



Equity Valuation of Equinor ASA

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Equinor ASA – Investment Summary

Ticker: EQNR.OL

Operating Industry: Integrated Oil & Gas

Current Price: kr. 191,75

Price Target: kr. 217,23 (\$23,15)*



We issue a hold recommendation for Equinor ASA, with a target price of kr.217,23 per share, which represents a 13% upside over the coming year. This recommendation is based on a combination of macroeconomic and company-specific expected events and given the uncertainty that shadow the Oil & Gas industry we believe that the upside is not substantial enough for a different recommendation.

Methodology	Segment	Price/share
DCF	Operations	Kr. 80,41
Real Option	Reserves	Kr. 136,82
Sum of the parts		Kr. 217,23
EV / EBITDAX		Kr. 227,52
EV / Annual Production		Kr. 235,77
Multiples Average		Kr. 231,65

Equinor's priority is to maximize and develop its unique Norwegian Continental Shelf (NCS) position, new asset and resource positions in Brazil and its international gas business. Despite of new investment being directed at new energy solutions by 2030, it is still an upstream-dominated company with activities in Norway and 29 other countries. Equinor also has a dominant, flexible and cost-advantaged position in European gas supply and a relevant North America shale position.

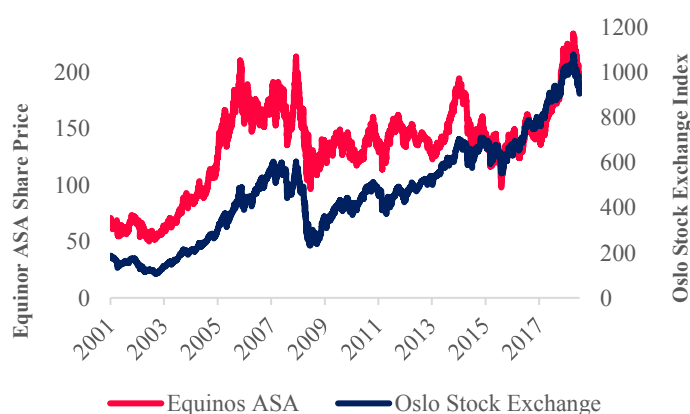
With a relatively intense reinvestment commitment to support longer-term growth post 2020E, investors could choose to wait for de-risked 'next generation' project delivery and earnings momentum.

After considerable losses in 2015 and 2016, the pressure in the business unit to respond made them focus in cost management and reach their objective of achieving a break-even price below \$50 per barrel by 2022 on their onstream operations.

Thanks to several new fields starting production and the recent acquisition of a 25% stake in the producing field Roncador in Brazil, production will grow somewhat over the next few years. However, post 2025, the production is likely to start declining relatively sharply if no more new fields are added to the portfolio through exploration or acquisitions.

Expectation to reach a break-even price of \$20 per barrel in future development, as stated by their CEO, will position Equinor at a competitive position, to better mitigate the different risk they are expose to.

Financial Data	2018	2019E	2020E	2021E
Revenue (Bill \$)	\$76,28	\$82,33	\$82,64	\$80,03
EBITDA (Bill \$)	\$27,77	\$27,23	\$27,75	\$28,03
EBITDA mg (%)	36,4%	33,1%	33,6%	35,0%
ROA (%)	3,31%	4,11%	2,96%	2,79%
EPS	\$1,15	\$1,41	\$1,03	\$1,05



*Note: NOK/USD rate 8,64

Equity Valuation – Equinor ASA

Freddy León Mujica

Abstract

This dissertation has the objective of valuing the Norwegian oil & gas company Equinor ASA, previously known as Statoil. The purpose is to reach the fair value of a single share of the company and issue a buy, hold or sell recommendation, by contrasting the target price with the current market price. The valuation performed is based in an oil & gas industry analysis, as well as a company analysis, so that well informed assumptions could be formed to forecast future performance. Equinor ASA's valuation is performed as a sum of the parts, where the current operations were valued following a DCF approach and the undeveloped proven reserves were valued using the Real Option methodology, the sum of the part approach was also complemented by multiples valuation. Equinor ASA's fair value reached with these methodologies was kr.203,17, that has a 10,56% upside against market price, given that the price difference is not significant given the industry's volatility, a hold recommendation was issued. This recommendation is consistent with Handelsbanken's report.

Keywords:

Company valuation, Fair value calculation, Oil & Gas, LNG, DCF, Real Option, Multiple valuation

Resumo

Esta dissertação tem como objetivo avaliar a empresa norueguesa de petróleo e gás Equinor ASA, antes conhecida como Statoil. O objetivo é atingir o valor justo de uma única ação da empresa e emitir uma recomendação para comprar, manter ou vender, contrastando o preço alvo com o preço de mercado atual. A avaliação realizada baseia-se numa análise da indústria do petróleo e gás, bem como numa análise da empresa, para que com suposições bem informadas se possa prever o desempenho futuro. A avaliação da Equinor ASA é realizada como uma soma de partes, onde as operações atuais são valorizadas seguindo uma abordagem DCF e as reservas provadas não desenvolvidas foram avaliadas usando a metodologia da Opção Real. A metodologia da soma das partes também foi complementada por uma avaliação de múltiplos. O valor justo da Equinor ASA alcançado com essas metodologias foi de kr.203,17, que tem um aumento de 10,56% em relação ao preço do mercado. Dado que a diferença de preço não é significativa, e tendo em conta a volatilidade da indústria, uma recomendação de retenção é emitida. Esta recomendação é consistente com o relatório do Handelsbanken.

Keywords:

Avaliação de empresas, Cálculo do valor justo, Petróleo e gás, GNL, DCF, Opção Real, Avaliação múltiplos.

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1. Introduction

1.1 Topic Relevance and Motivation

In an environment of high uncertainty and volatility that has been witnessed the past years in the Oil & Gas industry, oil prices reached record levels during the period 2014-2016. This downward trend was attributed to misestimation of energy demand by the OPEC, which were not willing to decrease their level of oil production, the lack of balance in the market led the Brent oil price to plummet from a price of 115\$ per barrel to a record low of 26\$ per barrel.

The situation forced the players of the market to re-assess their cost structures and shuffle their portfolio, not only by pursuing low carbon energy but also by including renewable sources of energy into their operations. Equinor ASA, put in practice these initiatives to maintain and even improve its competitive position in the market. This report aims to analyze the macroeconomics, industry specific and operation characteristics to assess the fair value of Equinor ASA.

1.2 Methodology

As a first step, of the process of assessing how to best value Equinor ASA, a discussion of the most used methodologies of firm valuation is presented in the literature review.

Then the oil & gas industry environment is analyzed, discussing both the supply and demand side, as well as their expected evolution for the foreseeable future.

As a third step Equinor ASA's businesses and strategy are discussed to better understand their motivations and their competitive position in the market.

In the final step, the equity valuation of Equinor ASA is developed based on the forecasted financial performance using the valuation methods the best suited the company. This valuation is later compared with an investment bank report, Handelsbanken, discussing the differences in the assumptions and methodologies used in each of the reports. In the conclusions section of this report, the limitation and recommendation issued are discussed.

2. Literature review

2.1 Introduction

This section addresses the different valuation methodologies, where its advantages and limitation will be discussed to determine which of them are best suited to determine the fair value of Equinor ASA. The methodologies explained in the following sections, where chosen in accordance to its relevance to the company subject of this dissertation.

A combination of industry understanding with the selection of the proper valuation model is always important to yield a reliable fair value for any investment valuation.

2.2 Intrinsic Valuation Methods

Every asset that has cash flows associated to its activities, has an intrinsic value that encompasses both its cash flow potential and its risk. Intrinsic value can be considered the value that would be attached to a firm by an unbiased analyst, given the information available at the time.

The most used intrinsic valuation methodology is the Discounted Cash Flow model; this approach has foundation in the present value rule, where the value of any asset is the present value of expected future cash flows (Damodaran, 2002).:

$$Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t}$$

Where, n = Life of the asset

CF_t = Cash flow in period t

r = Discount rate reflecting the riskiness of the estimated cash flows

Formula 1: Present Value Formula

Is worth discussing in detail the discount rate, as one of the main drivers for this approach.

2.2.1 The Discount Rate

The discount rate used in the DCF model, encompasses the different type of risks the company's cash flows are exposed to.

2.2.1.1 The Risk-Free Rate

The risk-free rate is the return of a risk-free asset, which are those assets where the actual return should always be equal to the expected return.

Given that these types of asset are incredibly difficult to find in the market, for valuation purposes the only securities that have a chance of being risk free are government securities, mainly because they are in control of printing of currency, in other words they control the cash that circulates their given economy.

However, the maturity of the bonds has to be taken into account, for 5-year treasury bonds the coupons on the bond will be reinvested at rates that cannot be predicted, for that reason the most common proxy for a risk-free rate used in valuations is the 10-year government bond(Damodaran, 2008). For Equinor ASA, the most suitable risk-rate chosen was the 10-year U.S. Treasury bond.

2.2.1.2 Cost of Equity

Equity risk premium are a central component of every risk and return model and refers to the additional return investors demand for holding equities(Damodaran, 2018). The most commonly used methodology to compute cost of equity, Capital Asset Pricing Model (CAPM).

2.2.1.2.1 CAPM

The Capital Asset Pricing Model, states that the risk premium equals the investment's beta times the market risk premium:

$$K_e = r_f + \beta_e(r_m - r_f)$$

Where, K_e = Cost of Equity

r_f = Risk-free rate

β_e = Equity beta

r_m = Market return rate

Formula 2: CAPM Formula

This tells the investor the amount of return they should expect for holding a risky asset, which exist in the efficient frontier.

2.2.1.4 Weighted Average Cost of Capital

The weighted average cost of capital (WACC) is the most used discount rate for discounted cash flows methodologies. It is a tax-adjusted discount rate, intended to pick up the value of interest tax shields that come from using an operation's debt capacity, is given by the following formula:

$$WACC = K_e * \left(\frac{E}{D + E} \right) + K_d * (1 - t) * \left(\frac{D}{D + E} \right)$$

Where, K_e = Cost of Equity

E = Market Value of Equity

D = Market Value of Debt

K_d = Cost of Debt

t = Corporate tax rate

Formula 7: Weighted Average Cost of Capital

However, the WACC as a discount rate has its limitations, the instinctive feature of WACC relies on fairly restrictive assumptions to get value of interest tax shields right, and with non-simplistic debt securities these methodologies has a considerable chance of miss-valuing the future cash flows. (T. A. Luehrman, 1997)

2.2.2 Discounted Cash Flow Valuation Models

These methodologies seek to determine the company's value by estimating the cash flows it will generate in the future and then discounting them, at a discount rate matched to the flows' risk. The discount rate chosen will depend on the type of cash flows, in practice; the interested parties often set the minimum discount rate, it may vary depending if the one determining the discount rate is on the sell-side or the buy side.

Although the flows may have infinite duration, under the assumption of going concern, is acceptable to ignore them after a certain period, as their present value will progressively decrease.(Fernandez, 2001)

2.2.2.1 Free Cash Flows to Firm

These are the cash flows generated by operations after tax, in order to calculate the free cash flow; we must ignore financing for the company's operation and concentrate on the financial return on the company's assets, viewed from a perspective of going concern.

	Earnings Before Interest and Tax (EBIT)
(-)	Tax paid on EBIT
(=)	Net Income without debt
(+)	Depreciation
(-)	Increased in fixed assets
(-)	Increase in Working Capital Requirement
(=)	Free Cash Flows to the Firm

Table 1: FFCF Inputs

Under the assumption that the company has no debt or other non-operational obligation to fulfill, the FCFE is the amount of cash available to distribute to investors.

2.2.2.2 Free Cash Flow to Equity

These cash flows are the ones distributed to investors after covering fixed asset investment and working capital requirements, and after paying the financial charges and repaying the corresponding part of the debt's principal.

