**775.744**	**783.561**	**759.859**	**839.733**	**854.304**

Cash flow statement in million NOK	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT	76.211	70.653	57.542	53.874	48.345	45.432	46.224
Depreciation and amortization	78.397	79.200	79.535	80.194	77.637	85.239	86.938
Δ Net working capital	-79.558	9.998	74.874	-1.165	-2.126	-187	444
Net investments (non-current assets - intangble and tangible assets)	-69.015	-86.500	-61.420	-86.846	-51.809	-162.027	-104.098
Free cash flows to the firm (FCFF)	**6.035**	**73.351**	**150.531**	**46.057**	**72.047**	**-31.544**	**29.508**
New net financial liabilities	2.746	-1.050	-36.167	3.040	-9.219	30.827	5.614
Net financial expenses after tax	-8.270	-8.338	-8.312	-7.422	-7.497	-7.270	-8.029
Free cash flows to equity holders (FCFE)	511	63.964	106.052	41.675	55.332	-7.987	27.093
Dividend	-511	-63.964	-106.052	-41.675	-55.332	7.987	-27.093
Cash surplus	-	-	-	-	-	-	-

Appendix 17: Forecasted Financial Statements – Bullish Scenario

BULLISH CASE SCENARIO								
		Budget period					Terminal period	
	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Revenue								
Purchases [net of inventory variation]		49%	49%	49%	49%	49%	49%	49%
EBITDA - margin				34%	34%	34%	34%	34%
Depreciation and amortisation		-11%	-11%	-11%	-11%	-11%	-11%	-11%
Net borrowing cost as a percentage of NIBD	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%	3,28%
Corporate tax	25%	25%	25%	25%	25%	25%	25%	25%
Effective operating tax rate		-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%	-69,00%
Inventories		4%	4%	4%	4%	4%	4%	4%
Trade and other receivables		13%	13%	13%	13%	13%	13%	13%
Non - current assets (PP&E/percentage)				**90%**	**90%**	**90%**	**90%**	**90%**
Non-interest bearing debt as a percentage of revenue				23%	23%	23%	23%	23%
Property, plant and equipment				50%	50%	50%	55%	55%
Net interest bearing debt as a percentage of invested capital		39%	39%	39%	39%	39%	39%	39%

Forecast income statement								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Total revenue (NOK million)	469.000	1.277.707	1.226.149	1.182.993	1.133.150	1.042.169	1.034.155	1.053.143
Net income from associated companies	-300	-	-	-	-	-	-	-
Other income	15.000	-	-	-	-	-	-	-
Total revenue	**483.700**	**1.277.707**	**1.226.149**	**1.182.993**	**1.133.150**	**1.042.169**	**1.034.155**	**1.053.143**
Purchases [net of inventory variation]	207.300	626.077	600.813	580.390	555.936	511.300	507.368	516.684
Implied interest expense - Operating Leases	-5.248	-5.192	-5.500	-	-	-	-	-
Operating expenses	84.500	81.500	82.100	-	-	-	-	-
Selling, general and administrative expenses	7.500	22.488	21.580	-	-	-	-	-
Exploration expenses	15.600	14.200	14.300	-	-	-	-	-
Total costs	**309.652**	**739.072**	**713.293**	**780.776**	**747.879**	**687.831**	**682.542**	**695.074**
EBITDA	**174.048**	**538.635**	**512.856**	**402.218**	**385.271**	**354.337**	**351.613**	**358.069**
Depreciation	-85.900	-78.397	-79.200	-79.535	-80.194	-77.637	-85.728	-87.029
EBITA	**88.148**	**460.238**	**433.656**	**322.683**	**305.077**	**276.701**	**265.885**	**271.039**
tax on EBITA	42.600	-317.564	-299.223	-222.651	-210.503	-190.923	-183.461	-187.017
NOPLAT	**45.548**	**142.674**	**134.433**	**100.032**	**94.574**	**85.777**	**82.424**	**84.022**
Net Financial expenses	-10.441	-11.027	-11.236	-10.776	-9.714	-9.821	-9.533	-10.608
Tax shield (effective tax rate of financial expenses	2.610	2.757	2.809	2.694	2.429	2.455	2.383	2.652
Net income/net earnings	**37.717**	**134.404**	**126.007**	**91.949**	**87.288**	**78.411**	**75.275**	**76.066**

