Handelshøyskolen BI - campus Bergen

BTH 36201

Bacheloroppgave - Økonomi og administrasjon

Bacheloroppgave

Bachelor Thesis - Valuation Norway Royal Salmon

Navn:	Julian Hove

Utlevering:	11.01.2021 09.00
Innlevering:	02.06.2021 13.00

Bachelor Thesis

at

BI Norwegian Business School

Valuation of Norway Royal Salmon ASA

BTH 36201 – Bachelor Thesis - Business Administration

Disclosure date:	11.01.2021
Filling date:	02.06.2021
BI Bergen	

"This bachelor thesis is a part of the studies at Handelshøyskolen BI. This does not imply that Handelshøyskolen BI vouch for the methods used, the results obtained, or the conclusions drawn."

Preface

This thesis is the final part of my bachelor's degree in business administration at BI Norwegian Business School.

The valuation of Norway Royal Salmon has been time-consuming, challenging, frustrating, and very rewarding. The thesis is based on the theoretical framework that I have to acknowledge during my time at BI. One of the most interesting things during the process was to use the theory in practice. This has given me a really good understanding of how investors make their decisions in real life.

I would like to thank my supervisor, Johnny Olesen, who has been available during the whole process, giving advice, critics, and constructive feedback.

At least, I would like to thank my fellow students for some wonderful years at BI, for our academic discussions, memories, and laughter.

Thank you.

Julian Hove.

Summary

This bachelor thesis is a valuation of the Norwegian fish farming firm, Norway Royal Salmon (NRS). The purpose is to estimate the fundamental value of NRS' equity and their fair value per share.

The fish farmers in Norway need licenses to farm. These licenses are granted from the Norwegian government with maximum allowed biomass (MAB). The strategic analysis shows that the future for fish farming and the global consumption of salmon is looking very bright.

NRS's performance in the historical period is satisfied as they have performed over average compared to its peers in many of the years in the different ratios. The historical period is also the fundament for the forecast with some adjustments due to the assumed market conditions.

The calculation of WACC is based on some assumptions and recommendations from well-known professors. The main valuation approach is the DCF model. This method is the most common approach in valuation, but it needs supplements. The supplements used are multiples and a Monte Carlo simulation.

The calculated WACC ended up at 6,13% with an assumed terminal growth rate of 2%. The DCF model is based on a forecasted period of nine years and the estimated enterprise value ended up at 12.702 MNOK. After subtracting the net interest-bearing debt, the estimated market value of equity is 11.186 MNOK as of 01.01.2021. The Monte Carlo simulation claims that the market value is, with 75% certainty, between 8.347 MNOK and 15.057 MNOK.

Taking the DCF model, Monte Carlo simulation, and the multiples to mind, it seems that NRS is undervalued in the market. It was only the P/E multiple that recommends selling the NRS share, the other multiples and approaches recommend buying the NRS share.

Therefore, I have concluded that the NRS share is undervalued in the market and the investor which has the desire to maximize profitability should buy the share.

Table of content

1.0 Introduction

1.1 Purpose

The purpose of this bachelor's thesis is a complete valuation of the fish farming company Norway Royal Salmon ASA, from here, NRS. The main purpose is to value the equity of NRS, with the part purpose of determining if an investor should hold, buy, or sell an NRS share, traded at the Oslo Stock Exchange.

The valuation in the following thesis is based on historical accounting numbers for NRS, together with a strategic analysis based on the possibilities that NRS and the fish farming industry have, as of the valuation period. The forecasted cash flows are discounted so it is possible to value the equity, and what the share price should be.

The decisions and preconditions in the following thesis only depend on public information. As of that, the valuation's outcome is affected by the preconditions, limitations, and information presented in the analysis in the thesis.

1.2 Problem statement

I have chosen valuation to be able to use the theoretical framework that I have learned during my bachelor's degree in the real market. Valuation is an interesting and challenging subject, and this will provide me with greater knowledge on how professionals are making their investment decisions, based on analysis.

The following problem statement for this bachelor thesis is:

> *"What is the fundamental value of the equity of Norway Royal Salmon ASA, as of 01.01.2021?"*

The first problem statement leads to a sub-problem statement, and it is:

> *«Should an investor, with the desire to maximize profitability as only motivation, hold, sell, or buy NRS shares, as of 01.01.2021?"*

1.3 The thesis' limitations

The valuation is based on historical data from 2014 to 2020. The historical data from the period regards NRS, and for the other companies which are analysed in the thesis. The financial data published before 2014, and after the accounting year of 2020, is not considered for the analysis in the following thesis.

1.4 The thesis' structure

The first chapter presents the general fundament for this bachelor thesis, with its problem statement, purpose, and limitations. Chapter two is an introduction to NRS, the fish farming industry, and other important factors for NRS. Chapter three gives an overview of the internal- and external factors which affect NRS's operations and their organisation of the firm. Chapter four is about the methodology on how the thesis is build up with survey design and other factors which need to be considered with the analysis of the firm.

Chapter five is about financial statements and how the accounting quality and a reformulation of the financial statements. It is done a financial statement analysis of NRS's historical performance compared to its peers.

The theoretical foundation for the valuation is presented in chapter seven. This chapter discusses different academic books and different economist perspectives on how a valuation should be done, how the different components should be calculated, etc. The forecast is presented in chapter eight and chapter nine is about calculating WACC, which is a continuing of chapter seven.

The valuation is presented in chapter ten with both the present value approach and relative valuation approach. Chapter 11 is about sensitivity analysis and a Monte Carlo simulation is performed to provide a more precise value of the equity. Chapter 12 gives a recommendation and answers on the problem statement.

Chapter 13 presents the weaknesses of the thesis's sources of information. The full view of the different appendices which is used is presented in chapter 14 and chapter 15 shows the different figures and tables in a more structured way.

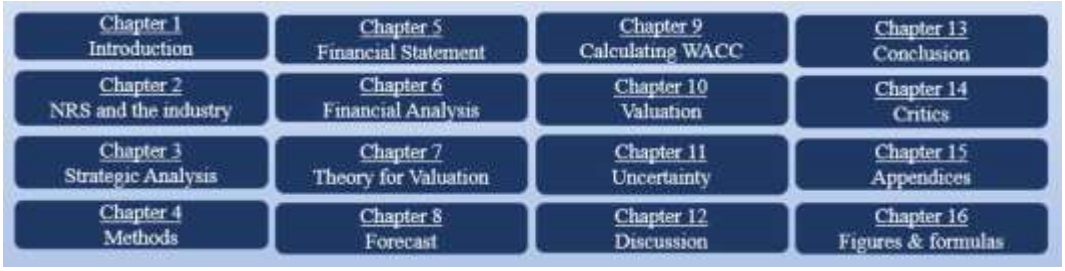


Figure 1 - Thesis structure

2.0 NRS and the fish farming industry

2.1 NRS

NRS was founded in 1992 by 34 fish farming companies as a sales and marketing company for farmed salmon. NRS took over 90,1% ownership in Reinhartsen Seafood AS and changed its name to NRS Sales AS. At the same time, NRS established its own investment company - Salmon Invest AS. Over the next eight years, NRS purchased minors' shareholdings in various aquaculture companies. NRS, NRS sales, and Salmon Invest merged back in 2003.

In 2006, NRS completed their first private placement, which resulted that NRS raised gross proceeds of 50 MNOK. In 2007, an acquisition of Feøy Fiskeoppdrett AS, Åmøy Fiskeoppdrett AS, and Nor Seafood AS was a reality. As NRS grew, they completed their second private placement, as they collected 100 MNOK. As of the same year, NRS acquired four other companies. The year later, NRS was awarded four new licenses. In 2010, NRS converted from a private to a public limited liability company. As 2011 followed, NRS raised gross proceeds of 46,1 MNOK because of the public offering. NRS got listed at Oslo Stock Exchange the same year.

In the following years, NRS has grown rapidly. They made a private placement and sale of treasury shares in which the company raised gross proceeds of 43,4 MNOK. NRS got awarded ten new green licenses as of 2014. NRS got 50% ownership in Arctic Fish EHF, because of an acquisition.

The government rewards places where the facilities for fish farming are in a specific environmental condition. NRS acquired 1 351 tonnes in the maximum allowed biomass (MAB), through a new traffic light system, developed by the government in 2018. NRS' development of Arctic Offshore Farming facilities granted NRS 5 990 tonnes MAB. The year later, NRS sold region south at an

enterprise value of 1 240 MNOK. During 2019 and 2020, NRS increased their groups' credit facilities dramatically, as NRS also has converted parts of their loans to green loans.

2.2 Arctic Offshore Farming

The Directorate of Fisheries granted NRS 8 development permits, with a total of 5 990 MAB for the development of Arctic Offshore Farming. The permits are a result of a long and good development process where NRS and Aker Solutions have developed a semi-submersible offshore fish farm designed for harsh areas. The location will provide increased area for utilisation of Norwegian sea waters and reduce the environmental footprints as it is located so far away from the coast. According to the NRS annual report for 2020, the industrial ambition is to combine knowledge from the fish farming industry with offshore expertise to develop the aquaculture industry of the future and secure sustainable growth.

2.3 Traffic light system

To secure a controlled and well-planned growth in the industry, Norway's Ministry of Trade and Industry has allowed a net national production increase of between 22.000 and 23.000 tonnes per year for the country's salmon and trout farmers under the "traffic light" growth regulation system (Fishfarmingexpert, 2021). Each firm that operates in the green areas is offered a 6 percent growth in MAB. One percent is sold at a fixed price and it is set to 156 000 NOK per tonne. The maximum possible offering is six percent due to rules and regulations.

Figure 2 - Traffic light system

All of NRS's production capacity is located in Troms and Finnmark, and these locations are considered as the best conditions for salmon farming – both concerning profitability and future growth.