	Free Cash Flow to Firm
(-)	Interest Payments * (1 – Corporate Tax Rate)
(-)	Principal Repayments
(+)	New Debt
(=)	Free Cash Flow to Equity

Table 2: FCFE Inputs

These cash flows assume the existence of a certain financing structure in each period, where the interest and the principal of the corresponding debt are paid, and new debt is hired. With the flows the valuation is of the company's equity, which is why the most appropriate discount rate would be the cost of equity. (Fernandez, 2001)

2.2.2.3 Adjusted Present Value (APV)

APV is designed to value operations or assets in place. This approach analyzes financial maneuvers separately and add their value together. (Timothy A Luehrman, 1997)

The model starts with the value of the unlevered firm that can be computed by discounting the free cash flows of the firm by its unlevered cost of equity. The unlevered cost of equity can be reverse engineered using the observed cost of equity, the cost of debt and the market debt-to-equity ratio. The resulting equation is the levered cost of equity for a company whose debt can take any value but whose interest tax shields have the same risk as the company's debt. (Koller, Goefhart, & Wessels, 2010)

$$K_e = K_u + \frac{D - V_{txs}}{E} * (K_u - K_d)$$

Where, K_e = Cost of Equity

E = Value of Equity

D = Value of Debt

K_d = Cost of Debt

K_u = Unlevered cost of equity

V_{txs} = Present Value of tax shields

Formula 8: Unlevered Cost of Equity

Once the value of the company as an all equity firm is establish, the value of tax shields and the expected bankruptcy cost should be included, to determine the current firm value. To estimate the tax benefits of debt, the total debt should be multiplied by its corporate tax rate, assuming that debt is permanent, and the tax benefits will continue in perpetuity, taking into account possible limitations in the amount of tax shields that are allowed within regulations. However, to compute the present value of interest tax shields for each of the period forecasted the following formula should be use: (Fernandez, 2001)

$$PVITS = \frac{D * K_d * t}{(1 + K_d)^n}$$

Where, D = Value of Debt

K_d = Cost of Debt

t = Corporate tax rate

Formula 9: Present Value of Interest Tax Shields

The final step of the process is to estimate the expected bankruptcy cost, this is usually computed by multiplying the probability of default by the bankruptcy cost. The ratings of corporate bonds can be used as a proxy to establish the probability of default for company.

However, when it comes to bankruptcy cost, understood as percentage of the value for the unlevered firm, there is no consensus in regards of how it should be computed, given that is very difficult to measure indirect bankruptcy cost.

$$\text{Expected Bankruptcy Cost} = \text{Probability of Default} * \text{Bankruptcy Cost}$$

Formula 10: Expected Bankruptcy Cost

In the end the current value of the company will be:

$$\text{Current Value of the Firm} = V_u + PVITS - EBC$$

Where, V_u = Value of the unlevered firm

$PVITS$ = Present Value of Interest Tax Shields

EBC = Expected Bankruptcy Cost

Formula 11: Adjusted Present Value

In general, the APV and the DCF (WACC) conclude similar answers. However, the APV approach is more practical when firms are evaluating the amount of debt to maximize its value, in other words, when the enterprise value is determine as an all-equity firm it is possible to analyze the effect the debt in the value of the unlevered firm, and experimenting with different level of debt can help in the determine the optimal value of the levered firm. (Damodaran, 2002)

Debt Ratio	Debt \$	Tax Rate	Unlevered Firm Value	Tax Benefits	Expected Bankruptcy Cost	Value of Levered Firm
0%	0	38%	\$ 55.638	0	\$10	\$ 55.628
20%	\$12.375	38%	\$ 55.638	\$4.703	\$11	\$60.330
40%	\$24.750	38%	\$ 55.638	\$9.405	\$107	\$64.936
60%	\$37.125	38%	\$ 55.638	\$14.108	\$6.417	\$63.329

Table 3: Example Analysis Debt Level APV (Damodaran, 2002)

2.2.2.4 Dividend Discount Model

This is one of the simplest models for valuing equity, where the value of the stock is understood as the present value of the expected dividend on it. The rationale of the model lies in the present value rule, with two basic inputs: expected dividends and the cost of equity.

$$\text{Value per share stock} = \sum_{T=1}^{T=\infty} \frac{E(DPS_T)}{(1 + K_E)^T}$$

Where, $DPS = \text{Expected dividend per share}$

$K_e = \text{Cost of Equity}$

Formula 12: Dividend Discount Model

“This model is flexible enough to allow for time varying discount rates, where the time variation is because of expected changes in interest rates or risk across time” (Damodaran, 2002). This approach is most suitable when the company has a well established dividend policy, that bears consistency with its profitability. (Pinto, Robinson, & Stowe, 2018)

2.2.2.5 Conclusions

Overall the chosen approach for Equinor ASA valuation will be to discount the FCFE by the WACC. Even though APV provides the flexibility to account for changes in the company's level of debt, given that, historically, capital structure has not change significantly from year-to-year, this approach will not provide additional value in comparison to the cost of capital approach.

2.2.3 The Terminal Value

As a way to wrap up the valuation, to determine the terminal value it can be considered a going concern approach, by computing it under the assumptions that the last cash flow forecasted will grow in perpetuity at a stable growth rate. The terminal value is a crucial input of any discounted cash flow methodology, since it can account for a significant amount of the Enterprise Value. An adaptation of the Gordon Growth model is most used formula for this approach:

$$TV = \frac{FCF_n}{r - g}$$

Where, $TV =$ Terminal Value

$r =$ Discount rate chosen

$g =$ growth rate in perpetuity

Formula 13: Terminal Value

Because is not possible to forecast the cash flows into infinity, the common practice is to estimate an explicit period and add the terminal value based on the *Formula 13*. In the end the value of the firm using the cost of capital approach, for example, will be as follow:

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

Formula 14: Firm Value with explicit period and terminal value

2.2.3.1 Growth Rate

While the determination of a growth rate can vary depending on the approaches, there are common themes among them, the main one is that growth and reinvestment rate are linked, which is why is common to compute growth rate as:

$$Perpetuity\ Growth\ Rate = Reinvestment\ rate * Return\ on\ Capital$$

Formula 15: Perpetuity Growth Rate

However, this approach is mainly valid for company that have a constant reinvestment rate throughout the analyzed period. And given that is not realistic for a company, under the assumption of going concern, to grow at higher rate than the nominal GDP of its main region of operation. Nevertheless, for natural resource companies, as it is the case of Equinor ASA, since there is a limited amount of resource in the planet, the common assumption in practice is to establish a nominal growth rate between 1% and 3%.

2.3 Real Option Valuation

One critique of conventional approach is that they fail to consider adequately the relation between the commodity prices and financing actions of companies. In other words, conventional valuation approaches fail to consider the option embedded within investments.

The fact that a project does not have a positive NPV, does not mean that right to the project are not valuable, this is something that is capture by the real option model. For the sake of this dissertation, the approach will be discussed from the point of view a natural resource company, so that the applicability to Equinor ASA can be more evident.

The simplest application of the option approach is in the valuation of natural resource reserves, where the company has the right to develop the reserve over a specific period and will be a function of the quantity of resources and the current price. As prices of the commodity rises and falls, the company will assess the viability of developing the reserves. Under the premise of natural resource reserves as options, the following inputs must be considered for its valuation:

Value of Underlying Asset	S	Quantity of resources time current price
Strike Price	K	Cost of developing the reserve
Life of the Option	T	Number of years of production it would take to deplete the reserve
Variance of underlying asset	σ^2	Variance of the price of the underlying asset
Dividend Yield	R	Annual Cash flow as a percentage of the value of the underlying asset
Development lag	n	Number of years from the decision to develop until actual extraction of the reserves

Table 4: Inputs for Reserves Valuation

Since extraction cannot be done instantaneously, once the value of the reserve is computed, it must be discounted to account for the development lag. The discount rate in

this case should be the dividend yield, to adjust for those cash flow loss during the development lag period. (Damodaran, 2009)

The option pricing model used in this approach is based on the Black-Scholes model, assuming the option of developing or not the reserve resembles a call option.

$$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \left(R - \frac{\sigma^2}{2}\right) * T}{\sigma * \sqrt{T}}$$

$$d_2 = d_1 - \sigma * \sqrt{T}$$

$$C = \frac{S * n * N(d_1) - K * e^{-r*T} * N(d_2)}{(1 + R)^n}$$

Formula 16: Option Pricing Computation

2.4 The Relative Valuation Method

Relative valuation approach can provide an insight and help in summarizing and test a valuation, however their use should be superficial, since it may lead to erroneous conclusions. The basic rationale behind multiples for valuation is that similar assets should sell at similar prices, this approach can also be used to value non listed companies, or division of traded companies, to see how they compared against their peers. (Koller et al., 2010)

To properly apply the multiples approach there are four basic principle worth mentioning:

- Use the right peer group, usually industrial classification are loosely defined, as an alternative could be to use the standard industrial classification codes issued by the U.S. Government. After this first list of market competitors, each of the company must be investigated to determine if they have similar prospect of ROIC and growth.
- Use forward-looking multiples, aside for the principles of valuation, empirical evidence shows that forward-looking multiples are more accurate predictors of value.
- Use enterprise value multiples, although P/E is widely used it is distorted by capital structure and nonoperating gains and losses. The alternative to this ratio is EV to EBITDA, in general this ratio is less susceptible to manipulation, since EV

already include debt and equity and EBITDA includes the profitability to investors, so a change in capital structure will affect this multiple.

- Adjust EV/EBITDA for nonoperating items, items like excess cash and pension items embedded in the EBITDA can distort this multiple. (Koller, Goedhart, & Wessels, 2005)

Given the peculiarities of the oil & gas sector, the multiples used are slightly different than the ones commonly used in other markets, for the valuation of Equinor ASA, the multiple used were:

- EV / EBITDAX: the “X” stands for the Exploration Expenses that are added back to the EBITDA, since recognition of these type of expenses and earning could vary significantly from one company to the other, it will depend if the company uses a successful effort or full cost accounting method. It’s an approach to standardize the accounting treatment of exploration expenses.
- EV / Annual Production: annual production is measure in “barrels of oil equivalent”, and this ratio gives an indication on how much their fields are worth on per barrel basis.

2.5 Sum of the Part Valuation

A valuation that sums the estimated values of each of the company’s businesses, is known as sum-of-the-parts valuation (Pinto et al., 2018). For the case of Equinor ASA, the value of the company was divided in two, current operations were valued using the DCF (WACC) approach, and the proven undeveloped reserves were valued using the real option approach, the assumptions taken for each of the approaches will be discussed later on.

3. Industry Analysis

Any reliable valuation requires a thorough understanding of the industry in which the company operates, so that the assumptions made in each of the approaches used for the valuation are in line with the industry dynamics. In this section we will address, mainly the oil & gas industry, as it is the sector in which Equinor ASA operates.

3.1 Oil & Gas Industry

Throughout 2017 and the first half of 2018, economy delivered a high growth rate, where consumer spending, driven by higher employment rates, combined by low inflation delivered an estimated GDP growth of 2,2% for regions like UK, US and Europe. A robust demand picture and solid economics fundamentals should allow the expansion to continue. The rising prosperity drives an increase in energy demand, although it expected that it will be counterbalance by an increase in energy efficiency

3.1.1 Oil Industry

Global oil demand grew by 1,5 mmbbl per day in 2017 and global supply grew by 0,4 mmbbl per day. However, decreasing oil prices in the first half of 2017 made OPEC and Non-OPEC countries adjust their production, to facilitate gradual rebalancing of the oil market. This recovery has been a result of various factors, including sustained success of the production restraint agreement between OPEC and non-OPEC countries before mentioned, less oil entering the market from challenged producers, and a strong global oil demand growth estimated by the Energy Information Administration (EIA) at about 1.6million b/d in 2018.

3.1.1.1 Oil Supply

On the supply side, the Organization of Petroleum Exporting Countries (OPEC) has been crucial to this market adjustment. In November 2017, an agreement made by OPEC and non-OPEC countries, to cut production by 1,8 million barrels per day, throughout 2018 helped to rebalance the market after the continued downward trend of 2016.

Despite the signs of recovery, the industry has to face several challenges in regards of the supply.

“A decrease in discoveries was aggravated the slowness of the rise in exploration spending after the downturn of oil prices of 2014–16. Globally, spending plummeted by more than 60 percent, from a high of US\$153 billion in 2014 to about \$58 billion in 2017.