Forecast balance sheet								
In million NOK	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Operating current assets								
Operating cash (2% of revenue)	9.674	25.554	24.523	23.660	22.663	20.843	20.683	21.063
Trade and other receivables	52.300	165.449	158.773	153.185	146.731	134.949	133.912	136.371
Inventories	22.000	55.166	52.940	51.077	48.925	44.997	44.651	45.470
Operating current assets	83.974	**246.169**	**236.236**	**227.921**	**218.318**	**200.789**	**199.246**	**202.904**
Non-interest-bearing debt								
Trade and other payables	82.200	155.000	187.500	-	-	-	-	-
Current tax payable	24.100	24.650	25.500	-	-	-	-	-
Total operating current liabilities	106.300	**179.650**	**213.000**	**269.851**	**258.481**	**237.728**	**235.900**	**240.231**
Operating working capital #####	**-22.326**	**66.519**	**23.236**	**-41.930**	**-40.163**	**-36.938**	**-36.654**	**-37.327**
Non-current operating assets								
Property, plant and equipment	720.282	712.700	720.000	723.046	729.034	705.788	779.344	791.177
Prepayments and non-current receivables	1.800	-	-	-	-	-	-	-
Intangible assets	34.600	34.600	34.600	-	-	-	-	-
Investment in associates	7.300	7.300	7.300	-	-	-	-	-
Goodwill and acquired intangibles	59.600	59.600	59.600	-	-	-	-	-
Asset classified as held for sale		-	-	-	-	-	-	-
Non-current operating assets 837789	823.582	**814.200**	**821.500**	**803.385**	**810.037**	**784.209**	**865.938**	**879.085**
Invested capital	801.256	**880.719**	**844.736**	**761.455**	**769.874**	**747.271**	**829.284**	**841.758**
Interest-bearing assets								
Cash and cash equivalents (excess cash)	66.694	-	-	-	-	-	-	-
Derivative financial instruments	28.600	-	-	-	-	-	-	-
Financial investments	107.100	-	-	-	-	-	-	-
Trade and other receivables	6.500	-	-	-	-	-	-	-
Prepayments and financial receivables	6.700	-	-	-	-	-	-	-
Deferred tax asset (non-operating)	38.800	-	-	-	-	-	-	-
Pension assets	11.300	-	-	-	-	-	-	-
Interest-bearing assets	265.694	-	-	-	-	-	-	-
Interest-bearing liabilities								
Pension liabilities	26.200	-	-	-	-	-	-	-
Debt equivalent operational lease	174.082	-	-	-	-	-	-	-
Libilities directly associated with assets classifi	-	-	-	-	-	-	-	-
Finance debt	284.500	-	-	-	-	-	-	-
Provisions	103.500	-	-	-	-	-	-	-
Derivative financial instruments	13.600	-	-	-	-	-	-	-
Deferred tax liability (non-operating)	-	-	-	-	-	-	-	-
Interest-bearing liabilities	601.882	-	-	-	-	-	-	-
Net-interest-bearing debt #####	336.188	**342.546**	**328.550**	**296.159**	**299.434**	**290.643**	**323.421**	**327.392**
Equity and equity equivalents								
Deferred tax liabilities netted (operations	86.400	-	-	-	-	-	-	-
Dividends payable	6.200	-	-	-	-	-	-	-
Upward-adjusted goodwill	10.900	-	-	-	-	-	-	-
Other provisions	6.000	-	-	-	-	-	-	-
Equity	355.000	-	-	-	-	-	-	-
Beginning of the year	491.619	465.068	538.174	516.186	465.296	470.440	456.628	505.863
Net earnings	37.717	134.404	126.007	91.949	87.288	78.411	75.275	76.066
Dividends	-64.221	-61.298	-147.995	-142.839	-82.144	-92.223	-26.040	-67.564
Equity and equity equivalents	**465.068**	**538.174**	**516.186**	**465.296**	**470.440**	**456.628**	**505.863**	**514.366**
Invested capital	**800.688**	**880.719**	**844.736**	**761.455**	**769.874**	**747.271**	**829.284**	**841.758**