2.4 NRS performance

Figure 3 - Region North

As NRS have had increased its revenues for many previous years, 2020 had a turn. Their operating revenues decreased by 8.4% and ended up at 5.12 billion NOK. The decrease in revenues can be explained by a low salmon price and the pandemic COVID-19. NRS sold their region south in 2019, therefore, all their facilities are located in northern Norway. This is strategic, as the environmental conditions are better further up towards northern Norway. Region North is in Troms and Finnmark, with a total MAB at 36 085 tonnes. As of 2020, NRS' sold 88 908 tonnes, which is a decrease of 1,08% from 2019, but they harvested the same amount as they did in 2019.

2.5 Production of salmon

The lifecycle of an Atlantic salmon is expected to last for around 3 years and can be divided into three different stages: 1) Eggs 2) Smolt and 3) Atlantic Salmon.

The first stage is when the salmon is only tiny eggs, the eggs are fertilized before they are hatched. This process, which takes around 1 to 1.5 years, appears in freshwater facilities and the eggs are now smolt. The smolt is transported into cages in the sea. These cages are their home until they are harvested. It takes between 1 and 2 years until it reaches satisfied harvest size, which is approximately 5 kilograms. The process of harvesting salmon goes on through the whole year. The demand and salmon prices fluctuate and it is, therefore, hard to say when the best time for harvesting is, but the fourth quarter is usually the most profitable quarter of the year (Laks, 2021).

2.6 The industry and markets

The salmon industry in Norway has a large impact on the global market for salmon. The Norwegian production of salmon is considered the largest in the world with over 50% of the global harvest. As a repercussion of the growing

demand for Norwegian salmon in the last couple of years, the harvest has increased as well. The most important factor for a fish farming company is their license since no license leads to no salmon. The industry is heavily regulated, and each company needs to be awarded a license based on ethical and environmental requirements. The licenses are awarded by the government, as they also are given to the highest bidder (Fiskeridirektoratet, 2021).

The fish farming industry, seen as one, is in growth. There is nothing that indicates that the growth shall stop in the closest future. The global demand for salmon increases each year, therefore salmon is such an important product for the fish farming industry (Kontali, 2020a).

The environmental conditions for producing salmon have their criteria. Biological facilities such as sea level temperature, stable water temperature, and other natural conditions need to be in order to produce salmon. Therefore, there are few producers of farmed fish, as Norway and Chile stand for over 70% of the global harvest. The long Norwegian coastline is quite similar to Chile's coastline, and that is a competitive advantage in this industry (Kontali, 2020). According to NRS's annual report of 2020, the desire to eat healthily and the increased focus on sustainable food production leads to high demand for salmon in Europe and the USA.

The world's largest salmon farmer is MOWI, former Marine Harvest, measured in volume. Lerøy Seafood Group, SalMar, and Cermaq are considered as the following three behind MOWI, all Norwegian fish farming companies. As of the 2019 harvested volume, NRS is considered the 19th largest salmon farmer in the world (Ilaks, 2021).

2.7 Fish Pool

Fish Pool ASA is established as an international, regulated marketplace for buying and selling financial salmon contracts. Fish Pool ASA is licensed by the Norwegian Ministry of Finance to operate as a regulated marketplace for commodity derivates with fish and seafood as underlying products. Fish Pool ASA does not offer physical trading of fish or salmon. Their cooperative partner, Nasdaq OMX, takes care of the clearing services (Fish Pool, 2021).

2.8 Land-based farming

Land-based farming could be many years away from being profitable, but one after one is being established in Norway, and many more are likely to occur. There are a lot of smaller companies with different types of technological solutions, which indicates that the field is in its starting phase and that there is not *one* technology for this type of fish farming.

Land-based fish farming is developed with Recirculating Aquaculture System, also referred to as RAS. The fish is farmed in a controlled and traceable environment and there is no use of any type of antibiotics to clean the fish from lice or other types of diseases, but with the same outcome. The waste from the fish tanks can be used as fertilizer for the farmers.

The environmental footprints will disappear if this technology sees the light of the day. This type of farming can occur anywhere in the world, therefore, countries that do not have the environmental criteria in order can also be fish farmers, and the need of transporting fish from Norway to the US, i.e., will disappear. Fish farming on land will be reduced by 50% if this technology is implemented (MOWI, 2021).

It is very expensive to establish land-based farming and the investors are not convinced that this is a profitable investment. The investment requires investments for over billions of NOK during the establishing phase. The requirement for capital does not stop there, it also needs capital after the establishment phase, and due to the uncertainty of how profitable the investment can be, there is a lack of investors who are willing to take the risk.

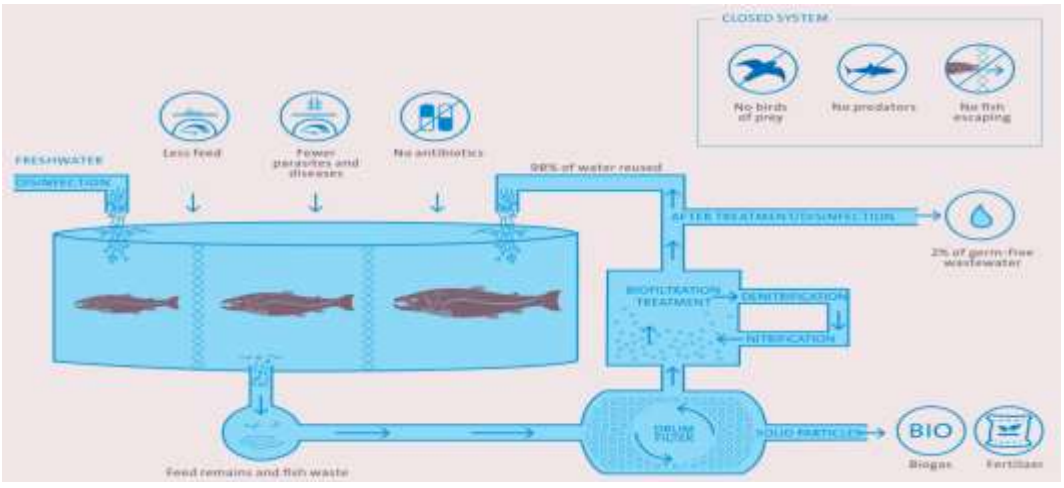


Figure 4 - Illustration of land-based fish farming

3.0 Strategic Analysis

The main purpose of a strategic analysis is to understand if the historical trends and current level analysed above will continue. History tends to repeat itself, but not always, so just prolonging current trends would probably lead to wrong results (Petersen, Plenborg, Kinserdal, 2017, p. 268).

The strategic analysis includes both internal and external analysis to provide a greater understanding of NRS's strategic position, how their operational activities are organized, and how the macroeconomic factors affect their business. The result is more accurate future cash flows.

The VRIO framework is used to analyse the internal resources that NRS processes, and if they are well organized so NRS can have the capability to make them their long-term competitive advantages. The macroeconomic factors that affect the market and industry are presented in the PEST analysis while the competitive rivalry in the industry is presented with Porter's Five Forces model. What is discovered by the analyses is summed up in the SWOT analysis.

Internal Analysis

3.1 Value Chain analysis

According to Porter (1998), a value chain analysis is a description of all the activities within and around a firm and relating them to an estimation of the competitive strength of the firm, compared to the rest in the industry.

The value chain analysis describes both the primary and supporting activities of a firm. The identification and understanding of the primary activities are crucial when determining the competitive advantages of a firm (Petersen, et, al., 2017, p. 274). Porter (1998) describes how the primary activities create value directly to the end-user. However, the supporting activities could be more important by looking for competitive advantages, than the primary activities are. Another important point of view is that the primary activities need their supporting activities to be functional.

Petersen, et al., (2017) demonstrates the importance of a benchmark, combined with a value chain analysis. This provides the analyst with an efficient tool to evaluate the competitive advantage of a firm or where the specific firm needs to improve its performance.

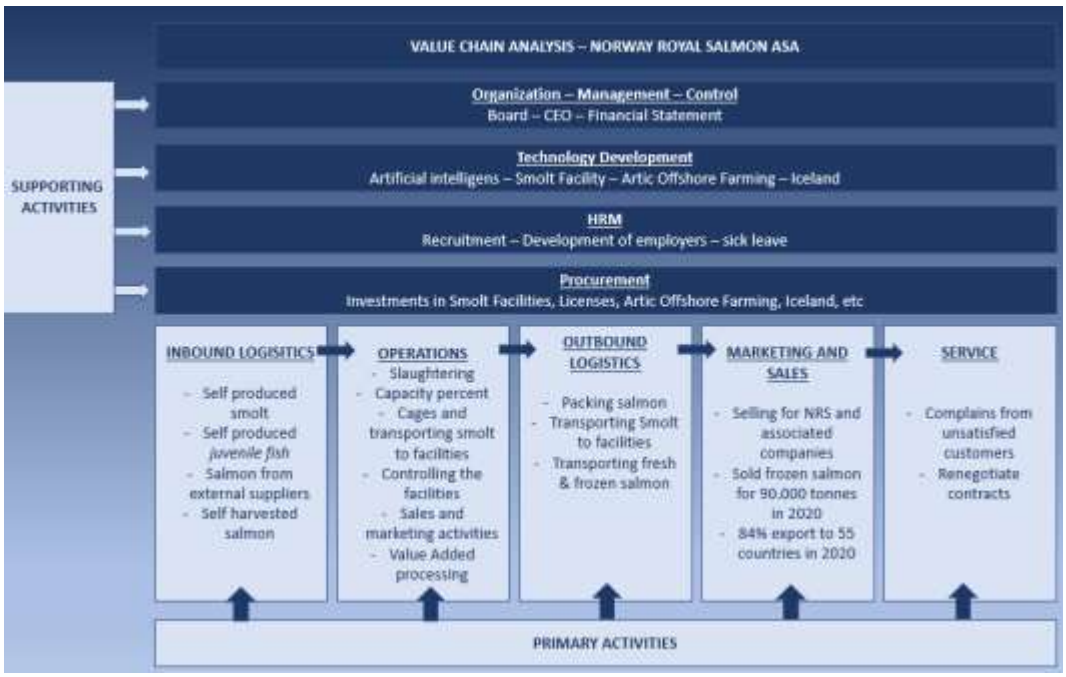


Figure 5 - Value Chain Analysis

NRS' peers in this thesis have performed significantly better than NRS by looking at both gross profit and harvested volume. The average gross profit in 2020 ended up at 44,76%, but NRS only managed to get a gross profit of 14,16%. Also, they harvested less than all the others, by far. The median for its peers ended up at 96 937 tonnes. NRS is over three times as small as this median with its 30 509 tonnes.