The investment slump in traditional supply sources looks like it will continue to have an effect on new production”. (Biscardini, Morrison, Branson & Del Maestro, 2018)

However, the outlook of global market for liquids expands with growing demands from developing economies met by increase in supply from low-cost producers. The increase in supply in 2017 was marginal, given that the market was still bearing part of the excess supply from 2016. Future supply increases are expected to be driven initially by US tight oil, with OPEC taking over by the end of the 2020s.

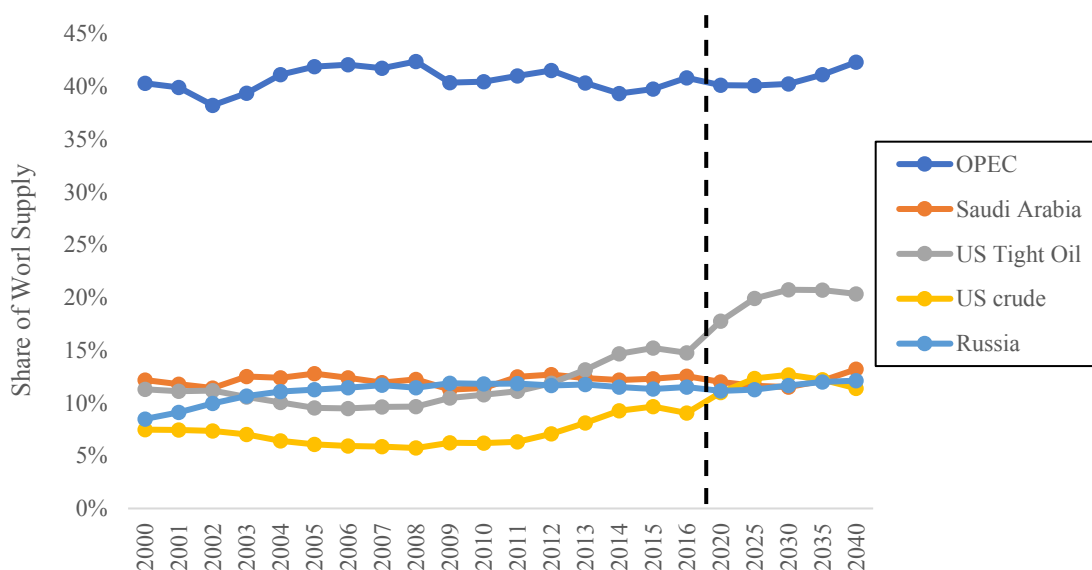


Figure 1: Share of world oil supply, BP Energy Outlook 2018

3.1.1.2 Oil Demand

Even though there is no foreseeable peak in the demand of oil, after an expansion of consumption by 1,4 mb/d in 2018 it is expected to for the growth to plateau to 1mb/d in the next 5 years. Several countries are starting to take initiatives to find alternative sources of energy as a substitute of oil, so demand management will require business models throughout the industry to evolve.

United States and China continue to be main sources of the oil demand growth, said growth is mainly driven by the petrochemical industry. Around a fourth of the total demand expected for 2023, is taken up by ethane and naphtha. The economic growth that has been experienced worldwide, is increasing the percentage of the population in the middle-class threshold, in particular in developing countries. This trend is increasing the demands of consuming goods and services, many of which require derivation of oil in order to be manufacture.

In regard on the demand outlook, it is expected that the growth in liquids demand is mainly driven by emerging economies, with India replacing China as the main driver, and OECD demand gradually declines and plateaus toward 2040.

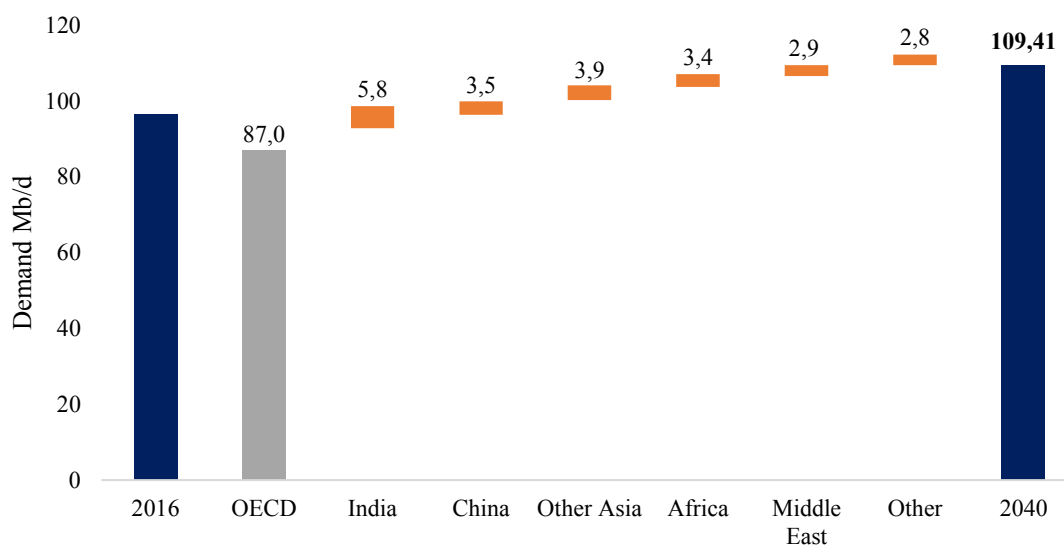


Figure 2: Outlook Oil Demand per region, BP Energy Outlook 2018

3.1.2 Gas Industry

Natural gas stopped being the main source of power generation within OECD countries in 2016. “A combination of factors led to this continued rise in demand for gas, including the implementation of robust government policies that place a cost on carbon emissions and the US shale gas revolution. Natural gas is helping to provide more and cleaner energy around the world”. (Shell LNG Outlook)

Greenhouse emission of gas are less than half of those emitted by coal when used for electric generation, modern natural gas-fired power plants also emit less than one tenth of the pollutants in comparison to coal plants. It is one of the most versatile sources of energy, as it can be used to generate power, for transportation of people and goods, and even provide heat for both residential use and industrial processes.

3.1.2.1 Gas Demand

Overall Gas consumption is expected to grow at an average rate of 2% per year until 2035, which is double the expected growth of global energy demand. In particular this growth is driven by the demand for LNG that is set to increase at an average of 4% per year.

Over the next twenty years 40% of the growth of demand of the energy mix is expected to be allocated to gas. Even though gas will continue as a power generation source, most the energy demand growth will arise from sectors like steel and cement production, which are difficult to electrify.

“In 2017, demand for LNG was strong with a clear “pull” from countries instead of a “push” of volumes seeking a home. This was similar to 2016, but during 2017 the demand pull was from legacy gas and LNG importers in Asia and Southern Europe; whereas 2016 was characterized by a pull from new areas of demand. Asian demand grew by more than 17 million tonnes, beating industry predictions going into the year. That is nearly as much as the total volume that Indonesia, the world’s fifth largest exporter, produced in 2017”.
(Shell LNG Outlook)

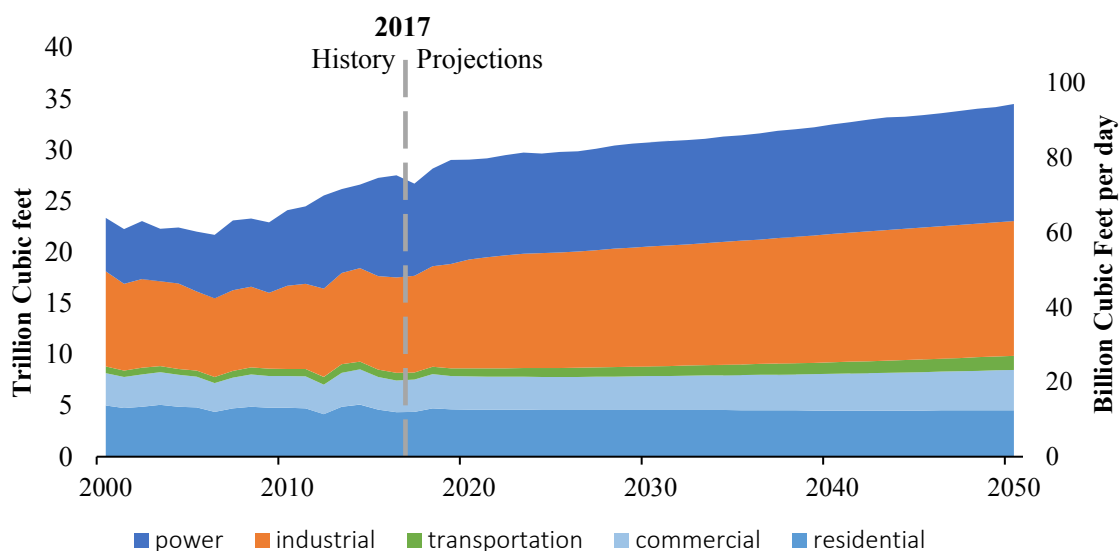


Figure 3: Natural Gas Consumption per Sector, EIA Energy Outlook 2018

3.1.2.2 Gas Supply

An increase in the number of countries that supply LNG, helped significantly the flexibility and the strength of the market, where China alone imported LNG from 20 different countries. With an expansion of planned capacity partially completed, the market size of LNG grew by 29 million tonnes.

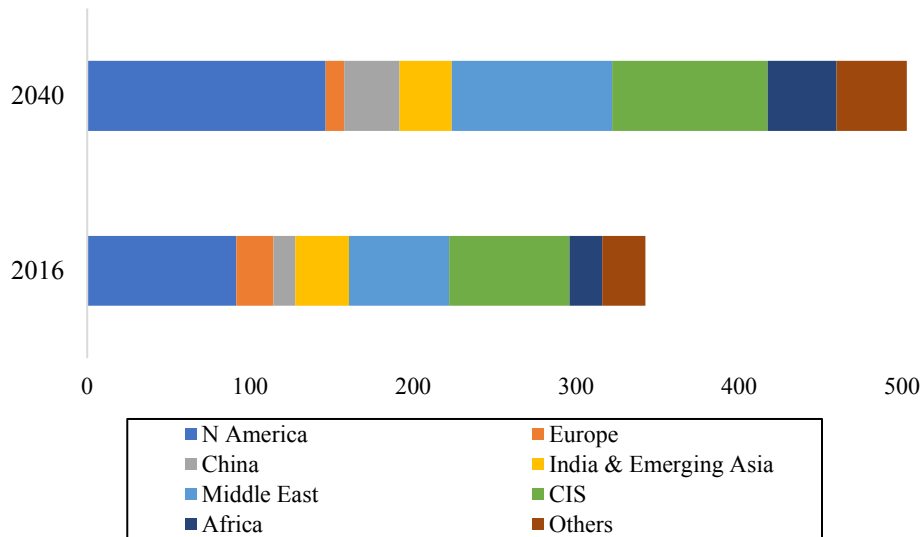


Figure 4: Natural gas Producer by Region

“Significant LNG exports came from new supplies in the USA and Australia, with increased output from existing LNG supply facilities in Africa. Domestic natural gas production is expected to continue being the dominant source of gas supply – especially in North America and parts of Europe where well-connected pipelines are already in place. In regions such as Asia and the Middle East, where cross-border pipelines are limited, LNG is expected to play a more significant role. Floating storage and regasification units (FSRUs) continue to enable fast, flexible and economically competitive options for countries looking to import LNG. These vessels can be docked in a port to re-gasify LNG and feed gas into a transmission or distribution network”. (Shell LNG Outlook)

3.2 Conclusions

Uncertainty and volatility are the two main characteristic that are being used to describe the Oil & Gas industry, not only because of high variance of commodities prices, but also because of the increasing talks of energy transition among governments to empower cleaner sources of energy. This environment is forcing companies in the industry to rethink their approach on competition with its peers.