Cash flow statement	in million NOK	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT		142.674	134.433	100.032	94.574	85.777	82.487	83.932
Depreciation and amortization		78.397	79.200	79.535	80.194	77.637	85.526	87.320
Δ Net working capital		-88.845	43.283	65.166	-1.767	-3.225	-284	673
Net investments (non-current assets - intangble and tangible assets)		-69.015	-86.500	-61.420	-86.846	-51.809	-165.213	-105.439
Free cash flows to the firm (FCFF)		**63.210**	**170.417**	**183.313**	**86.155**	**108.380**	**2.516**	**66.485**
New net financial liabilities		6.358	-13.995	-32.391	3.275	-8.791	31.982	5.908
Net financial expenses after tax		-8.270	-8.427	-8.082	-7.286	-7.366	-7.150	-7.937
Free cash flows to equity holders (FCFE)		61.298	147.995	142.839	82.144	92.223	27.348	64.457
Dividend		-61.298	-147.995	-142.839	-82.144	-92.223	-27.348	-64.457
Cash surplus		-	-	-	-	-	-	-

Appendix 18: Estimating Beta

Re-levered beta

RE - LEVERED BETA							
Company	**BP**	**Chevron**	**Conoco Phillips**	**Exxon Mobil**	**Royal Dutch Shell**	**Average**	**Statoil**
Raw Beta	1,92	1,18	1,11	0,90	1,33	1,29	0,75
Totalt debt	**76.835.863.619**	**62.725.005.583**	**38.221.800.969**	**63.851.663.207**	**92.476.000**		**336.187.692.509**
	$	$	$	$	£		NOK
Share price	3,54	89,96	46,69	81,45	0,07		123,7
Shares outstanding	18.412.392.432	1.868.646.000	1.235.996.000	4.443.900.000	6.397.520.526		3.188.647.103
Market value of equity	**65.179.869.209**	**168.103.394.160**	**57.708.653.240**	**361.955.655.000**	**447.826.437**		**394.435.646.641**
Debt-to-equity ratio	1,18	0,37	0,66	0,18	0,21		0,85
Debt to enterprise valu	54%	27%	40%	15%	17%		46%
Equity to enterprise va	46%	73%	60%	85%	83%		54%
Unlevered beta	0,88	0,86	0,67	0,77	1,10		0,40
Median	0,81						
Relevered beta	**1,77**	**1,12**	**1,35**	**0,96**	**0,98**	**1,23**	**1,51**

MASCOFLAPEC

MASCOFLAPEC								
		Weights	**Low**	**Average**	**Substantial**	**High**	**Very high**	**Weighted risk**
			1	2	3	4	5	
M	Management	0,1	1					0,10
A	Assets	0,2		2				0,40
S	Strategy	0,03	1					0,03
C	Country risk	0,1				4		0,40
O	Operational leverage	0,1		2				0,20
F	Financial leverage	0,15			3			0,45
L	Liquidity of investment	0,1				4		0,40
A	Access to sources of funds	0,05	1					0,05
P	Partners	0,02			3			0,06
E	Exposure to other risks	0,1				4		0,40
C	Cash flow stability	0,05					5	0,25
		100%						2,74
		Beta equity		**1,37**				

Appendix 19: Cost of debt (Rd)

Current financial debt	264,00	Weighted avarage interest rate	3,39%
		Interest payment	8,95
Non-current financial debt	20,50	Weighted avarage interest rate	2%
		Interest payment	0,39
Total debt	284,50	Total interest payment	9,3391
Weighted average interest rate	3,28%		