3.2 VRIO

The VRIO analysis is a tool to analyse the firm's uniqueness of resources and capabilities. The search for competitive advantages could be easier if the available resources and the uniqueness of those resources are analysed. The organization must have the competence to use its competitive advantage, otherwise, it is of no use. This framework is used to analyse the value of the strategic resources. VRIO stands for *value* as if the resource results in an excess return if exploited. *Rarity* as if the resource is unique or in the hands of relatively few. *Imitability* as if the resource is difficult or costly to obtain, develop or duplicate. *Organisation* as if the organisation is organised, ready, and able to exploit the resource (Petersen, et al., 2017, p. 275).

A benchmarking of a firm's most important resource to its peers is an excellent way of determining the strength and uniqueness of key resources. The customers must find the firm's resources as valuable if the firm wants to build competitive

advantages. A firm's resources can be divided into *financial-, human-, physical- and organizational resources.*

3.2.1 Financial resources

According to the annual report for 2020, NRS's equity ratio ended up at 53,8% as of 31.12.2020. This ratio has been fluctuating between 39% and 72% for the last 6 years, dependent on the investments NRS has made. NRS's performance based on revenues has been increasing for the last couple of years, except 2020, where they had an 8% decrease. NRS' has made some large investments in 2019 which needed to be financed with some debt.

The more debt, the more unfavorable if the interest rate increases. The financial resources in the fish farming industry are the definition of survival. NRS' financial position is well organised, but not unlike the standards for the rest of the firm's in the industry, thus, this do not provide any competitive advantage since it is easy to imitate.

NRS's equity ratio is over its peers average from 2016 to today's date, and it is therefore considered that their financial position is strong, but it is not unusual in the industry.

Year	2014	2015	2016	2017	2018	2019	2020
NRS	30,9 %	41,0 %	82,8 %	56,6 %	71,8 %	92,6 %	48,7 %
Average	*42,4 %*	*44,2 %*	*61,8 %*	*63,9 %*	*66,4 %*	*59,5 %*	*41,6 %*

Figure 6 - Equity ratio

3.2.2 Human resources

According to the annual report 2020, the employees are their most valuable resources. NRS values Human Relations (HR) and Health and Safe Executive (HSE) very high, as they want safe and stable employment. HSE has the highest priority in NRS, and their HSE vision is no injuries on personnel, environment, and equipment. The management contains experienced people within both aquaculture, economics, and management. Their competence, together with their employees are valuable, but not unique. It can be discussed that it is unique since every individual is special. It is hard, almost impossible to measure how imitable the competence is, the decision ends up as rare and inimitable, and leads to a temporary competitive advantage.

3.2.3 Physical resources

NRS has been investing in new facilities to gain more control over the value chain. They have invested in their smolt facility which can produce approximately 2 400 tonnes each year. This will increase their capacity and decrease their overall costs (NRS Annual Report, 2020). NRS owns 50% of Artic Fish, which is in perfect conditions for fish farming in Iceland. Their most important investment is Arctic Offshore Farming, which is an offshore fish farming platform in a condition suitable for salmon. There will be two cages, with a total of 5 990 MAB. This technology takes fish farming to a new dimension and is therefore considered rare and imitable,

3.2.4 Organizational resources

With the development of the smolt facility, NRS has more control of the value chain. The control is from when the eggs are fertilized and till the salmon is harvested. Thus, this resource is considered as well organized and valuable, but it is imitable. Most of the fish farming companies have control of the value chain to reduce cost and gain economies of scale, therefore this resource is not considered rare.

External analysis

3.3 PEST analysis

The PEST framework is detecting the macro-factors that may affect a firm's cash flow potential and future risk. The framework includes the impact of four factors: political, economic, social, and technical factor (Petersen, et al., 2017, p. 271). This tool is simple and very common to help firms analyse the four factors stated above.

3.3.1 Political factors

The fish farming industry has its limitation due to their licenses. No license, no farming. These licenses are awarded by the government, and many factors need to be fulfilled to be granted licenses. The Directorate of Fisheries issues licenses that give each firm permission to produce salmon, given the assumption that it contributes to local and national value creation, as the ethical- and environmental rules are followed.

According to the annual report of 2020, NRS export around 84% of their produced salmon to the global market, and the toll fees do have its impact on a firm like NRS. Since NRS operates in the global market, NRS needs to adjust the different toll fees, tax rates, or changes in other relevant fees. This is hard to predict due to the high uncertainty in the geopolitical factors.

3.3.2 Economic factors

The key interest rate given by the Norwegian bank is set to 0,00% (28.05.2021) due to the major effect Covid-19 has had on the Norwegian economy. The market interest rate is affected quite positively since the key interest rate is historically low. A repercussion of a low key interest rate is this often leads to investment activities due to lower interest rates on loans (Norges Bank, 2021). Since NRS export most of its salmon to the global market, a high global purchase power leads to higher demand and NRS can expand its production.

Inflation has been affecting the prices in the market. Inflation is measured by the consumer price index which describes the change in the consumer price index for services and goods which is demanded by Norwegian households (SSB, 2021). The Norwegian monetary is to keep the growth in the consumer price index close to 2% each year, over time.

The global gross domestic product, from now on GDP, was estimated to decrease by 2,5% in 2020 due to Covid-19. The historical average for the last two decades has been 4%. Since the global GDP was -2,5% for 2020, it is only 1982 who has lower ratio since 1960. The GDP is expected to increase by 4% in 2021. China is the largest buyer of Norwegian salmon, has rebounded faster than expected, as 2020 got slowed down by 1%, which is the lowest since 1980. The private household consumption of salmon has increased during the pandemic, and there is no indication that this trend shall decrease, according to Global Economic Prospects (2021).

Thus, it is reasonable to believe that the global demand for salmon will increase, even as the prospects in general or the global economy are uncertain (Global Economic Prospects, 2021).

3.3.3 Sociocultural factors

NRS's core values are that they shall produce high-quality salmon for everyone and take more control over the value chain – by being *committed by name*. As for

NRS and any other firm, if they deliver products that the customer likes, or better than they expected, they will increase their value to the brand.

As the world's population increases, the demand for food is going to increase in the future. The middle class is growing in large emerging markets, and it allows more people to eat differently, and more nutritious, protein-rich food, such as fish. Since salmon is such a healthy product due to its high contains proteins, omega-3, vitamins, and minerals, it is only beneficial to eat more salmon (MOWI, 2021).

Fish farming is one of the most climate-friendly forms of animal husbandry. The fish farming industry shall not have any impact on the seabed, as it is being followed by the governments. The biological footprints from fish farming are tiny, compared with land-based food production.

The increased demand for Norwegian salmon in the Japanese sushi market has had its impact. Since this leads to global awareness by other markets, it also helps the fish farming industry's reputation (Aperitif, 2021). The fish farming industry has its environmental impact as the escaped salmon destroys the wild salmon's population, or as the fish farming companies release antibiotics or other chemicals for taking care of the lice, destroys for the other species in the area.

NRS investment in Arctic Offshore Farming is a strategic way to deal with these environmental damages. The environment in the north, where Arctic Offshore Farming is located, is less exposed to salmon lice which leads to fewer chemicals, and a healthier environment, and the result is higher quality on the salmon.

3.3.4 Technological factors

NRS is a growing company, and their investment in Artic Offshore Farming will be efficient as research shows how harsh environment/strong water resistance and salmon weight are correlated. Increased water resistance will increase the body weight of the salmon by 8% (Eriksen, 2020). The researcher, Marit Bjørnevik, explains how this could increase the revenues with 1-2 MNOK, with each cage. It is not only profits, as the increased costs of pumping water to the cages with oxygen need to be taken into mind as well.

Land-based fish farming is moving rapidly in the Norwegian market as its benefits eliminate the challenges sea-based farming got. There will be no escaped salmon or environmental pollution due to the control of the inlet and outlet of the water.

The downside to this type of development is the large investments, operational cost, and high fish mortality. Also, if this type of farming breaks through, the competitive advantage that Norway got with its coastline and environment, will be lost as salmon can be produced anywhere.

The Norwegian government awards a large amount of the state budget each year for research and other goods which will help Norway to maintain its position as the leading seafood nation in the world (MOWI, 2020).

3.4 Porter's five forces

An analysis of the rivalry among existing competitors provides the analyst with an understanding of the level of competition in the industry. The competition is measured by the threats of potential substituting products, threats of potential entrants, bargaining power of buyers, and bargain power of suppliers. If competition is tough, it tends to affect returns negatively. Competition or rivalry occurs because one or more competitors either feel the pressure or see the opportunity to improve their position in the market (Petersen, et al., 2017, p. 272).

3.4.1 Threat of potential entrants

The industry is regulated due to its licenses. These licenses need to be awarded by the directorate of fisheries and to be awarded licenses each fish farming company needs to fulfill some criteria. As of the limitation of licenses, the industry is protected by this. No license, no farming. The industry is characterized by some large companies with large and modern farming facilities combined with the latest technology. By adding a large need of capital for the establishment, the industry got large barriers which make the smaller companies less competitive. Thus, the larger and well-established companies an advantage by the economy of scale.

The potential threat could come from fish farming on land, as they minimize the threat from diseases that occur at the seashore and in the ocean. This part of fish farming is only in its early phase in Norway, but its possibilities are huge. Norway implements the idea from Denmark by developing the largest facilities in the country (NRK, 2020). This type of investment in fish farming takes years of cash flow to generate profitably and the technology is in its early phase, which weakens the threat, for now. Taking these factors in hand, the threat is considered low.

3.4.2 Threats from substitutes

Substitutes limit the potential return of an industry because high returns in an industry will make substitutes more attractive. The possible risk of substituting products can occur if someone has the potential to improve the price-performance relation relative to current products in the industry or if the products are produced by industries earning high returns (Petersen, et al, 2017, p. 272-273).