After the downturn of oil prices in 2014, big players in the industry adopted an “always-low” policy, where there was a general trend of disinvestment of non-strategic assets and a continuous cost efficiency of their operational expenses. In other words, companies are starting to manage their portfolio at a lower break-even price, in order to maintain their

profitability at any given oil price. The cleaning of inefficiencies within operation is expected to become a mantra in the industry, even if oil prices rise.

This trend of continuous efficiency will have to be combined with an initiative to develop new businesses to expand their portfolio. This has already been seen in some of the mayor players, with significant investments in renewable energy and shifting their portfolio to natural gas, as it is considered to be the bridge between fossil fuels to a low-carbon emission source.

Despite highs and lows of the industry, demand keeps exceeding annual forecasts, inventories are being reduced, and reserves are not being replaced due to lack of investment in exploration. Nonetheless, the world remains dependent on oil and gas.

“The need to find more of both resources will become more pressing over the short to medium term. Portfolios have to be resilient, innovation needs to thrive, and productivity and capital efficiency must remain the bedrock of operations. Looking further out, companies will need a robust strategy for hydrocarbon weighting: a strategy that will serve them no matter what the future brings. Only those companies who can do all this will prevail”. (Biscardini, Morrison, Branson & Del Maestro, 2018)

4. Company Analysis

4.1 Company Overview

Equinor ASA was founded as Den Norske Stats Oljeselskap AS, the Norwegian State Oil company in 1972. Equinor ASA became listed on the Oslo Børs (Norway) and New York Stock Exchange (US) in June 2001. Equinor ASA is engaged in exploration, development and production of oil and gas in addition to renewables. They are the leading operator on the Norwegian continental shelf and have substantial international activities. Equinor ASA sells crude oil and is a major supplier of natural gas. Processing, refining, offshore wind and carbon capture and storage is also part of our operations.

4.1.1 Activities

Equinor ASA's operations are managed through six business unit:

- **Development & Production**, this area manages upstream activities in charge of exploring for and extracting crude oil, natural gas and natural gas liquid. This business unit is sub-divided by D&P Norway, which is in charge of the Norwegian Continental Shelf (NCS); D&P USA is in charge of upstream activities in USA and Mexico; and D&P International is in charge of worldwide upstream activities excluding activities of Norway and USA.
- **Marketing, Midstream and Processing** this area is in charge of marketing and trading activities related to oil products and natural gas, transportation, processing and manufacturing, and development of oil and gas.
- **Technology, Projects & Drilling (TDP)** is responsible for the global project portfolio, well delivery, new technologies and sourcing across Equinor ASA. TPD seeks to provide safe and secure, efficient and cost-competitive global well and project delivery, technological excellence, and research and development.
- **Exploration**, this business unit is in charge of exploration activities worldwide, their aim is to position Equinor ASA as a leading exploration company by accessing high potential new acreage and drilling more significant wells in growth and frontier basis.
- **New Energy Solutions (NES)**, reflects the long-term commitment of Equinor ASA to complement their oil and gas portfolio, with profitable renewable energy and low-carbon energy solutions. This area is in charge of wind farms and carbon capture and storage.

- **Global Strategy & Business Development (GSB)**, this business area is responsible of developing the corporate strategy and merger & acquisition activities for Equinor ASA.

In regards of financial reporting, the different segments reported as source of revenues are D&P Norway, D&P International (includes D&P USA), Marketing, Midstream & Processing, and Others, this last segment compiles TDP, NES, GSB and Exploration.

4.2 Share Price Evolution

Equinor ASA share price since the Initial Public Offering (IPO) in June 2001, gained 181% with their lowest price point in November 2002 at kr. 50, and the highest prices was reached in September 2018 at kr. 234.

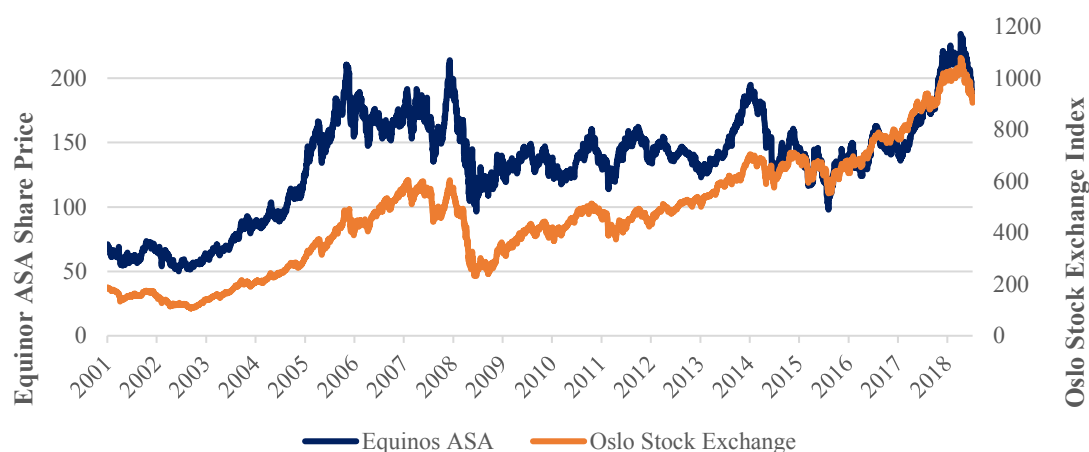


Figure 5: Equinor ASA Share Price vs. Oslo SE Index

There is a high correlation between the returns of Equinor ASA and the Oslo Stock Exchange, with an 83% correlation. This could be explained by the fact that the company is more than one fourth of the total index capitalization.

4.3 Company shareholder structure

Even though the company was made public in the year 2001, the Norwegian government is still the main shareholder with 67% of ownership, holding 2.237 million shares. The other 33% of shares outstanding, are free-float in the market.

4.4 Operational & Financial Performance

In 2016 and 2015, Equinor ASA's results were heavily influenced by low oil and gas prices, leading to lower earnings and impairment losses. In 2017 and 2018, prices have been recovering and we are seeing better results. Operational performance has been solid,

and production was up by 5% in 2017. Cost discipline and efficiency improvements have contributed to the reduced operating costs. Supported by increasing prices and better operational performance, several previous impairments have been reversed.

<i>(USD Billion)</i>	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenues	\$87,68	\$119,47	\$124,22	\$108,53	\$98,78	\$59,64	\$45,87	\$61,19	\$76,28
EBITDA	\$31,10	\$46,91	\$45,87	\$38,77	\$33,46	\$18,08	\$11,63	\$22,42	\$27,77
EBIT	\$22,71	\$37,75	\$35,48	\$26,44	\$17,37	\$1,37	\$0,08	\$13,77	\$19,04
Net Profit	\$6,23	\$13,98	\$11,93	\$6,66	\$3,51	-\$6,05	-\$3,88	\$4,60	\$3,2
Profit Margin	7,11%	11,70%	9,61%	6,13%	3,55%	-10,14%	-8,46%	7,51%	5,01%
ROIC	7,6%	15,1%	11,4%	5,8%	3,4%	-5,1%	-3,2%	5,1%	7,2%

Figure 6: Financial Indicators Summary

The analysis of Equinor ASA, went several years back to understand the magnitude of the effect that fluctuation in oil prices have had in the profitability and the operations of the company. As it can be seen in Figure 6, during the period of low oil prices that started in mid-2014, the company suffered considerable losses that could only be recovered after a combination of cost efficiency implantation and rising commodities prices.

This exposure to fluctuation in oil prices is trying to be reduced by an expansion of their portfolio, with investment in low carbon energy and improvement in the efficiency of their processes, reaching solutions that could be both cost efficient and at the same time less detrimental to the environment.

5. Valuation of Equinor ASA

In order to compute Equinor ASA fair value, the value of the company was segmented between current operations and proven undeveloped reserved, using different approaches for each of the segments.

5.1 Intrinsic Valuation

For the current operations of the company, the approach used was the Discounted Cash Flow model, and in particular, de cost of capital approach.

5.1.1 Future Cash Flow Forecast

The explicit period for the estimation of the company's cash flows ranges from 2019 to 2025, due to the current uncertainty of Brent oil prices, and the high exposure of Equinor's revenues to these changes, a longer explicit period was not forecasted.

Data collection date is 31st of December 2018, and at this date Equinor ASA had only published the results for the first nine months, which why the results of the last quarter were estimated based on the year-date-trend of the historical Q4 results, always taking into account the prices of Brent oil at that point in time.

5.1.1.1 Equinor ASA Revenue

Equinor business revenues is comprised of income from four different segment, Exploration & Production Norway, Exploration & Production International, Marketing, Midstream & Processing (MMP) and Other, already explained in the Company review. "The eliminations section includes the elimination of inter-segment sales and related unrealized profits, mainly from the sale of crude oil and products. Inter-segment revenues are based upon estimated market prices" (Equinor ASA, annual report)

<i>(USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
E&P Norway	\$13,08	\$17,69	\$21,90	\$23,64	\$23,73	\$22,98	\$23,51	\$22,92	\$22,92	\$22,92
E&P International	\$6,66	\$9,26	\$11,57	\$12,49	\$12,53	\$12,14	\$12,42	\$12,11	\$12,11	\$12,11
MMP	\$44,98	\$59,07	\$74,18	\$80,07	\$80,37	\$77,83	\$79,62	\$77,64	\$77,64	\$77,64
Other	\$0,04	\$0,09	\$0,13	\$0,14	\$0,14	\$0,13	\$0,14	\$0,13	\$0,13	\$0,13
Elimination	-\$18,88	-\$24,92	-\$31,50	-\$34,00	-\$34,13	-\$33,05	-\$33,81	-\$32,97	-\$32,97	-\$32,97
Total revenues	\$45,87	\$61,19	\$76,28	\$82,33	\$82,64	\$80,03	\$81,87	\$79,83	\$79,83	\$79,83
<i>Growth</i>	<i>-23,09%</i>	<i>33,39%</i>	<i>24,66%</i>	<i>7,94%</i>	<i>0,38%</i>	<i>-3,16%</i>	<i>2,30%</i>	<i>-2,49%</i>	<i>0,00%</i>	<i>0,00%</i>

Figure 7: Historical and Forecasted Revenue

The incomes are heavily influenced by fluctuation in oil and gas prices, and recovering prices throughout 2017 and 2018, helped significantly the operational performance with considerable increases in revenues in the last two years. For the forecast of the explicit period, revenue was forecasted as regression of the Brent oil prices given the exposure of the main segments to the commodity price. To make sure that this variable is of enough significant to use for the forecast we ran a regression of the revenue against the Brent oil prices.

R²	P-value	Intercept	Slope
94%	0,00000018	7.880,9	999,35

Table 5: Regression Equinor Revenue vs. Oil Prices

The results of the regression run, showed that the Brent oil price is a significant variable to use in the regression model for the forecast. The formula used to compute the revenues in the periods forecasted was a simple linear regression:

$$y = x * \beta + \alpha$$

Where, x = oil price

B = slope

α = intercept

y = revenue for the period

Formula 17: Linear Regression

For the estimation of oil prices in the explicit period, the main source used was the Reuters Crude Oil Price Poll, which consists in a poll performed to the main analyst and companies where they are asked to provide a forecast on the price of Brent and WTI oil for the next 5 years (See Appendix 2). This poll was contrasted with a Price Forecast Report published by Deloitte, and both sources established that for the medium-term Brent Oil Prices are expected to maintain within a range of high \$60s and low \$70s. On regard of Equinor ASA's production, they estimated a CAGR of 1%-2% for the next 5 years, when taken into account in projection of revenue, it did not have a significant impact on the result of the forecast.

5.1.1.2 Equinor ASA Operational Costs

After the crash of oil prices on late 2014, most oil companies in the sector cut down non-essential and non-strategic asset and started to implement cost discipline and efficiency improvement to reduce operating cost.