Appendix 20: DCF and EVA –Valuation

Stochastic modelling scenario

VALUATION - STOCHASTIC CASE							
Statoil ASA	Forecast period					Terminal period	
DCF - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
FCFF	21.406	12.121	52.109	27.248	61.434	-41.746	28.679
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Discount factor	0,95	0,90	0,85	0,81	0,77	0,73	
Present value of FCFF	20.294	10.894	44.402	22.012	47.050	-30.311	
Present value of FCFF in forecasting horizon	114.342						
Present value of FCFF in terminal period	598.368						
Estimated market value of firm (aka enterprise value)	712.710						
Net interest-bearing debt	-336.188						
Estimated market value of equity	376.522						
Market cap	376.522.080.492						
Outstanding shares	3.188.647.103						
Price	kr. 118,08						

Statoil ASA	Forecast period					Terminal period	
EVA - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT	17.585	21.959	29.882	32.838	35.109	38.107	45.587
Invested capital, beginning of period	801.256	797.434	807.273	785.045	790.635	764.310	844.163
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Cost of capital	43.909	43.699	44.239	43.020	43.327	41.884	46.260
EVA	-26.324	-21.740	-14.357	-10.183	-8.218	-3.777	-673
Discount factor	0,95	0,90	0,86	0,81	0,77	0,73	
Present value of EVA	-25.004	-19.614	-12.303	-8.288	-6.354	-2.774	
Invested capital (book value), beginning of period	801.256						
Present value of EVA in forecasting horizon	-74.337						
Present value of EVA in terminal period	-14.209						
Estimated market value of firm (aka enterprise value)	712.709						
Net interest-bearing debt	-336.188						
Estimated market value of equity	376.522						

Bearish scenario

Valuation - BEARISH CASE SCENARIO							
Statoil ASA	Forecast period					Terminal period	
DCF - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
FCFF	14.474	10.478	69.830	17.151	48.085	-36.719	-6.571
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Discount factor	0,95	0,90	0,85	0,81	0,77	0,73	
Present value of FCFF	13.722	9.418	59.502	13.855	36.826	-26.661	
Present value of FCFF in forecasting horizon	106.662						
Present value of FCFF in terminal period	-137.103						
Estimated market value of firm (aka enterprise value)	-30.441						
Net interest-bearing debt	-336.188						
Estimated market value of equity	-366.629						
Market cap	-366.628.501.786						
Outstanding shares	3.188.647.103						
Price	-kr. 114,98						

Statoil ASA	Forecast period					Terminal period	
EVA - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT	12.408	8.221	16.562	14.507	12.000	9.479	8.866
Invested capital, beginning of period	801.256	799.190	796.933	743.665	741.021	704.936	751.135
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Cost of capital	43.909	43.796	43.672	40.753	40.608	38.631	41.162
EVA	-31.501	-35.574	-27.110	-26.246	-28.608	-29.152	-32.297
Discount factor	0,95	0,90	0,86	0,81	0,77	0,73	
Present value of EVA	-29.921	-32.095	-23.232	-21.364	-22.118	-21.409	
Invested capital (book value), beginning of period	801.256						
Present value of EVA in forecasting horizon	-150.140						
Present value of EVA in terminal period	-681.557						
Estimated market value of firm (aka enterprise value)	-30.441						
Net interest-bearing debt	-336.188						
Estimated market value of equity	-366.629						

Base case scenario

VALUATION - BASE CASE							
Statoil ASA	Forecast period					Terminal period	
DCF - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
FCFF	6.035	73.351	150.531	46.057	72.047	-31.544	29.508
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Discount factor	0,95	0,90	0,85	0,81	0,77	0,73	
Present value of FCFF	5.722	65.928	128.267	37.206	55.178	-22.903	
Present value of FCFF in forecasting horizon	269.398						
Present value of FCFF in terminal period	615.648						
Estimated market value of firm (aka enterprise value)	885.046						
Net interest-bearing debt	-336.188						
Estimated market value of equity	548.858						
Market cap	548.858.342.918						
Outstanding shares	3.188.647.103						
Price	kr. 172,13						