It can be discussed if chicken, pork, or cattle is potential substitutes for salmon, as they are other sources of protein. An objection to this is the difference in utility value for the end-user. The advantage salmon got, compared to the three potential substitutes is the source of omega 3. Farmed salmon is considered a homogeneous product, as it does not matter which company it comes from. Thus, the customers switching costs are therefore low. The threat from substitutes is considered low.

3.4.3 Bargaining power of buyers

According to Petersen, et al., (2017), the bargaining power of buyers provides the analyst an understanding of the relative strength between buyers and the industry.

As presented above, the switching cost is low since the customers easily can switch the different providers of salmon and protein sources. Low switching costs and large numbers of customers indicate high bargaining power, in addition to the high numbers of substitutes and the homogeneous characteristics salmon got, I find it reasonable to consider the bargaining power of buyers as high.

3.4.4 Bargain power of the suppliers

If suppliers have the bargaining power over the participants in an industry, they can squeeze the profitability of the industry by raising the prices or lowering the quality of the products or services being offered (Petersen, et al., 2017, p. 273).

The fish farming industry is highly dependent on some products which their suppliers supply to deliver top-quality salmon. Since NRS produces their smolt, it is mainly medicining for diseases. There are many suppliers in the markets, thus, the suppliers find it hard to increase prices. The source of fish food is lower on the other hand, which leads to a stronger bargaining power for the suppliers. It is reasonable to conclude that the bargaining power of suppliers is moderate**.**

3.4.5 Competitive rivalry

As presented above, there are several producers of farmed salmon in the international market, and there are many of the same size as NRS. The differentiation in the industry is characterized as low, and the suppliers offer the same products, thus, the switching cost for the customers is low. By looking at these factors, the only way to compete is usually on price. Since the industry is dependent on the spot- and forward prices, it is another barrier to differentiate. The margins are low, and if some competitors want to expand, large investments are needed. Summed all together, the rivalry in the industry is considered high.

3.5 SWOT

A summary of the internal and external analysis is presented in the SWOT matrix. The external analysis such as PEST analysis and Porter's Five Forces lead to a better understanding of NRS's opportunities and threats. The internal analysis for NRS leads to a better understanding of the strengths and weaknesses.

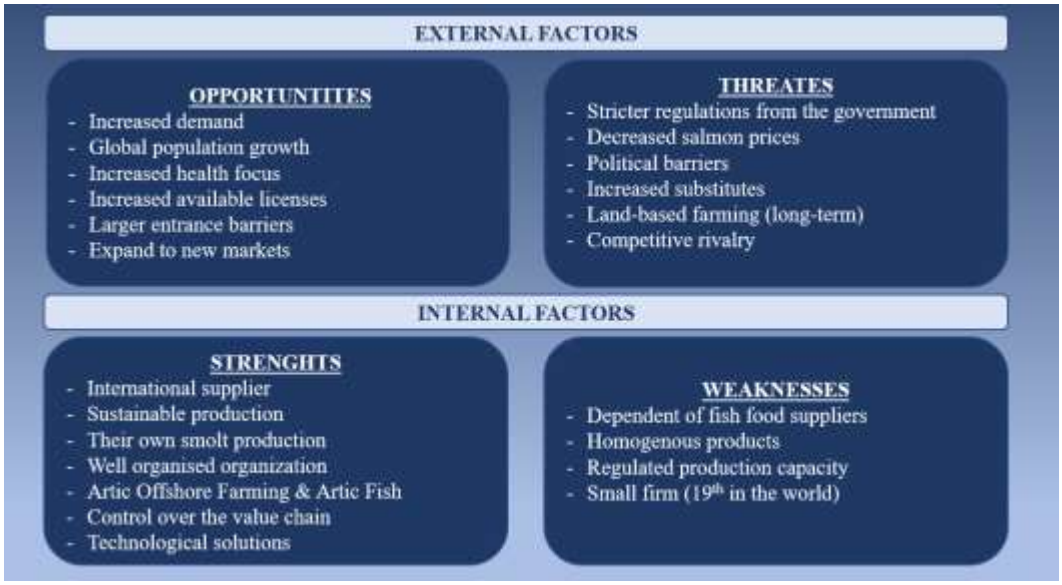


Figure 7 – SWOT

4.0 Methods

I will present how the research method is done and how I have collected data for my problem statement. Gripsrud, Olsson & Silkoset (2017) explain that method is often defined as a planned procedure. The procedure shall provide the analyst with an overview of how to organize, understanding, and analysing data.

The two most common approaches to collect data are qualitative- and quantitative methodology. The qualitative methodology has its strengths when it questioned: *what, why, and how?* On the other hand, the quantitative methodology provides answers on *how many*? (Gripsrud, et al., 2017, p. 204). My problem statement presented in this thesis is a quantitative methodology as I want to provide an answer to what the actual value on NRS' equity is, and what the fair value of the NRS stock is.

4.1 Primary- and secondary data

According to Gripsrud, et al., (2017), secondary data is collected by others for another purpose and primary data is collected by the analyst himself by interviews, observations, surveys, etc. The primary data is collected to answer a precise problem statement. The large benefit of secondary data is that it is already collected, and this saves time. Since this type of data is collected for another purpose, the validity is reduced (Gripsrud, et al., 2017, p. 69).

Secondary data includes often raw data and published summaries. The raw data must be analysed more as it does not provide the analyst any information in its raw form. Secondary data is divided into both external and internal sources. The annual reports and other public documentation or reports required by the law are considered as internal sources in this thesis and the external sources are the data collected from Kontali, the Norwegian Bank, and other sources which have a connection with the fish farming industry and related to the thesis. The used sources are presented in the appendices.

4.2 Validity & reliability

The two concepts, reliability & validity, are used to say something about the quality of the research. The purpose is to provide information on how well the method, technique, or test measures what they are to measure. We can say that reliability is about the consistency of the measurement and validity is how accurate the measurement is (Gripsrud, et al., 2017, p. 61).

It is important to understand that reliability and validity are closely related, but they mean different things. If a measurement is reliable it is not sure that the same measurement is valid, but on the other hand, if the measurement is valid, it is often reliable.

Even how well the measurement is planned; it should not be taken for granted that it measures the exact phenomenon that it is supposed to measure. This is also referred to as systematic failure.

4.3 Survey Design

The survey design is determined by how much we know about a specific subject, combined with the thesis's purpose. It is necessary to have different tools to measure and analyse the different questions that this thesis raises. It is, according to Gripsrud, et al., (2017), common to divide into three different survey designs: 1) exploratory 2) descriptive and 3) causal. These three types can only be used in different ways, as they have different purposes.

Exploratory research is most commonly used when the researcher wants to investigate a problem that is not precise or clear. The purpose is to understand the underlying factors for the existing problem. The exploratory research alone will not solve the problem.

Descriptive research is the method that describes the common characteristics of the specific population or the phenomenon that is studied. It is used when the researcher's purpose is to describe the phenomenon which is studied. This method is used on subjects or phenomena where the researcher has a basic understanding of the problem.

Causal research is used when the researcher wants to explain the cause-and-effect relationship between variables. This method studies a phenomenon or situation to determine the patterns of relationship between the variables in the study.

A lot of the calculations in this thesis are based on assumptions. As the main purpose is to determine NRS' stock price and NRS' fundamental value. Each individual has their assumptions, and it is, therefore, an unknown process from the beginning. Thus, I find it natural to determine the thesis as exploratory research.

4.4 Preparations

The preparation stage is mostly about acquiring knowledge about the exact phenomenon. This valuation thesis is based on a public listed firm, and its content is built up of publicly available information. One important factor to write a thesis like this is that there must be enough public information available. By public information, it is the relevant curriculum literature, financial articles, and research

literature. The need for reliable sources of information has been very crucial for the outcome of the thesis. The previous work in the financial field has had an impact on the thesis structure and the different types of literature have given me a helping hand on the best valuation models for my thesis.

4.5 Analysis of data

The valuation presented in this thesis is based on multiple financial and strategic analyses. The financial analysis contains the most important and common approach in valuation, the discounted cash flow model (DCF). The model provides me with the answer on what the fundamental value of the firm is, and therefore it answers the problem statement for the thesis.

The Bloomberg terminal at school has been a useful tool to collect valid and good enough data for the industry and NRS's peers. The terminal made the valuation less time-consuming and more accurate.

The assumption is based on the growth potential of NRS, how I assume the market will look in the future, how the global economy will change, and so on. These are factors that affect the output of the valuation. The assumption is based on my research for data in respective articles, books, interviews, and other financial literature.

5.0 Financial Statement

The financial statement is the most reliable source since it is audited by an independent auditor and must be in compliance with accounting standards. It has certain requirements set by the stock exchange, national law, and accounting standards. If these requirements are not met, the firm may receive fines or be prosecuted (Petersen, et al., 2017, p. 29-48).

According to the annual report of 2020, NRS' financial statements have been prepared in accordance with the Norwegian Accounting Act of 1998, International Financial Reporting Standards (IFRS), and generally accepted accounting practice in Norway. The consolidated financial statements have been prepared on a going concern basis.

5.1 Accounting quality

Accounting quality is defined by a more complete, neutral, and free from error and provides more useful predictive or confirmatory information about the firm's underlying economic position and performance (Petersen, et al, 2017, p. 461). Good accounting quality depends on the type of user. There are three types of users according to Petersen, et al., (2017). The equity-, the debt- and compensation-oriented stakeholder. Some firms may have different motives for the manipulation of their financial statements. This could be the blurring of poor management, performance-related pay, debt-covenants, capital market issues, and so on. The quality should be prepared in accordance with good accounting policies. The information in the financial reports should contain a high level of information so there are no suspects that the firm is hiding some information. Since NRS's financial statement is prepared with the guidelines with IFRS[1], I find it very hard to believe that it does not reflect the financial position of NRS.