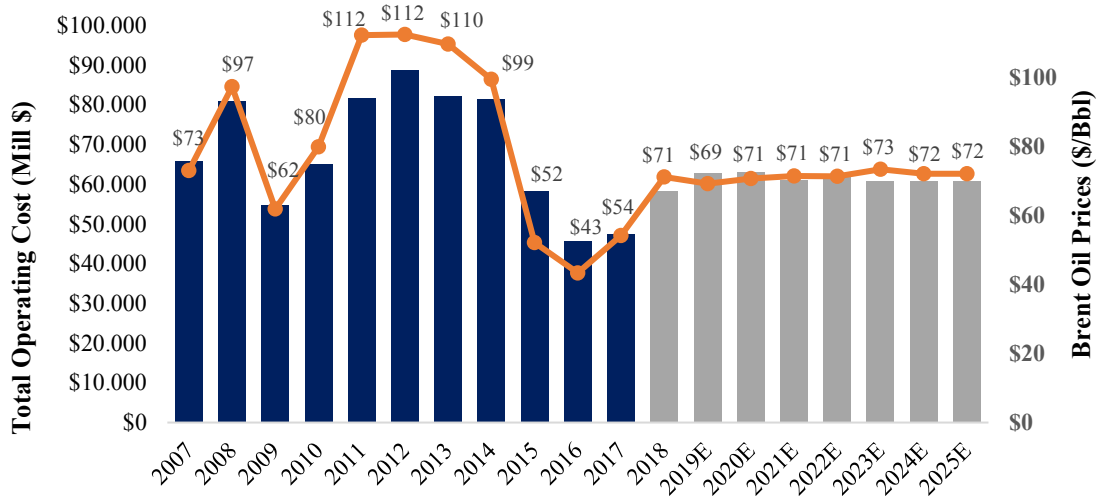


Figure 8: Total Operating Cost & Brent Price Evolution

Equinor ASA is investing heavily in automation of their operational processes and in the reduction of their climate emissions. Although, they are expected to reach a “break-even” price of 21\$ in their future developments, as stated by the CEO in the Annual Report, this implementation is not expected to be realized in the short to medium-term.

5.1.1.3 Equinor ASA CAPEX and Depreciation

Equinor ASA’s CAPEX, understood as PP&E, capitalized exploration expenditures, intangible assets, long-term share investments and investment in equity accounted firms, reached a level of almost \$11 Billion in 2018, and is expected to maintain a similar level throughout the explicit period.

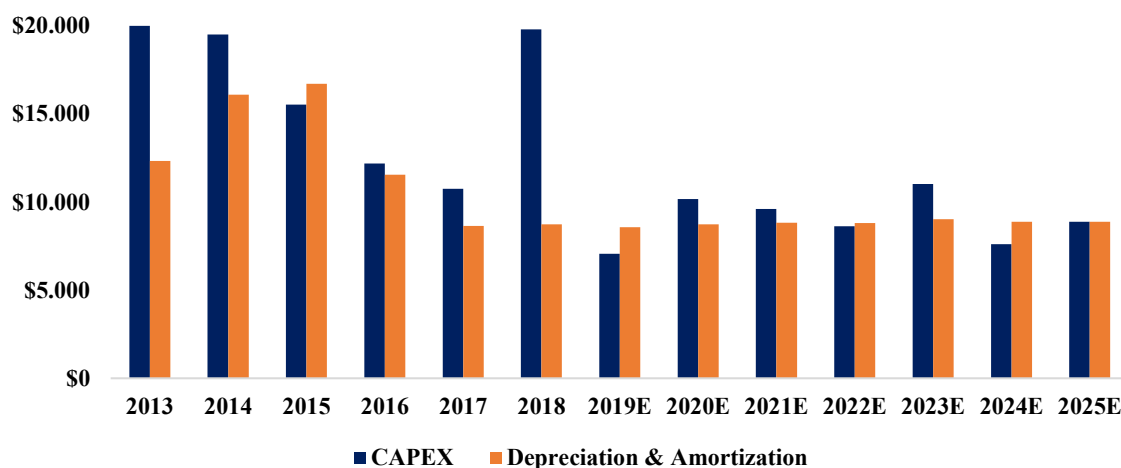


Figure 9: Evolution of CAPEX and Depreciation & Amortization

Depreciation & Amortization saw a downward trend during the period of low oil prices and stables out from the year 2017 onwards; it is expected for the company to reach steady state in the year 2024 where CAPEX is equal to Depreciation & Amortization. Estimation of the CAPEX was based in the variation PP&E plus depreciation. In the case of PP&E was projected as percentage of sales, since these items are largely driven by company's operation, and in general the more revenue the more capital expenditure is expected. Since fluctuation Depreciation and Amortization are highly related to assets, D&A was forecasted as percentage of PP&E.

5.1.1.4 Equinor ASA Working Capital

For the computation of net working capital, the approach used was to use the Non-Cash Working capital. With this approach, cash is taken away from the current asset side of the equation, given that if companies do not require cash for their day-to-day operations it is a common practice to invest said cash in treasury bills or short-term government securities. Account receivables were forecasted as percentage of sales, while inventories was projected as percentage of Cost of Goods Sold.

On the other hand, from the liabilities side of the working capital equation, short-term interest bearing debt is also dismissed from the computation, and all account payable items where projected as percentage of Cost of Goods Sold. Given that we are using the DCF approach in the valuation, financial debt will be included in the computation of the

Weighted Average Cost Capital, so including it in the working capital would be double counting.

<i>WC (USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Inventories	\$3,23	\$3,40	\$3,82	\$3,75	\$3,82	\$3,86	\$3,85	\$3,95	\$3,88	\$3,88
Account receivables	\$7,84	\$9,43	\$11,36	\$11,14	\$11,36	\$11,47	\$11,45	\$11,74	\$11,55	\$11,55
Current Asset	\$11,07	\$12,82	\$15,18	\$14,89	\$15,17	\$15,33	\$15,29	\$15,69	\$15,44	\$15,44
Deferred Tax Assets	\$2,20	\$2,44	\$3,05	\$3,00	\$3,05	\$3,08	\$3,08	\$3,16	\$3,11	\$3,11
Account Payable	-\$9,67	-\$9,74	-\$11,25	-\$11,03	-\$11,24	-\$11,35	-\$11,33	-\$11,62	-\$11,43	-\$11,43
Current tax payable	-\$2,18	-\$4,06	-\$9,04	-\$8,85	-\$9,93	-\$10,03	-\$10,01	-\$10,27	-\$10,10	-\$10,10
Current Liabilities	-\$11,85	-\$13,80	-\$20,29	-\$19,87	-\$21,17	-\$21,38	-\$21,34	-\$21,89	-\$21,54	-\$21,54
Deferred Tax Liabilities	-\$6,43	-\$7,65	-\$9,48	-\$9,29	-\$9,47	-\$9,57	-\$9,55	-\$9,79	-\$9,64	-\$9,64
WC Determination	-\$5,02	-\$6,19	-\$11,53	-\$11,28	-\$12,41	-\$12,54	-\$12,51	-\$12,84	-\$12,63	-\$12,63
<i>% Revenue</i>	-10,94%	-10,11%	-15,11%	-13,70%	-15,02%	-15,67%	-15,28%	-16,08%	-15,82%	-15,82%
Changes in WC	\$1,37	\$0,51	-\$3,81	\$1,16	-\$1,09	-\$0,52	\$0,32	-\$0,64	\$0,21	\$0,00

Figure 10: Net Working Capital Computation

Deferred tax assets are forecasted as percentage of growth of revenue, given that this item is usually tied to operations. In the case of deferred tax liabilities, it relates to the differences between tax depreciation methodologies and the book value, so in the in long run it grows with operations, in other word with revenues.

5.1.1.5 Equinor ASA Cost of Capital

5.1.1.5.1 Capital Structure

Equinor ASA has a target Net Debt to EBITDA ratio of 30% for the short term, and for the medium to long-term, they aim to maintain this ration between 20% and 30%. These targets were used to stablish the target level for the explicit period.

<i>(US Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
EBITDA	\$11,63	\$22,42	\$27,77	\$27,23	\$27,75	\$28,03	\$27,97	\$28,69	\$28,23	\$28,23
Net debt	\$18,37	\$15,44	\$17,17	\$13,56	\$15,30	\$11,05	\$11,07	\$8,62	\$7,43	\$6,32
Net debt to EBITDA	158,00%	68,86%	61,84%	49,79%	55,13%	39,40%	39,57%	30,04%	26,30%	22,39%

Figure 11: Net debt Ratio

Even though Equinor ASA started trading in the Norwegian stock exchange in 2001, it only began distributing dividends in 2014, maintaining a steady level of dividend despite

the results of the company. This can explain the increasing level of the Net Debt Ratio in 2016, for this reason for the forecast was assumed a constant level of dividend for the explicit period.

5.1.1.5.2 Cost of Debt

Equinor has a big percentage of debt trading in the market in US dollars, representing 83% of the total debt outstanding, for this tranche of debt the cost of debt assumed was the average YTM of the bonds outstanding. For the other 17% of total debt, which correspond to bank loans that was also hired in US dollars, the cost of debt considered was the spread of the rating given by Standard & Poor's, given that the detailed information of the rate negotiated for those loans was not available.

The overall cost of debt of Equinor ASA was considered as weighted average of the YTM times the percentage of the total debt traded in the market, and the spread of the rating assigned by the agencies time the amount of debt that corresponded to loans.

Considering that the rating issued by S&P on July 2018 was AA-/Stable, that correspond to a synthetic spread of 0,74% according to Damodaran's database, and that the average YTM of bonds issued was of 4,02%; by computing a weighted average of both tranches of the debt a cost of debt of 3,46% was reached.

5.1.1.5.3 Cost of Equity

The cost of equity was computed using the CAPM model, as a risk-free proxy the most used rate is the 10-year bond. Despite that Equinor ASA's has reported almost 75% of its revenues are allocated in Norway, all of the transactions from their operations are in U.S. dollars as the main currency of commodities prices, which is why the 10-year treasury bond of the United State government was considered to be most suitable indicator of risk-free for this firm, at the data collection point the rate of this bond was 2,91%.

For the market risk premium, the return of the Norwegian stock exchange market, the risk free and the country risk premium (CRP), were considered. The country risk premium of Equinor ASA was estimated as a weighted average of each of the countries where the company has assets allocated, reaching a CRP of 0.90%. The country risk for each of the countries were extracted from Damodaran's data base. The market return of the Norwegian Stock Exchange was 9,78% for 2018.

Country	Country Risk Premium	Assets allocated
Norway	0,00%	46,24%
USA	0,00%	25,76%
UK	0,57%	6,13%
Brazil	3,46%	5,64%
Angola	6,34%	3,86%
Canada	0,00%	2,29%
Azerbaijan	3,46%	1,97%
Algeria	5,19%	1,49%
Other	4,28%	6,63%

Table 6: Country Risk Premium

The beta of the company was derived from data on equity returns, by regression analysis. By conducting a regression of the excess return of the market against the excess return of the stock, we got a raw beta of 1,54. The raw beta yielded by the regression was adjusted by mean reversion, using the Blume adjustment, where the raw beta of the company is assigned weight of 2/3 and the beta of the market is assigned a weight of 1/3. After the adjustment the beta obtained was 1,36.

Using the CAPM model as the approach to reach a cost of equity for Equinor ASA provided a 13,45%.

5.1.1.5.4 Weighted Average Cost of Capital

For the market value of debt, we applied the debt-to-market ratio of the traded bonds to the tranche of debt that is not traded as an estimation of market value of the loans. Taking into account the market value of debt the and the market value of equity, and its respective costs, we arrived at WACC of 10,17%.