Statoil ASA	Forecast period					Terminal period	
EVA - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E
NOPLAT	76.211	70.653	57.542	53.874	48.345	45.432	46.224
Invested capital, beginning of period	801.256	871.432	868.733	775.744	783.561	759.859	836.835
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%
Cost of capital	43.909	47.754	47.607	42.511	42.939	41.640	45.859
EVA	32.303	22.898	9.935	11.363	5.406	3.791	366
Discount factor	0,95	0,90	0,86	0,81	0,77	0,73	
Present value of EVA	30.683	20.659	8.514	9.250	4.180	2.784	
Invested capital (book value), beginning of period	801.256						
Present value of EVA in forecasting horizon	76.069						
Present value of EVA in terminal period	7.721						
Estimated market value of firm (aka enterprise value)	885.046						
Net interest-bearing debt	-336.188						
Estimated market value of equity	548.858						

Bullish scenario

VALUATION - BULLISH CASE SCENARIO								
Statoil ASA	Forecast period					Terminal period		
DCF - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E	
FCFF	63.210	170.417	183.313	86.155	108.380	2.516		66.485
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%		5,48%
Discount factor	0,95	0,90	0,86	0,81	0,77	0,73		
Present value of FCFF	60.040	153.752	157.092	70.129	83.796	1.848		
Present value of FCFF in forecasting horizon	526.656							
Present value of FCFF in terminal period	1.403.047							
Estimated market value of firm (aka enterprise value)	1.929.703							
Net interest-bearing debt	-336.188							
Estimated market value of equity	1.593.515							
Market cap	1,59352E+12							
Outstanding shares	3.188.647.103							
Price	kr. 499,75							

Statoil ASA	Forecast period					Terminal period		
EVA - valuation model	2016E	2017E	2018E	2019E	2020E	2021E	2022E	
NOPLAT	142.674	134.433	100.032	94.574	85.777	82.487		83.932
Invested capital, beginning of period	801.256	880.719	844.736	761.455	769.874	747.271		827.242
WACC	5,48%	5,48%	5,48%	5,48%	5,48%	5,48%		5,48%
Cost of capital	43.909	48.263	46.292	41.728	42.189	40.950		45.333
EVA	98.765	86.170	53.740	52.846	43.588	41.537		38.599
Discount factor	0,95	0,90	0,85	0,81	0,77	0,73		
Present value of EVA	93.634	77.449	45.792	42.691	33.382	30.158		
Invested capital (book value), beginning of period	801.256							
Present value of EVA in forecasting horizon	323.106							
Present value of EVA in terminal period	805.341							
Estimated market value of firm (aka enterprise value)	1.929.703							
Net interest-bearing debt	-336.188							
Estimated market value of equity	1.593.515							

Appendix 21: Sensitivity Analysis

Volatility of Gas Price and WACC

	Volatility gas price	Optimistic		Realistic	Pessimistic	
WACC		**20,00%**	**21,50%**	**23,44%**	**25,00%**	**27,00%**
Optimistic	**4,9%**	133,63	128,60	125,07	121,96	119,18
	5,3%	128,57	125,42	122,13	115,51	113,04
Realistic	**5,5%**	122,94	120,16	118,08	114,26	111,84
	5,7%	120,67	116,81	113,08	111,64	109,91
Pessimistic	**6,0%**	118,52	114,12	112,60	110,76	109,14

Exchange Rate and WACC

	Exchange rate	Optimistic		Realistic	Pessimistic	
WACC		**8,00**	**7,50**	**7,00**	**6,50**	**6,00**
Optimistic	**4,9%**	228,56	183,47	122,62	98,38	55,41
	5,3%	227,62	182,71	120,54	94,39	54,68
Realistic	**5,5%**	226,12	181,31	118,08	92,79	53,55
	5,7%	225,17	180,73	117,94	92,60	53,32
Pessimistic	**6,0%**	224,48	179,59	116,65	91,47	52,71

Production Growth

Production growth	International	Optimistic		Realistic	Pessimistic	
Domestic		**3,00%**	**2,50%**	**2,00%**	**1,50%**	**1,00%**
Optimistic	**3,0%**	122,06	121,01	120,23	119,91	118,88
	2,5%	120,87	120,51	119,64	118,56	117,69
Realistic	**2,0%**	119,96	119,08	118,08	117,91	117,02
	1,5%	119,03	118,89	117,59	116,99	116,87
Pessimistic	**1,0%**	118,13	117,57	117,15	116,73	116,41