5.2 Reformulating the financial statements

To prepare the financial statements for analysing economic performance, you need to reorganize the items on the balance sheet, income statement, and statement of cash flows (Koller, Goedhart & Wessels, 2015, p. 169). The purpose of separating accounting items into operation and financing is to highlight the sources of value creation, which will be useful to most of a firm's stakeholders (Petersen, et al., 2017, p. 136).

A firm consists of operating, investing, and financing activities. It is beneficial to separate operations from financing activities. The distinction between operating items and financial items is not always easy to make. This is because *operations* are not defined clear or that the notes in the financial statements are not sufficiently informative. A rule of thumb is that it is a financing item if interest-bearing or requires a return.

The reformulation of financial statements deals with something called special items. This could be difficult to determine if it belongs to financing or operations. These special items could be - gains and losses from sales of non-current assets,

[1] IFRS stands for International Financial Reporting Standards, at they set common rules for financial statements so they can be consistent, transparent and comparable around the world.

restructuring cost, rental income and expenses from property, write-down, and so on. The special items are usually classified under operations, as they often are related to the firms' core business.

5.2.1 The analytical income statement

The analytic income statement requires every accounting item to be classified as belonging to either operation (O) or finance (F). The purpose of dividing the accounting items in this way is to obtain a better knowledge of the different sources of value creation in a firm (Petersen, et al., 2017, p. 111).

Petersen, et al., (2017) claims that investments in associated companies should be classified as an operating item *if* it is a part of the firms' core business. If it is not a part of the core business, it should be considered as financial and be subtracted when calculating net-interest debt.

According to the previous annual reports, income from associated companies is related to NRS' core business and is therefore classified as operational. Since the numbers from the annual reports are after-tax, I have added the tax expense by calculating the effective tax rate.

During 2019, NRS' region south was sold for over 1,2 billion NOK. This is a non-recurring item, which is unusual and not a part of the regular business. This is not a part of the regular business since NRS does not sell their regions regularly. This is also affecting the effective tax rate as this changes the rate significantly, thus, it is not considered further while reformulating the income statement.

Since corporation tax is positively affected by net financial expenses, it is necessary to add back the tax advantage that the net financial expenses offer, this is also defined as the tax shield.

$$\text{Effective taxrate} = \frac{\text{Corporation tax x 100}}{\text{EBIT}}$$

Formula 1 - Effective tax rate

	2014	2015	2016	2017	2018	2019	2020
Gross profit	424 521	503 477	993 413	1 048 696	947 956	1 000 170	724 986
EBITDA	219 285	272 201	755 575	749 941	652 216	642 789	345 451
EBIT	177 873	218 504	694 512	667 878	575 666	555 985	244 704
NOPAT	129 847	159 508	520 884	507 588	443 263	433 668	190 869
Net income	111 267	136 296	506 034	492 292	427 436	411 542	165 018

Figure 8 - Summary reformulated income statement

5.2.2 Revenues and costs

NRS' revenues relate to the harvesting and selling of salmon. Their revenues come from their facilities or their associated companies' facilities. From the consolidated income statement, there are no *non-recurring items*, and their revenues are considered normal.

The cost of goods sold includes everything that costs from the smolt to harvested salmon and it is therefore considered normal. The wages are related to the daily operation, but the pension is according to Koller, et al., (2015) a non-operating current liability. It is, therefore, reasonable to categorize this as financial. Other operating expenses are also related to the core businesses and are therefore classified as operational.

5.2.3 Biological assets

The biological assets are valued under IAS 41[2], and they are recognized and measured at fair value by IFRS 13. Since there is no efficient market for sales of live fish, it is very hard to estimate a value. Therefore, along with other practitioners, this financial item is classified as abnormal due to the volatility in the salmon price.

5.2.4 The analytical balance sheet

To match the items in the analytical income statement with the related items in the analytical balance sheet, items marked as operating (O) and financing (F) activities in the income statement, must be marked the same way in the balance sheet (Petersen, et al., 2017, p.114).

The reformulation of the balance sheet provides the analyst with information about net operating non-current assets (NONCA), operating current assets (OCA), operating liabilities (OL), i.e. These ratios are used to calculate net operating working capital (NOWC). The main purpose is to create net operating assets/invested capital (NOA), which is NOWC together with NONCA.

Invested capital/net operating assets represent the amount a firm has invested in its operating activities and which requires a return (Petersen, et al., 2017, p. 114).

[2] IAS 41 agriculture sets out the accounting for agricultural activity – the transformation of biological assets into agricultural produce. The standard generally requires biological assets to be measured at fari value less costs to sell.

5.2.4 Tax

The accounting item corporation tax is the sum of the tax paid, tax payable, and change in deferred taxes for the year – this however is often classified as tax payables in the balance sheet (Petersen, et al., 2017, p. 117). These are connected to the core business of NRS and are therefore considered as operational current liabilities.

5.2.5 Cash and cash equivalents

This post is according to Petersen, et al., (2017) considered as excess cash which can be paid out as dividends, buy back own shares, or used to repay debt without affecting the underlying operations. Some of the cash should ideally be included in operating assets, which requires a return, but this often gives unprecise estimates. This post has been 3,19% in percent of revenues from 2014 to 2020, and it is interest-bearing. Therefore, it is reasonable to classify this as financial.

5.2.6 Leasing

The leasing activities are according to NRS annual report for 2020 classified as interest-bearing and connected to long-term contracts. I find it natural to classify these as long-term interest-bearing debts.

The total assets in the balance sheet are divided into operating non-current assets (ONCA), financial assets (FA), and operating current assets (OCA). Equity and debt are defined as total equity (E), interest-bearing debt (IBD), and operating liabilities (OL) - OL contains operating current liabilities (OCL) and non-current operating liabilities (NCOL).

The ONCA and NCOL create net operating non-current assets (NONCA). OCL subtracted from OCA creates net operating working capital (NOWC). NONCA minus NOWC provides us with invested capital/net operating assets (NOA). Net interest-bearing debt (NIBD) is created by subtracting FA from IBD.

6.0 Financial Analysis

Historical financial numbers are a useful tool while estimating the future of the firm. The following analysis is based on both the income statement and the balance sheet.

The analysis contains historical data from 2014 to 2020. It is important to analyse the historical performance of NRS isolated, and to its peers, therefore, it is made

benchmark to firms in the Norwegian salmon farming industry. The historical data is collected from the Bloomberg Terminal as it was less time-consuming than analyse every financial report from 2014 to 2020 for each firm. The following fish farming firms are in the benchmark: MOWI, SalMar, Bakkafrost, Lerøy Seafood, Grieg Seafood, and NRS.

NRS is presented with the yellow line and the average for its peers is presented with the red line to make a clear distinction between them.

6.1 Profitability analysis

Historical profitability is an important element in defining the future expectations for a firm (Petersen, et al., 2017, p.139). Further, Petersen, et al., (2017) claims that it is fundamental to understand the profitability of the firm's operations, as this provides information about the sustainability of the business model and how well it is managed.

6.2 Return on Assets

Return on Assets (ROA) provides information on how profitable a company is relative to its total assets. This ratio is most accurate while comparing similar firms to each other. ROA is, according to Baksaas & Hansen (2015), the assets can be used to create a result that can be distributed to the equity and liabilities that have financed the firm.

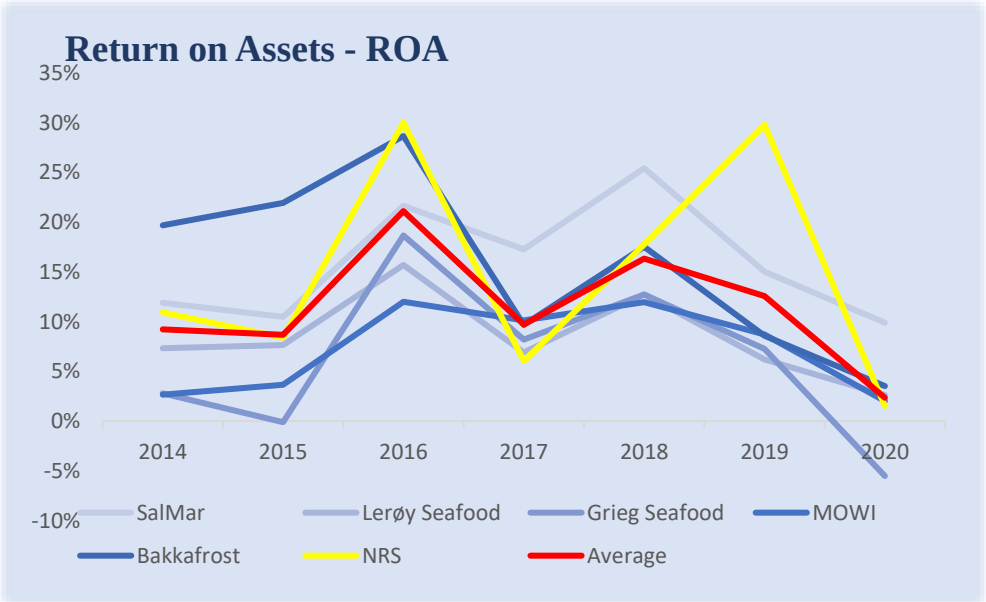


Figure 9 - Return on Assets

The results from the analysis show that NRS has performed at a significantly higher level compared to its peers in 2016 and 2019, as they increased dramatically during those years. This indicates that NRS's performance has been very effective compared to its peers.