5.1.1.6 Equinor ASA Free Cash Flows and Terminal Value

Based on the assumptions discussed in the previous sections the computation of the free cash flow of the firm, are as follows:

<i>(USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
(+) Revenue	\$45,87	\$61,19	\$78,90	\$77,36	\$78,84	\$79,65	\$79,47	\$81,53	\$80,21	\$80,21
(-) Operating Costs	-\$45,79	-\$47,42	-\$59,86	-\$58,69	-\$59,82	-\$60,43	-\$60,29	-\$61,86	-\$60,86	-\$60,86
(*) 1 - Tax Rate	22,00%	34,26%	26,51%	27,07%	19,44%	19,62%	19,64%	19,74%	19,77%	19,82%
= NOPAT	\$0,02	\$4,72	\$5,05	\$5,05	\$3,70	\$3,77	\$3,77	\$3,88	\$3,83	\$3,84
(+) Dep. & Amort.	\$11,55	\$8,64	\$8,74	\$8,56	\$8,73	\$8,82	\$8,80	\$9,03	\$8,88	\$8,88
(-) CAPEX	\$12,19	\$10,76	\$19,79	\$7,07	\$10,17	\$9,60	\$8,62	\$11,02	\$7,61	\$8,88
(-) Changes in WC	\$1,37	\$0,51	-\$3,81	\$1,16	-\$1,09	-\$0,52	\$0,32	-\$0,64	\$0,21	\$0,00
= FCFF	-\$1,99	\$2,10	-\$2,19	\$5,39	\$3,35	\$3,51	\$3,62	\$2,52	\$4,89	\$3,84

Figure 12: Free Cash Flow to Firm

The terminal value was computed using the adaptation of Gordon Growth Model discussed in the Literature Review (*Formula 13*). For the perpetuity growth rate, the estimation was based in the world nominal GDP and the outlook of the oil and natural gas demand for the explicit period, yielding a growth rate of 1,85%.

5.1.2 Real Option Valuation Method

Real option approach was used for the valuation of the proved undeveloped reserves, as an attempt to consider the optionality of this assets, they will exploited or not depending in the price of the underlying asset, in this case the price of Brent oil.

To estimate the total value of the underlying assets, the number of barrels associated to the undeveloped reserve was multiplied by the average Brent oil price for 2018, \$71,09. The cost of developing the reserves would be considered the strike price of the option, taking into account the cost of production per barrel, for the life of the option it is assumed to be the number of years that it will take to deplete the reserve, based on annual production.

The dividend yield was considered to be the net production revenue as a percentage of the values of the asset, as the last input to determine the price the “option”, we estimated the variance of the distribution as the variance of the prices of Brent oil.

Once the value of the reserves was determine using the Black-Scholes pricing model, it was discounted, considering a development lag of three years and the dividend yield. This gave us a total value for the proven undeveloped reserves of \$72,81 billion.

5.1.3 Sum of the Parts

To reach the fair value of the company per share, we used the sum of the part approach, where the value of the current operations was computed using the discounted cash flow approach, and the value of the undeveloped reserves by the real option approach.

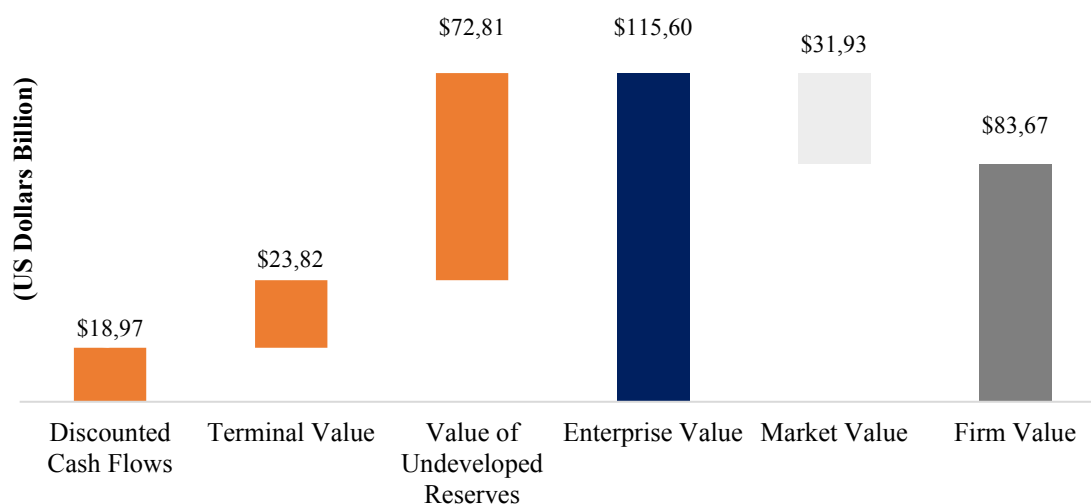


Figure 13: Dissemination of the Firm Value

After subtracting the market value of debt from the enterprise value to obtain the fair value of the firm, it was divided by the number of outstanding shares giving us the fair value per share.

Since the analysis of the historical accounts and its projection were done in US dollars, in order to determine the fair price per share for the Norwegian Stock Exchange, the price given was multiplied by the exchange rate at the data collection point, at the 31st of December 2018 the exchange rate of NOK to USD was kr.8,64, this yielded a price per share of kr.217,23.

5.1.4 Sensitivity Analysis

A sensitivity analysis consists in stressing the value of dependent variables of the model and see how fluctuations in the chosen variable will affect the price of the share. For this model, the analysis was performed in key variables, in particular those variables that are susceptible to a higher degree of volatility, and those that are crucial inputs in the approach used to determine the fair value of Equinor ASA.

The variables included are exchange rate NOK/USD, the terminal growth rate, weighted average cost of capital, and Brent oil prices. The variation from the central case to

determine the optimistic and the pessimistic scenario, different approaches were taken for each of the variable.

In the case of WACC, a sensitivity analysis was performed based in fluctuations in the Market Risk Premium and the Beta (See Appendix 4), from the distribution yielded the 25th percentile was chosen as the pessimistic scenario and the 75th percentile as the optimistic scenario. A similar approach was used for the Terminal Growth, the difference being that the sensitivity was based on fluctuation in oil & gas consumption (See Appendix 5).

For the NOK/USD exchange rate, the pessimistic and optimistic scenario where estimated based in the standard deviation of the changed of the past 10 years. Lastly, given the considerable volatility of Brent oil prices, we decided to put a conservative 10% variation between each of the scenarios.

	Pessimistic	Central	Optimistic
NOK/USD Exchange Rate ($\pm 1\%$)			
Value per share	kr 214,36	kr 217,23	kr 220,81
% Change	-1,32%		1,65%
Terminal Growth Rate (± 2 p.p)			
Value per share	kr 204,27	kr 217,23	kr 238,38
% Change	-5,97%		9,74%
WACC (± 3 p.p)			
Value per share	kr 196,53	kr 217,23	kr 257,12
% Change	-9,53%		18,36%
Brent Oil Prices ($\pm 10\%$)			
Value per share	kr 190,38	kr 217,23	kr 244,85
% Change	-12,36%		12,72%
Average			
Value per share	kr 201,39	kr 217,23	kr 240,29
% Change	-7,29%		10,62%

Figure 14: Sensitivity Analysis

Analysis was made under assumption that the rest of the variables remain constants, in *ceteris paribus* basis. The variation of the metric chosen reached a valuation range of kr. 201,39 to kr. 240,29.

5.2 Relative Valuation

Peer group selection is one of the first steps, and a crucial one to begin a relative valuation using the multiples approach. Equinor ASA's peers were selected based on area of activities, focusing mainly in integrated oil & gas companies, those that were mostly dedicated to refining activities were discarded from the group. The Return on Invested Capital (ROIC) was used as second metric to filter potential peers, as a measure of profitability for the comparable companies.

<i>(USD Billion)</i>	Enterprise Value	Market Capitalization	ROIC	Long-Term Growth
Equinor ASA	\$94,12	\$73,78	11,18%	16,9%
Canadian Natural Resources Ltd	\$60,17	\$0,86	9,00%	34,2%
Occidental Petroleum Corp	\$73,19	\$12,27	7,60%	74,1%
Anadarko Petroleum Corp	\$42,70	\$25,00	8,00%	12,0%
ConocoPhillips	\$76,13	\$54,44	13,37%	120,3%
Total SA	\$137,82	\$57,36	9,54%	19,7%
BP PLC	\$111,55	\$82,20	8,40%	37,1%
Royal Dutch Shell PLC	\$270,20	\$128,39	8,87%	21,5%
Repsol SA	\$35,95	\$145,04	9,15%	5,4%
Exxon Mobil Corp	\$400,52	\$15,16	6,47%	23,2%

Figure 15: Equinor's Peer Group

The main assumptions in the relative valuation approach, is that the value of the firm is based on the value of other, comparable firms that are expected to generate similar cash flows in the future. (Berk & DeMarzo, 2014)

5.2.1 Multiples Valuation

By expressing the value of a firm in terms of a multiple, we can adjust the differences that may be observable among the peers. For the case of Equinor ASA, the two multiples chosen to best reflect the value of the firm where the EV/EBITDAX and EV/Annual Production, already discussed in the literature review.

For the multiple approach, the values used were the forecasted financial metrics for Equinor ASA and its peers. Given that a principle of any valuation is to estimate the value of the firm based its capacity to generate future cash flow, it was logical to use forward-looking multiples.

	EV to EBITDAX	EV to Annual Production
Peer Group's Average	4,53x	\$178,51

Figure 16: Peer group's Multiples

Applying the peer group's multiples to Equinor ASA financial metrics, we reach the enterprise value and in order to obtain the equity value of the firm, the market value of net debt is subtracted.

	EV to EBITDAX	EV to Annual Production
Equinor's value per share (kr.)	227,52	235,77

Figure 17: Equinor's Multiple Valuation

The results from this approach, help to assure the results from the value obtain using the intrinsic valuations methodologies.

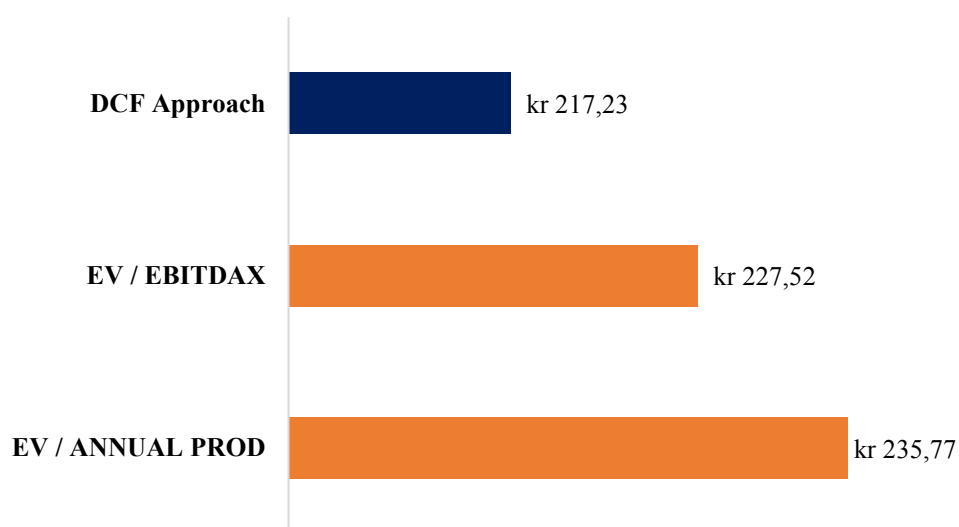


Figure 18: Valuation Summary, Price per Share (Kr./share)

6. Comparison with investment bank

The comparison was made against Handelsbanken valuation issued in July 31st, 2018. The methodologies and main inputs are summarized in the following table:

	This report's Valuation	Handelsbanken's Valuation
Estimated fair price	kr 217,23	Kr 240,00
Recommendation	Hold	Hold
Explicit forecast period	2018-2025	2017-2022
Method - Overall	Sum of the Part	DCF
Cost of equity without CRP	12,55%	7,60%
Overall WACC	10,17%	6,60%
Perpetuity growth rate	1,85%	1,22%

Figure 19: Summary of differences between this report's and Handelsbanken's valuation

Handelsbanken issued a hold recommendation with a target fair-value price of Kr.240 per share, which represented an upside of only 11% from the market price at 31st of July 2018 of Kr.216.60 per share. This recommendation is in line with 33% of the total 34 analysts that cover Equinor ASA issued a hold recommendation, as shown in Figure 20.

Buy	Hold	Sell	Consensus
17	12	4	Overweight

Figure 20: Analyst Recommendation Consensus on Equinor ASA, The Wall Street Journal

One of the main differences between the report is the explicit period chosen, at the moment of Handelsbanken's valuation, only the results of the first quarter of 2018 was available making this year part of the explicit period.

In regards of the approach used for the valuation, there is a slight difference between the report, as we used a sum of the parts approach, where DCF model was used for the current operations and a real option model for the proved reserves, in the case of Handelsbanken's report they value the company as whole was based on the DCF model, in both valuations sales and earnings were forecasted based in historical financial performance and derived from expectation of micro and macroeconomics factors.

The most significant differences are in reference of WACC calculation, despite using the same proxy for the risk-free rate, Handelsbanken used a 2,5% which correspond to the 10-year US Treasury Bond. However, in the case of the equity risk premium it was based

on the return of the NYSE, as the beta used the same benchmark as the equity risk premium. These assumptions can easily explain the differences in the cost of equity and overall WACC of both models, and at the same time the different prices yielded by each of the models. As explained in the previous section, for the computation of equity risk premium and the beta in this report, we took the Norwegian Stock Exchange as the benchmark, given the majority of operations and revenues of Equinor ASA are coming from this region.

Despite all the differences found, the overall conclusion was the same given the point in time in which each of the valuation where done, as both present an upside of around 11% of the fair value reached against the market value, that is not significant enough considering the volatility at which the business is exposed to, both reports stand by a hold recommendation.

7. Conclusion

By applying a DCF approach for the valuation of Equinor ASA, we reach a value per share of Kr.217,23. A hold recommendation is issued, since the upside is only 13,29% from the market price and given the exposure of the company to Brent oil prices volatility, we do not find suitable a buy recommendation, in spite of the potential upside found in the fair value. The assumptions used throughout this model are supported by industry factors, such as the expected trend of oil prices fluctuations, average development lag for fields production, estimation of perpetual growth rate driven by expected increment of oil and gas consumption. Multiple valuation reassures that Equinor ASA is undervalued in respect to its peers. This report has a limitation the assumptions taken throughout the valuation process, despite the sensitivity performed.

Appendixes

Appendix 1: Financial Statements

<i>Balance Sheet I (USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Property, Plants & Equipment	\$59,56	\$63,64	\$76,58	\$75,08	\$76,52	\$77,30	\$77,13	\$79,13	\$77,85	\$77,85
Intangible Assets	\$9,24	\$8,62	\$11,23	\$11,01	\$11,22	\$11,33	\$11,31	\$11,60	\$11,42	\$11,42
Equity Accounted Investments	\$2,25	\$2,55	\$2,72	\$2,64	\$2,55	\$2,48	\$2,40	\$2,32	\$2,25	\$2,18
Deferred Tax Assets	\$2,20	\$2,44	\$3,05	\$3,00	\$3,05	\$3,08	\$3,08	\$3,16	\$3,11	\$3,11
Pension Assets	\$0,84	\$1,31	\$1,15	\$1,10	\$1,06	\$1,01	\$0,97	\$0,93	\$0,90	\$0,86
Derivatives Financial Instruments	\$1,82	\$1,60	\$1,14	\$1,12	\$1,14	\$1,15	\$1,15	\$1,18	\$1,16	\$1,16
Financial Investments	\$2,34	\$2,84	\$2,78	\$2,78	\$2,78	\$2,78	\$2,78	\$2,78	\$2,78	\$2,78
Prepayments and Financial Receivables	\$0,89	\$0,91	\$1,46	\$1,43	\$1,45	\$1,47	\$1,47	\$1,50	\$1,48	\$1,48
Total Non-Current Assets	\$79,13	\$83,91	\$100,11	\$98,15	\$99,78	\$100,61	\$100,28	\$102,61	\$100,94	\$100,84
Inventories	\$3,23	\$3,40	\$3,82	\$3,75	\$3,82	\$3,86	\$3,85	\$3,95	\$3,88	\$3,88
Trade and other receivables	\$7,84	\$9,43	\$11,36	\$11,14	\$11,36	\$11,47	\$11,45	\$11,74	\$11,55	\$11,55
Derivatives Financial Instrument	\$0,49	\$0,16	\$0,28	\$0,28	\$0,28	\$0,29	\$0,29	\$0,29	\$0,29	\$0,29
Financial Investments	\$8,21	\$8,45	\$7,31	\$7,31	\$7,31	\$7,31	\$7,31	\$7,31	\$7,31	\$7,31
Cash and Cash equivalents	\$5,09	\$4,39	\$2,72	\$3,90	\$4,60	\$8,93	\$9,78	\$13,03	\$14,99	\$16,94
Total Current Assets	\$24,86	\$25,82	\$25,50	\$26,37	\$27,37	\$31,86	\$32,67	\$36,32	\$38,03	\$39,97
Assets held for sale	\$0,54	\$1,37	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
<u>TOTAL ASSETS</u>	\$104,53	\$111,10	\$125,61	\$124,52	\$127,15	\$132,47	\$132,95	\$138,93	\$138,97	\$140,81

Balance Sheet II (USD Billion)	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Shareholders' Equity	\$35,07	\$39,86	\$42,67	\$44,19	\$41,89	\$44,30	\$45,43	\$46,63	\$47,84	\$49,15
Non-Controlling Interests	\$0,03	\$0,02	\$0,02	\$0,03	\$0,03	\$0,03	\$0,03	\$0,03	\$0,03	\$0,03
Total Equity	\$35,10	\$39,89	\$42,69	\$44,22	\$41,92	\$44,32	\$45,46	\$46,66	\$47,87	\$49,19
Finance Debt	\$28,00	\$24,18	\$24,69	\$21,70	\$20,57	\$21,75	\$22,31	\$22,90	\$23,49	\$24,14
Deferred tax liabilities	\$6,43	\$7,65	\$9,48	\$9,29	\$9,47	\$9,57	\$9,55	\$9,79	\$9,64	\$9,64
Pension liabilities	\$3,38	\$3,90	\$3,96	\$3,80	\$3,65	\$3,50	\$3,36	\$3,23	\$3,10	\$2,97
Provisions	\$13,41	\$15,56	\$18,80	\$18,43	\$18,79	\$18,98	\$18,93	\$19,43	\$19,11	\$19,11
Derivative Financial Instruments	\$1,42	\$0,90	\$1,21	\$1,18	\$1,20	\$1,22	\$1,21	\$1,25	\$1,23	\$1,23
Total Non-Current Liabilities	\$52,63	\$52,20	\$58,13	\$54,41	\$53,68	\$55,01	\$55,36	\$56,59	\$56,56	\$57,08
Trade, othey payable and provision	\$9,67	\$9,74	\$11,25	\$11,03	\$11,24	\$11,35	\$11,33	\$11,62	\$11,43	\$11,43
Current tax payable	\$2,18	\$4,06	\$9,04	\$8,85	\$9,93	\$10,03	\$10,01	\$10,27	\$10,10	\$10,10
Finance debt	\$3,67	\$4,09	\$2,60	\$3,31	\$6,89	\$5,72	\$5,99	\$6,24	\$6,41	\$6,70
Dividend Payable	\$0,71	\$0,73	\$0,77	\$0,77	\$0,77	\$0,77	\$0,77	\$0,77	\$0,77	\$0,77
Derivatives Financial Instruments	\$0,51	\$0,40	\$1,21	\$1,19	\$1,21	\$1,23	\$1,22	\$1,25	\$1,23	\$1,23
Total Current Liabilities	\$16,75	\$19,02	\$24,87	\$25,14	\$30,04	\$29,09	\$29,31	\$30,14	\$29,95	\$30,24
TOTAL EQUITY AND LIABILITIES	\$104,53	\$111,10	\$125,69	\$123,77	\$125,64	\$128,43	\$130,13	\$133,40	\$134,38	\$136,51

<i>Income Statement (USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Exploration & Production Norway	\$13,08	\$17,69	\$22,65	\$22,21	\$22,63	\$22,86	\$22,81	\$23,40	\$23,03	\$23,03
Exploration & Production International	\$6,66	\$9,26	\$11,99	\$11,75	\$11,98	\$12,10	\$12,07	\$12,39	\$12,19	\$12,19
Marketing, Mid-Stream & Processing	\$44,98	\$59,07	\$76,75	\$75,25	\$76,69	\$77,47	\$77,30	\$79,30	\$78,02	\$78,02
Other	\$0,04	\$0,09	\$0,13	\$0,13	\$0,13	\$0,13	\$0,13	\$0,13	\$0,13	\$0,13
Elimination	-\$18,88	-\$24,92	-\$32,61	-\$31,97	-\$32,59	-\$32,92	-\$32,85	-\$33,70	-\$33,15	-\$33,15
Total revenues and other income	\$45,87	\$61,19	\$78,90	\$77,36	\$78,84	\$79,65	\$79,47	\$81,53	\$80,21	\$80,21
Purchases (net of inventory variation)	-\$21,51	-\$28,21	-\$39,48	-\$38,70	-\$39,45	-\$39,85	-\$39,76	-\$40,79	-\$40,13	-\$40,13
Operating expenses	-\$9,03	-\$8,76	-\$9,64	-\$9,45	-\$9,63	-\$9,73	-\$9,71	-\$9,96	-\$9,80	-\$9,80
Selling, general and administrative expenses	-\$0,76	-\$0,74	-\$0,78	-\$0,76	-\$0,78	-\$0,79	-\$0,79	-\$0,81	-\$0,79	-\$0,79
Depreciation, amortization and impairment losses	-\$11,55	-\$8,64	-\$8,74	-\$8,56	-\$8,73	-\$8,82	-\$8,80	-\$9,03	-\$8,88	-\$8,88
Exploration expenses	-\$2,95	-\$1,06	-\$1,23	-\$1,21	-\$1,23	-\$1,25	-\$1,24	-\$1,28	-\$1,26	-\$1,26
Net operating income (loss)	\$0,08	\$13,77	\$19,04	\$18,66	\$19,02	\$19,22	\$19,17	\$19,67	\$19,35	\$19,35
Net foreign exchange gains (losses)	-\$0,12	\$0,13	-\$0,30	-\$0,30	-\$0,30	-\$0,31	-\$0,31	-\$0,31	-\$0,31	-\$0,31
Interest income and other financial items	\$0,44	\$0,49	\$0,32	\$0,35	\$0,38	\$0,42	\$0,45	\$0,49	\$0,53	\$0,58
Gain (losses) derivative fin instruments	\$0,47	-\$0,06	-\$0,43	-\$0,42	-\$0,43	-\$0,43	-\$0,43	-\$0,44	-\$0,43	-\$0,43
Interest expense	-\$0,98	-\$0,94	-\$0,84	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Impairment loss recognized	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Other financial expenses	-\$0,07	\$0,04	-\$0,18	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Net financial items	-\$1,24	-\$0,35	-\$2,27	-\$1,30	-\$1,37	-\$1,35	-\$1,34	-\$1,35	-\$1,33	-\$1,31
Income/(loss) before tax	-\$1,16	\$13,42	\$16,77	\$17,36	\$17,65	\$17,87	\$17,83	\$18,32	\$18,03	\$18,04
Current Income Tax Expense	-\$4,03	-\$7,81	-\$11,91	-\$11,65	-\$13,08	-\$13,22	-\$13,19	-\$13,53	-\$13,31	-\$13,31
Deferred Tax Expense	\$1,30	-\$1,02	-\$1,03	-\$1,01	-\$1,13	-\$1,15	-\$1,14	-\$1,17	-\$1,15	-\$1,15
Net income / (loss)	-\$3,88	\$4,60	\$3,82	\$4,70	\$3,43	\$3,51	\$3,50	\$3,62	\$3,56	\$3,57