A satisfactory level is hard to say, but since the fish farming industry is, according to Damodaran (2018), seen as a capital intensive industry, and NRS' average has been at around 15% for the historical period, versus the industry benchmarks 12%, it is reasonable to say that NRS performance is satisfied.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

Formula 2 - Return on Assets

6.3 Return on Equity

Return on Equity (ROE) measures owners' accounting return on their investments in a firm (Petersen, et al., 2017, p.168). Further, the ROE measures the profitability of the firm as it takes both operating and financial leverage into account. The firm needs less capital from its shareholders if the ROE ratio increases over a period, thus, ROE is can be seen as an efficiency ratio.

$$ROE = \frac{\text{Net Income}}{\text{Average shareholders Equity}}$$

Formula 3 - Return on Equity

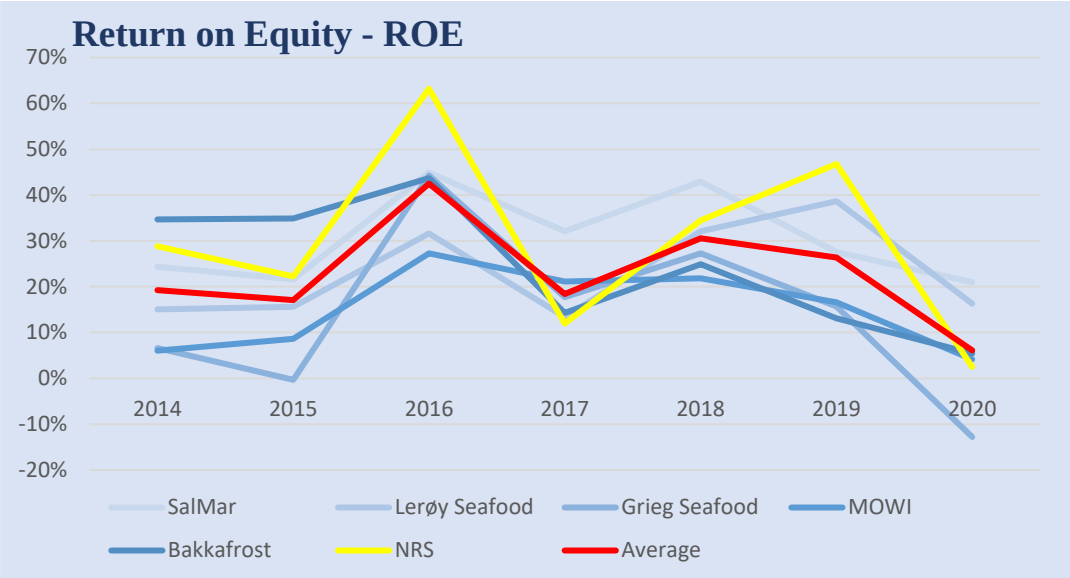


Figure 10 - Return on Equity

NRS' ROE has been both increased and decreased dramatically over the historical period, but has been greater than the industry benchmark as an average. As we can see in the figure above, every firm in the industry benchmark is affected by the pandemic as this led to a decrease for every firm and Grieg ended up with a negative ROE in 2020.

6.4 Return on Invested Capital

Return on Invested Capital (ROIC) measures the profitability of the operations. The ratio is more suitable than EBIT or NOPAT when measuring the profitability of a firm's operations. This ratio measures the *actual* return is at a satisfactory level compared to its investor's required rate of return (Petersen, et al., 2017, p.142). ROIC is calculated by dividing NOPAT by the average invested capital.

$$ROIC = \frac{NOPAT}{\text{Average Invested Capital}}$$

Formula 4 - Return on Invested Capital

NRS historical ROIC is close to the average of the industry's benchmark, but it has been decreasing for the last four years as the figure below shows. It is also very important to set ROIC up against WACC as this is the rate of return above what is required if ROIC is larger than WACC.

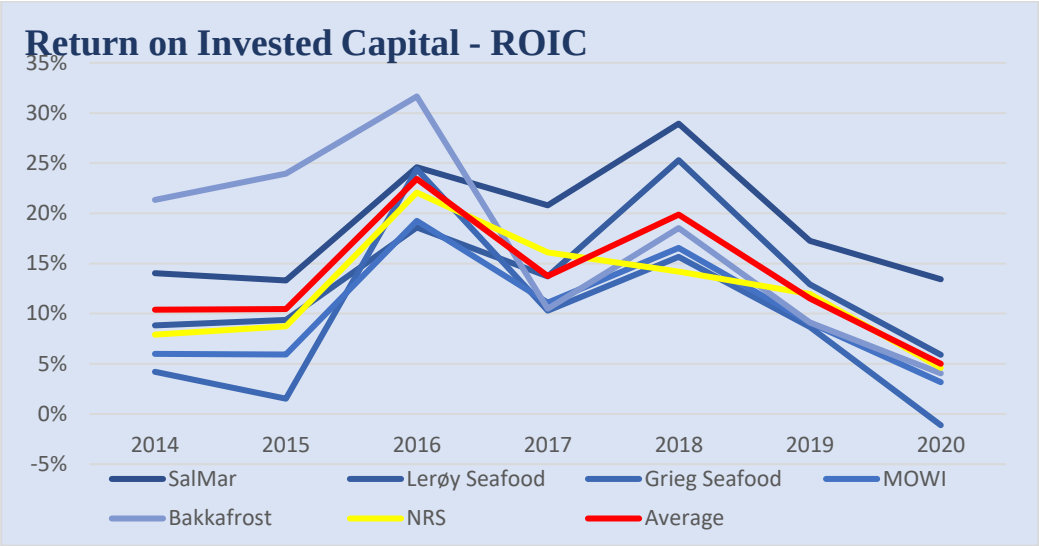


Figure 11 - Return on Invested Capital

NRS has created a higher rate of return than what is required during the whole historical period with 2020 as an exception. However, it was only SalMar from the peers who presented an ROIC higher than WACC for 2020.

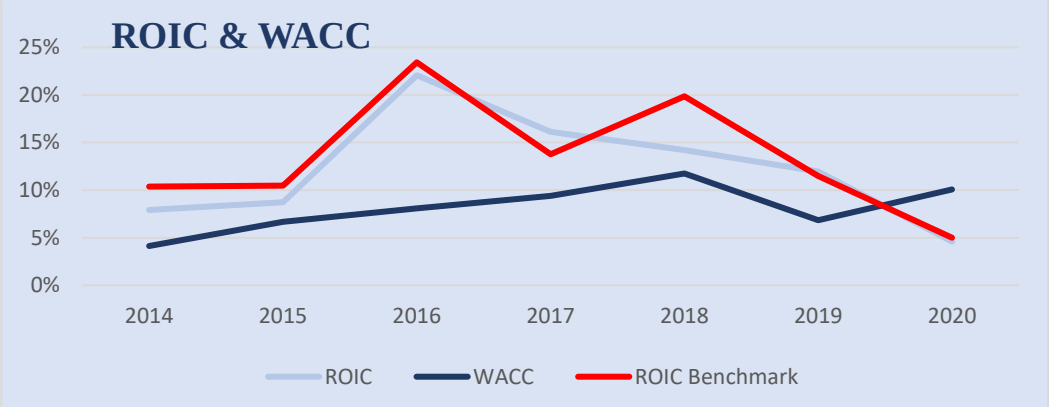


Figure 12 - Return on Invested Capital & Weighted Average Cost of Capital

There are some pitfalls in the interpretations of ROIC, according to Petersen, et al., (2017), as it can be differences in accounting policies, the average age of assets, differences in systematic risk, and the product lifecycle. However, there might be some differences in the accounting policies and the systematic risk, but it is assumed that the average age of assets and the product lifecycle is similar as they operate in the same industry and most firms use linear depreciation for external reporting purposes (Petersen, et al., 2017, p.148).

6.5 Liquidity analysis

Liquidity is crucial for any business since it, according to Petersen, et al., (2017) measures how well a firm can pay its bills or carry out profitable investments or in worst cases, lead to bankruptcy if the firm lacks liquidity. The firms' ability to generate positive net cash flows in both long- and short-term influences the firm's liquidity, but it is important to understand that the short- and long-term liquidity risk are not the same, but they are a measurement of a firm's ability to pay its debt in time.

6.6 Long-term liquidity

By looking at the long-term liquidity risk, there must be a good balance between equity and long- and short-term financing, corresponding to the nature of the assets and the risk of operations (Petersen, et al., 2017, p.216).

$$\text{Debt to Equity} = \frac{\text{Total liabilities}}{\text{Total shareholders equity}}$$

Formula 5 - Debt to Equity

Equity ratio and financial leverage provide identical information about the long-term liquidity risk (Petersen, et al., 2017, p. 218). It is recommended by both Koller, et al., (2015) and Petersen, et al., (2017) to use market value if it is possible, and Bloomberg Terminal provides me with the most accurate market values. I have used the ratio of debt to equity as a measurement for financial leverage.

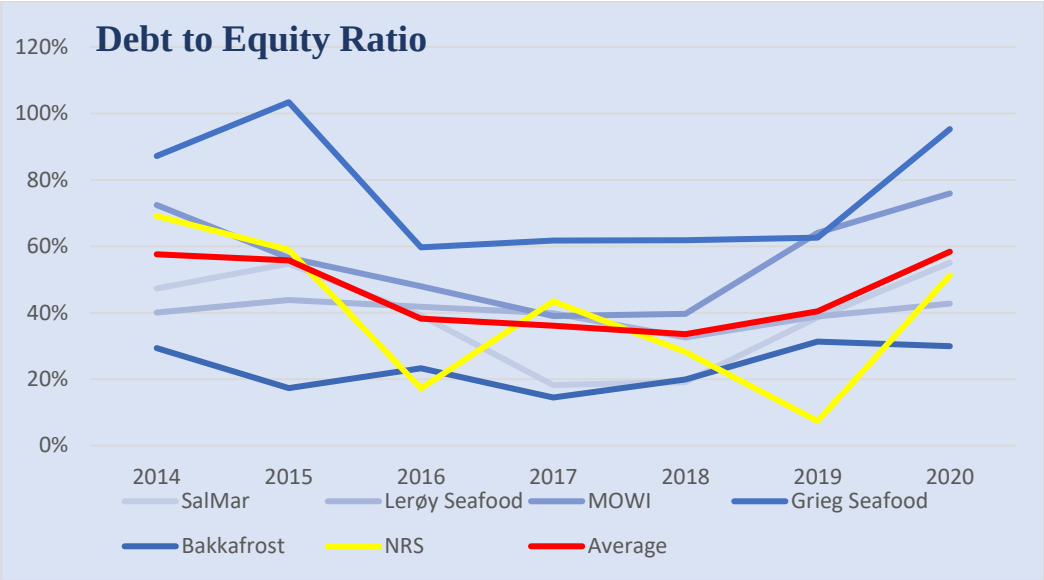


Figure 13 - Debt to Equity

NRS' is very normal, as the debt-to-equity is not unlike the industry benchmark. This could implicate that NRS's investment rate has not been any aggressive compared to its peers. On the other hand, Grieg Seafood has been over the benchmark for the whole period and Bakkafrost has been under the industry benchmark.