<i>Cash Flow Statement (USD Billion)</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Income for the period	-\$3,88	\$4,60	\$3,82	\$4,70	\$3,43	\$3,51	\$3,50	\$3,62	\$3,56	\$3,57
DD&A	\$11,55	\$8,64	\$8,74	\$8,56	\$8,73	\$8,82	\$8,80	\$9,03	\$8,88	\$8,88
Inventories	-\$0,73	-\$0,17	-\$0,42	\$0,07	-\$0,07	-\$0,04	\$0,01	-\$0,10	\$0,06	\$0,00
Trade and other receivables	-\$1,17	-\$1,59	-\$1,94	\$0,22	-\$0,21	-\$0,12	\$0,03	-\$0,30	\$0,19	\$0,00
Trade and other payables	\$0,33	\$0,07	\$1,51	-\$0,22	\$0,21	\$0,11	-\$0,03	\$0,29	-\$0,19	\$0,00
Deferred tax and Tax receivables and payables	-\$1,72	\$2,85	\$6,19	-\$0,32	\$1,21	\$0,17	-\$0,04	\$0,43	-\$0,27	\$0,00
Others	\$0,92	\$0,04	-\$0,33	-\$0,08	-\$0,14	-\$0,12	-\$0,10	-\$0,13	-\$0,07	-\$0,09
(Increase) decrease in net derivative financial instruments	\$1,31	-\$0,08	\$1,46	-\$0,02	\$0,02	\$0,01	\$0,00	\$0,03	-\$0,02	\$0,00
Cash flow from operations	\$6,61	\$14,37	\$19,02	\$12,92	\$13,17	\$12,34	\$12,17	\$12,86	\$12,15	\$12,37
Capital expenditure	-\$10,72	-\$10,76	-\$19,79	-\$7,07	-\$10,17	-\$9,60	-\$8,62	-\$11,02	-\$7,61	-\$8,88
Intangible assets	\$0,21	\$0,62	-\$2,61	\$0,22	-\$0,21	-\$0,11	\$0,03	-\$0,29	\$0,19	\$0,00
Investments in associated companies	-\$1,42	-\$0,31	-\$0,17	\$0,08	\$0,08	\$0,08	\$0,08	\$0,07	\$0,07	\$0,07
Financial investments	-\$0,01	-\$0,50	\$0,06	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
(Increase) decrease in current financial investments	\$1,61	-\$0,24	\$1,14	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Other	\$0,50	\$1,27	\$4,61	-\$0,37	\$0,35	\$0,19	-\$0,04	\$0,49	-\$0,31	\$0,00
Cash flow from investing	-\$9,83	-\$9,91	-\$16,76	-\$7,13	-\$9,94	-\$9,44	-\$8,56	-\$10,75	-\$7,66	-\$8,81
Free cash flow	-\$3,22	\$4,47	\$2,27	\$5,79	\$3,23	\$2,90	\$3,61	\$2,11	\$4,49	\$3,56
Net proceeds from debt issuance	-\$0,62	-\$3,40	-\$0,98	-\$2,28	\$2,45	\$0,00	\$0,82	\$0,84	\$0,77	\$0,94
Dividends paid	-\$1,92	-\$1,53	-\$2,30	-\$2,30	-\$2,30	-\$2,30	-\$2,30	-\$2,30	-\$2,30	-\$2,30
Repurchase of shares and other equity transactions	-\$0,03	-\$0,02	-\$0,01	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Unrealized (losses)/gains on securities	\$0,00	-\$0,06	\$0,06	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Other comprehensive Income	-\$0,37	\$0,10	\$0,01	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Cash flow from financing activities	-\$2,94	-\$4,92	-\$3,21	-\$4,58	\$0,15	-\$2,29	-\$1,47	-\$1,46	-\$1,53	-\$1,36
Currency translation differences	-\$0,17	-\$0,38	-\$0,23	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Change in cash and cash equivalents	-\$6,33	-\$0,84	-\$1,18	\$1,21	\$3,38	\$0,60	\$2,14	\$0,65	\$2,96	\$2,19

Appendix 2: Energy Outlook

Primary Energy Consumption (Mill toe)	1970	1980	1990	2000	2010	2020	2030	2040	Average annual change 2000-2040
Oil	2.252,97	2.985,75	3.152,50	3.579,58	4.021,41	4.563,94	4.863,89	4.835,58	0,88%
Gas	890,02	1.291,47	1.767,44	2.181,72	2.874,25	3.534,25	4.148,30	4.706,51	2,89%
Coal	1.482,76	1.812,74	2.246,41	2.384,72	3.635,64	3.697,04	3.821,24	3.761,60	1,44%
Nuclear	17,73	160,96	452,97	584,28	625,91	673,65	772,13	911,67	1,40%
Hydro	265,82	384,56	487,49	601,11	778,67	1.014,73	1.159,92	1.241,11	2,66%
Renewables	2,31	6,82	35,02	59,02	234,11	794,05	1.551,89	2.526,99	104,53%

Commodities Price Forecast	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Brent Price (\$/barrel)	\$71,09	\$69,13	\$70,62	\$71,43	\$71,25	\$73,32	\$72,00	\$72,00
West Texas Intermediate (\$/barrel)	\$66,37	\$61,05	\$64,38	\$65,09	\$65,51	\$66,83	\$70,00	\$70,00
Henry Hub Price (\$/mmBtus)	\$2,90	\$2,90	\$3,10	\$3,30	\$3,40	\$3,55	\$3,75	\$3,90
National Balancing Point (£/therm)	£0,60	£0,61	£0,57	£0,53	£0,53	£0,53	£0,53	£0,54

Appendix 3: Extended Peer Group

Company Name	Enterprise Value (\$ USD Bn)	Market Capitalization (\$ USD Bn)	ROIC	Long Term Growth
Equinor ASA	\$94,12	\$73,78	11,18%	16,90%
YPF SA	\$17,65	\$0,67	3,60%	-6,40%
Canadian Natural Resources Ltd	\$60,17	\$0,86	9,00%	34,20%
Frontera Energy Corp	\$1,83	\$5,40	0,00%	0,00%
Marathon Oil Corp	\$19,32	\$5,46	2,75%	0,00%
Encana Corp	\$19,80	\$11,45	0,00%	46,00%
Galp Energia SGPS SA	\$19,81	\$11,94	23,90%	19,90%
Apache Corp	\$24,27	\$12,24	0,00%	127,60%
Occidental Petroleum Corp	\$73,19	\$12,27	7,60%	74,10%
Devon Energy Corp	\$34,32	\$14,74	1,00%	63,00%
Exxon Mobil Corp	\$400,52	\$15,16	6,47%	23,20%
Anadarko Petroleum Corp	\$42,70	\$25,00	8,00%	12,00%
OMV AG	\$27,48	\$25,40	29,70%	3,80%
Chevron Corp	\$273,43	\$29,83	6,43%	58,10%
Hess Corp	\$18,39	\$37,19	1,87%	0,00%
NK Lukoil PAO	\$46,13	\$48,40	14,65%	0,00%
ConocoPhillips	\$76,13	\$54,44	13,37%	120,30%
Eni SpA	\$93,48	\$57,29	8,73%	27,70%
Total SA	\$137,82	\$57,36	9,54%	19,70%
Petroleo Brasileiro SA Petrobras	\$0,00	\$72,67	0,00%	24,10%
BP PLC	\$111,55	\$82,20	8,40%	37,10%
Royal Dutch Shell PLC	\$270,20	\$128,39	8,87%	21,50%
Repsol SA	\$35,95	\$145,04	9,15%	5,40%
Gazprom PAO	\$98,36	\$195,37	10,20%	11,70%
PetroChina Co Ltd	\$340,40	\$214,87	7,14%	35,80%
Ecopetrol SA	\$63,85	\$241,70	40,00%	0,00%
Premier Oil PLC	\$3,01	\$313,47	3,00%	0,00%

Appendix 4: Sensitivity Weighted Average Cost of Capital (WACC)

WACC		Market Risk Premium												
		2,81%	3,81%	4,81%	5,81%	6,81%	7,81%	8,81%	9,81%	10,81%	11,81%	12,81%	13,81%	14,81%
Beta	0,76	3,34%	3,90%	4,46%	5,03%	5,59%	6,15%	6,71%	7,27%	7,83%	8,39%	8,95%	9,51%	10,07%
	0,86	3,47%	4,11%	4,75%	5,38%	6,02%	6,65%	7,29%	7,92%	8,56%	9,19%	9,83%	10,46%	11,10%
	0,96	3,61%	4,32%	5,03%	5,73%	6,44%	7,15%	7,86%	8,57%	9,28%	9,99%	10,70%	11,41%	12,12%
	1,06	3,74%	4,52%	5,31%	6,09%	6,87%	7,66%	8,44%	9,22%	10,01%	10,79%	11,57%	12,36%	13,14%
	1,16	3,87%	4,73%	5,59%	6,44%	7,30%	8,16%	9,02%	9,87%	10,73%	11,59%	12,45%	13,31%	14,16%
	1,26	4,00%	4,93%	5,87%	6,80%	7,73%	8,66%	9,59%	10,53%	11,46%	12,39%	13,32%	14,25%	15,19%
	1,36	4,13%	5,14%	6,15%	7,15%	8,16%	9,16%	10,17%	11,18%	12,18%	13,19%	14,20%	15,20%	16,21%
	1,46	4,27%	5,35%	6,43%	7,51%	8,59%	9,67%	10,75%	11,83%	12,91%	13,99%	15,07%	16,15%	17,23%
	1,56	4,40%	5,55%	6,71%	7,86%	9,02%	10,17%	11,33%	12,48%	13,63%	14,79%	15,94%	17,10%	18,25%
	1,66	4,53%	5,76%	6,99%	8,22%	9,44%	10,67%	11,90%	13,13%	14,36%	15,59%	16,82%	18,05%	19,28%
	1,76	4,66%	5,96%	7,27%	8,57%	9,87%	11,18%	12,48%	13,78%	15,09%	16,39%	17,69%	18,99%	20,30%
1,86	4,79%	6,17%	7,55%	8,92%	10,30%	11,68%	13,06%	14,43%	15,81%	17,19%	18,57%	19,94%	21,32%	
1,96	4,92%	6,38%	7,83%	9,28%	10,73%	12,18%	13,63%	15,08%	16,54%	17,99%	19,44%	20,89%	22,34%	

Appendix 5: Sensitivity Terminal Growth Rate

Terminal Growth Rate		Oil Production												
		321.859	328.428	335.130	341.970	348.949	356.070	363.337	374.237	385.464	397.028	408.939	421.207	433.843
Gas Production	298.313	1,85%	1,84%	1,83%	1,82%	1,81%	1,80%	1,79%	1,77%	1,76%	1,74%	1,73%	1,71%	1,70%
	304.401	1,86%	1,85%	1,84%	1,83%	1,82%	1,81%	1,80%	1,78%	1,77%	1,75%	1,74%	1,72%	1,71%
	310.614	1,87%	1,86%	1,85%	1,84%	1,83%	1,82%	1,81%	1,79%	1,78%	1,76%	1,75%	1,73%	1,72%
	316.953	1,88%	1,87%	1,86%	1,85%	1,84%	1,83%	1,82%	1,80%	1,79%	1,77%	1,76%	1,74%	1,73%
	323.421	1,89%	1,88%	1,87%	1,86%	1,85%	1,84%	1,83%	1,81%	1,80%	1,78%	1,77%	1,75%	1,74%
	330.022	1,90%	1,89%	1,88%	1,87%	1,86%	1,85%	1,84%	1,82%	1,81%	1,79%	1,78%	1,76%	1,75%
	336.757	1,91%	1,90%	1,89%	1,88%	1,87%	1,86%	1,85%	1,83%	1,82%	1,80%	1,79%	1,77%	1,76%
	346.859	1,92%	1,91%	1,90%	1,89%	1,88%	1,87%	1,86%	1,85%	1,83%	1,82%	1,80%	1,79%	1,77%
	357.265	1,94%	1,93%	1,92%	1,91%	1,90%	1,89%	1,88%	1,86%	1,85%	1,83%	1,82%	1,80%	1,79%
	367.983	1,95%	1,94%	1,93%	1,92%	1,91%	1,90%	1,89%	1,88%	1,86%	1,85%	1,83%	1,82%	1,80%
	379.023	1,97%	1,96%	1,95%	1,94%	1,93%	1,92%	1,91%	1,89%	1,88%	1,86%	1,85%	1,83%	1,82%
	390.393	1,98%	1,97%	1,96%	1,95%	1,94%	1,93%	1,92%	1,91%	1,89%	1,88%	1,86%	1,85%	1,83%
	402.105	2,00%	1,99%	1,98%	1,97%	1,96%	1,95%	1,94%	1,92%	1,91%	1,89%	1,88%	1,86%	1,85%

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