6.7 Short-term liquidity

The short-term liquidity risk is the same as the long-term but in a short-term perspective. There are several arguments about what is a satisfactory level since the purchases of goods results in accounts payable, thus, a firm will usually be able to refinance its current operating liabilities as long as it continues its business. The operating profit will be negatively affected if the current operating assets are sold, and not repurchased but used to pay current liabilities, for example. Therefore, it is hard to use a rule of thumb for the ratio level. The satisfactory level is driven by different industries, as capital intensive industries, as NRS operates in, need a significantly higher ratio than firm's that deliver services, for example.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Formula 6 - Current Ratio

The ratio is calculated by dividing the firm's current assets by the firm's current liabilities. The ratio is an indicator of how well managed the firm is to pay off its debt with its assets.

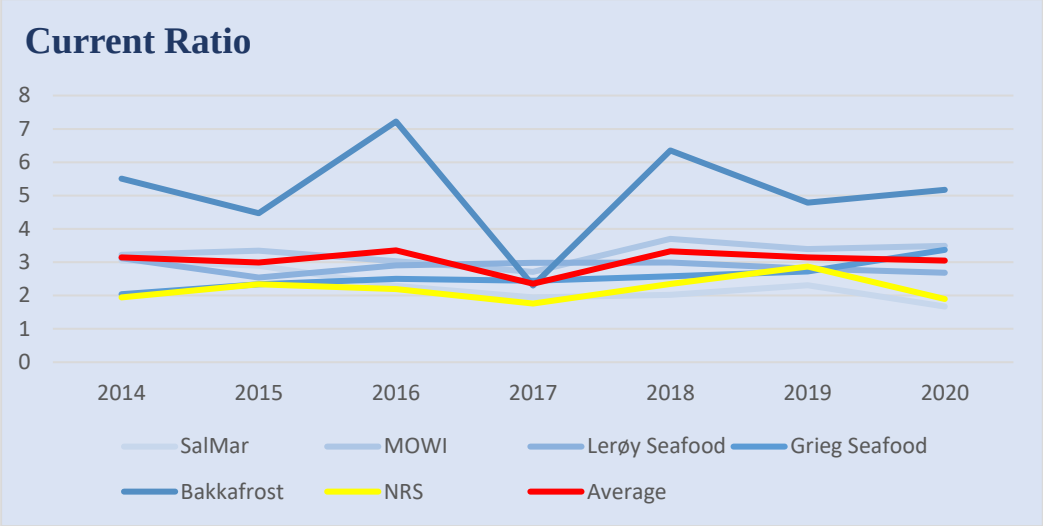


Figure 14 - Current Ratio

A current ratio level greater than 2 is traditionally acceptable, but firms with a ratio lower than 2 manage to pay their bills in time as well. Thus, it is reasonable to conclude that NRS's performance is at a satisfactory level since it does not differ so much from the industry benchmark.

7.0 Theoretical foundation for the valuation

7.1 Valuation model

Valuation is, according to Petersen, et al., (2017), typically associate with topics such as stock analyses and mergers & acquisitions. The number of different valuation approaches can be quite overwhelming, to simplify, the approaches can generally be classified into four groups: present value, relative valuation (often mention as multiples), the asset-based approach, and the contingent claim valuation (Petersen, et al., 2017, p. 298).

The present value approaches estimate the intrinsic value of a firm based on the analysts' projections of the cash flows of a firm and the discount factor that reflects risk in the cash flow and the time value of money (Petersen, et al, 2017, p. 300). The discounted cash flow approach (DCF) is very common to find when the value of a firm is estimated. The DCF has considered all aspects of the firm, the intangible and tangible factors, economic, industrial, and macroeconomic factors.

According to Petersen, et al., (2017), the DCF model is undoubtedly the most popular of the present value approaches, as it is widely adopted by practitioners. When an analyst is evaluating a firm, the intrinsic value may be different from the market value, this indicates if the firm is undervalued, valued correctly, or overvalued.

The relative valuation approach/multiples, together with DCF, is the most common valuation method. The popularity of using multiples is the low level of complexity and the speed by which a valuation can be performed (Petersen, et al, 2017, p. 317). Due to its low level of complexity, it is used as a supplement to the DCF, *not* a replacement. According to Petersen, et al., 2017, the most common multiple is P/E[3], P/B[4], EV/EBITDA[5], and EV/EBIT[6]. The relative valuation approach is criticized for its low complexity; however, this approach is most suitable for firms with a short operational history.

The third value approach is the asset-based approach. The value of a firm's equity is estimated by measuring the assets and liabilities by applying different measurement bases (Petersen, et al, 2017, p. 328). This approach is fundamentally different from the present value approach and multiples. It is used when a firm is supposed to go out of business.

The last category, contingent claim valuation or real options models, applies option pricing models to measure the value of firms that share option characteristics. This is the least commonly used valuation approach used by practitioners (Petersen, et al, 2018, p. 299).

The importance of picking the correct valuation technique is large since each technique is used for different purposes, as presented above. Every technique has its pros and cons, thus, good research for each valuation method is crucial.

The present value is the most suitable approach in this thesis, and I am going to use discounted cash flow (DCF), and the relative valuation approach as a supplement to the DCF model.

[3] Price to Earnings
[4] Price to Book
[5] Enterprise Value to Earnings Before Interest, Taxes, Depreciations & Amortisation
[6] Enterprise Value to Earnings Before Interest & Taxes

7.2 Present value

The present value approach is used to estimate the intrinsic value of a firm based on the analysts' estimation of the firm's cash flows and the discount factor which is reflecting the risk in the cash flows and the time value of money (Petersen, et al., 2017, p. 300). The higher the discount rate is, the lower the present value of the future cash flows. The present value claims that money today is worth more than the same amount of money in the future.

7.3 Discounted Cash Flow

The discounted cash flow (DCF) model is undoubtedly the most popular of the present value approaches. The DCF model can be specified in two ways. One approach estimates the enterprise value, and another approach estimates the equity value (Petersen, et al., 2017, p. 304).

The calculation of the enterprise value is calculated with the formula under, and it is important to subtract the market value of NIBD to be able to estimate the market value of equity. According to the DCF model, only the FCFF and WACC affect the market value of the firm. This implies that firm value is positively affected by higher FCF and lower WACC (Petersen, et al., 2017, p. 305).

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

Formula 7 - Enterprise Value

7.4 Terminal Value

Public listed companies are assumed to have an infinite lifetime, but it is not possible to forecast future cash flows infinitely. Therefore, it is assumed that the forecasted period shall end sometime in the future and the value of the firm is calculated to that point. The Gordon growth model assumes that a firm will continue to grow at a constant rate since the firm has reached a steady state. The following formula is used to calculate the terminal value in this thesis.

$$\text{Terminal Value} \quad \frac{FCFF^{n+1}}{WACC - Growth^{n}}$$

Formula 8 - Terminal Value

It is very hard, and perhaps impossible to estimate future capital structures and the other factors in the calculations of WACC. To simplify the calculations, I assume that the WACC will remain at the same level for the whole forecasted period in the DCF model, however, this is not how it is done in reality.

7.5 Multiples

One simple way the investors and executives value companies is to value the company in relation to the value of other companies (Koller, et al, 2015, p. 167). According to Petersen, et al., (2017), a valuation based on multiples is often popular among practitioners. One of the reasons for the popularity is the low level of complexity and the speed by which a valuation can be performed. While the DCF model is the most accurate and flexible method for valuing companies, using a relative value approach can provide insights and help you summarise and test your valuation (Koller, et al., 2015, p. 351).

7.6 The weighted average cost of capital (WACC)

The WACC has three primary components: 1) the cost of equity, 2) the after-tax cost of debt and 3) the company's target capital structure. The WACC needs to be at a satisfactory level for both lenders and shareholders since it is a result of mixing the required rate of return for both parties. According to Koller, et al., (2015), the WACC ratio should be stable over the years, and in NRS' annual report for 2020, the estimated WACC is 8%. The WACC in this thesis is calculated with the formula presented below.

$$\text{WACC} = \frac{\text{NIBD}}{(\text{NIBD} + \text{E})} \times r_d \times (1 - t) + \frac{\text{E}}{(\text{NIBD} + \text{E})} \times r_e$$

Formula 9 - Weighted Average Cost of Capital

The abbreviation for ***NIBD*** is the market value of the net interest-bearing debt, ***E*** stands for the market value of equity, r_d stands for the required rate of return on

NIBD, r_e is the abbreviation for the required rate of return on equity and t is the corporate tax rate.

The capital structure must be based on market values and the market values must reflect the true opportunity cost of investors or lenders. If a firm is not a public traded company, there are alternative ways of establishing the capital structure, since the market value is only available for public traded companies. The alternative ways could be by looking at peers' capital structure or iteration.

On the other hand, Koller, et al., (2015), claims that the capital structure should be weighted towards the firms' targeted capital structure, rather than the market value. The reason is that the firms' capital structure today may not be the capital structure the firm has in the long term.

7.7 Risk-free rate

The risk-free interest rate expresses how much an investor can earn without incurring any risk. A government bond is usually used as a proxy for the risk-free rate since the underlying assumption is that the government bond is risk-free (Petersen, et al, 2017, p. 364). Koller, et al., (2015) claims that the 10-year government bond is the best to use since the liquidity premium is generally smaller for a 10-year government bond than a 30-year government bond.

The government bond is not always risk-free, as some requirements need to be fulfilled. One of them is that the default risk is very low. The Norwegian government bonds can be used at a risk-free rate as they are AAA-rated by the world government bonds (Damodaran, 2020).

For the last decade, PWC and the Norwegian Association of Financial Analysts (NAFA) have completed surveys for each year to find out what type of government bond the analysts' have used in their valuation, and the majority use the 10-year government bond (PWC, 2020).

According to Koller, et al (2015), two conditions need to be fulfilled for an investment to be risk-free over time. 1) there is no default risk and 2) there is no uncertainty about reinvestment rates. This, however, is only possible with a zero-coupon government bond. Each projected cash flow should, according to Petersen, et al., (2017), be discounted using a risk-free rate that is based on a similar duration.

7.8 Market risk premium

The market risk premium is defined as the expected excess return investors achieve by investing in the market portfolio rather than in risk-free alternatives. The most common approach to estimate market risk premium is by historical excess return the market portfolio has given over the average risk-free rate (Berk & DeMarzo 2017, p. 443-444). On the other hand, Kaldestad & Møller (2016) claims that this approach could give the wrong outcome, as the historical risk premium does not always tend to reflect the future outcome. Koller, et al., (2015) recommends adding a risk premium to today's long-term government bond rate. The estimate of the future market return will then incorporate current interest and inflation rates, rather than those in the past.

The market risk premium, according to Koller, et al., (2015), is the difference between what an investor should expect on return on a market portfolio and the risk-free rate. Investors need compensation for the risk in their investments and their opportunity cost. The market risk premium is what the investor requires in additional return to change the risk profile in their investments. Koller, et al., (2015) claims that there are three ways of estimating the market risk premium. It is done by 1) historical premium, 2) implied premium, and 3) questionnaires.

1) is by looking at what happened in the past. This is the most commonly used approach. The approach is best for large markets which are highly diversified and got a long history, like the U.S market, i.e. 2) The implied premium is looking for the relation between current share prices and the aggregate fundamental performance, which is given by earnings, expected dividends, growth, and required return on equity. This is a very complex process and out of my knowledge. As of this, I will not use it furthermore in the thesis. 3) The questionnaires are when practitioners use what they think is the appropriate risk premium. The estimate will be based on the expected returns in the future.

Analysis from the U.S stock market from 1900 to 2014 shows that the average annual excess return is 5,5% if a 10-year holding period was used. Blume's estimator for longer-dated cash-flows is slightly higher, at 6,2% (Koller, et al., 2015, p. 287). Further, Koller, et al., (2015) assumes this is too high, as the study included only countries with strong historical returns. This phenomenon is called, by statisticians, *survivorship bias*. Koller, et al., (2015) claims that the U.S stock

market is unlikely to replicate over the next century, it needed to adjust downward the historical market risk premium. After the adjustment, which is called *survivorship premium*, the market risk premium ends up to 4,7% - 5,4%, which we round to 5% (Koller, et al., 2015, p. 288).

7.9 Beta

The beta value is a measurement of the compensation an investor gets to take additional risk. Petersen, et al., (2017) explains that the measurement on risk which is used in the CAPM is beta, and it shows the systematic risk for the stock compared to the market portfolio, seen as a whole.

The volatility of return is higher than the market if the beta value is greater than 1, and the opposite if it is under 1. The share is perfectly correlated with the market if the beta value is 1. In the theory, the CAPM defines the market portfolio as both private and public, but this is very hard, if not impossible, to measure the whole market as one. However, it is recommended by Koller, et al., (2015) to *not* use a local market index. Usually, the market index contains few industries, and in some cases, few companies. This means that you are not measuring market-wide systematic risk, but rather a company's sensitivity to a particular industry (Koller, et al., 2015, p. 299). Thus, best practice indicates that the stock's covariation should be put up against a diversified index. Oslo Børs index (OSEBX) could be an option, but Koller, et al., (2015), claims that a global index is more suitable while making a regression. Therefore, the MSCI[7] World Index is the index that will be used in this thesis.

The risk connected with investments is represented by the unlevered beta, and it measures the risk that each company has to its investments. Even if a company does change its capital structure over time, it should not be taken for granted that the unlevered beta will be changed as well. The unlevered beta will only be affected if there are changes in the investments (Berk & DeMarzo, 2017, p. 535).

According to Damodaran (2018), the debt beta is not that simple to calculate in practice, a lot of practitioners have assumed that the debt beta is equal to 0, since

[7] MSCI is an acronym for Morgan Stanley Capital International. This is a investment research company that provides stock indexes, portfolio risk and performance analytics, and governance tools to insititutional investors and hedge funds.

debt comes with a tax shield. Koller, et al., (2015) claims that investment-grade companies, on the other hand, are assumed to have a debt beta equal to 0,3 by practitioners.

7.10 The Capital Asset Pricing Model

To value a company using enterprise discounted cash flow (DCF), discount your forecast of Free Cash Flow (FCF) at the weighted average cost of capital (WACC). The WACC represents the return that all investors in a company, equity, and debt, expect to earn for investing their funds in one particular business instead of others with similar risk, also referred to as their opportunity cost (Koller, et al., 2015, p. 283). The CAPM adjusts for company-specific risk through the use of beta, which measures how a company's stock price responds to movements in the overall market (Koller, et al., 2015, p. 284).

Since NRS's capital structure contains both equity and debt, the interest of both types of investors must be considered when calculating the required rate of return. The lenders collect money before the firm's owners receive payback on their investments, therefore, the shareholders' risk is higher, therefore, they require a higher rate of return as a repercussion.

7.11 Cost of equity - r_e

The cost of equity (r_e) is the most difficult component of WACC to estimate, and academics and practitioners have proposed numerous models to estimate the cost of equity, but no one has been universally accepted (Koller, et al, 2015, p. 286). The cost of equity for an investor is the required rate of return on an equity investment. By looking from the firm's perspective, the required rate of return on a specific investment is determined by the cost of equity. To determine the required rate of return for an investor, the most common technique is to use the capital pricing asset model, thus, this is used further in the thesis.

Most finance textbooks suggest using the CAPM when estimating the investors' required rate of return (Petersen, et al. 2017, p. 345). Therefore, I will use the model in the thesis while calculating the cost of equity. One of CAPM's weaknesses is that its components are highly based on an assumption of the market.

$$r_e = r_f + \beta_e \times (r_m - r_f)$$

Formula 10 - Cost of Equity

The abbreviation for r_e is the investors' required rate of return, while r_f is the risk-free interest rate, the abbreviation for β_e is the systematic risk on equity, and r_m is the return on the market portfolio.

7.12 Cost of debt - r_d

The cost of debt (r_d) is described as the effective interest rate a firm pays on its liabilities. Along with the cost of equity, the cost of capital is a part of the firm's capital structure. The cost of debt ratio can be calculated both before tax and after-tax. The most common part is after tax. The cost of debt includes the current interest rate, default risk of the firm, and the tax advantages given with carrying debt.

Since NRS is a small firm, the cost of debt is according to Koller, et al (2015), calculated in the following two ways. 1) to look at what NRS has paid on their interest-bearing debt in the past, and then calculate an average. 2) A comparison of NRS' coverage ratio together with NRS' size to its peers with their rated debt. This approach does not give a precise ratio of what NRS has paid on their interest-bearing debt. I find it both practical and natural to calculate an average of the interest paid by NRS from 2014 to 2020. This approach has its weaknesses, but I find this approach appropriate for the thesis, and it is therefore used further.

8.0 Forecast

Petersen, et al., (2017) explains several factors considered when determining how long a forecast should be. The most important factor is when the firm reaches a steady state. A firm reaches a steady state when it grows at a constant rate, and by reinvesting a constant percentage of the firm's profit each year.

In general, Koller, et al., (2015) recommend using an explicit forecasting period of 10 to 15 years, perhaps longer for cyclical companies or those who are experiencing rapid growth. By using a shorter, 5 years, i.e, could often result in an undervaluation of the firm. On the other hand, the issue with a long forecast is that it is difficult to forecast individual items for 10 to 15 years into the future.

Further, to simplify my DCF model, I have a detailed eight-year period, but in the terminal year (9^{th}), it is expected a 2% growth in every item. This approach does, according to Koller, et al., (2015), not only simplify the forecast but also focus on the business's long-term economy, rather than the individual items of the forecast.

As presented earlier in the thesis, the fish farming industry has been growing rapidly for the last decades. The industry has its limitation due to harvesting and production. As of this, I find it reasonable for NRS' growth to decrease, and the ninth year is considered as the terminal year, as it is assumed that NRS has reached a steady-state and will grow at a constant rate.

8.1 Value drivers

By understanding the business's value drivers, the managers know the relative impact of their company's value drivers on long-term value creation. The repercussion is that the management can be able to set priorities so the activities that create more value take precedence over others.

Some factors are more important than others for NRS. The salmon price and volume are considered as the most important since they combined, equals NRS revenues. However, the historical growth and profitability, which has been analysed earlier in the thesis, and the factors presented in the strategic analysis, provide the forecasted assumptions which will be presented below.

8.2 Salmon price

Several factors are affecting the market price for Atlantic salmon. The absolute and seasonal variations in the supply and demand. The globalisation of the market, which leads to arbitrage opportunities between regional markets. The production of salmon has its cost during the salmon life cycle, and the importance of delivering salmon of high quality affects the price on a large scale. The flexibility of market channels, disease outbreaks, and food scares are other factors to consider as well (MOWI, 2020). The salmon price is very unpredictable, and this leads to several different assumptions made in this thesis.

Supply is the volume or number of salmon exported to each market. By looking at macroeconomic theory, supply is assumed to be equal to the marginal cost. This means, according to the theory, that each supplier of salmon is going to produce salmon until the marginal cost is equal to the price for salmon in the market. The global demand for salmon is how much salmon is consumed on a global basis.

Many factors are affecting global demand. This could be exchange rates, seasonal variations, substitutes, trends, and so on. One example of a trend was when Japanese sushi started to use Norwegian salmon (Aperitif, 2020). The growing population, eagerness to eat healthily, and the rich source of protein are other factors, in the long term, that is going to affect the global demand.

History tends to repeat itself and the fish farming industry is a cyclic industry by looking at historical data. The cyclic changes are determined that the production of salmon is a time-consuming process that takes around 2-3 years. The salmon price is determined by the global supply and demand. The fish farming companies are realising larger quantities with smolt to increase the production. The repercussion is a higher supply volume than the demand volume and this leads to a decrease in the salmon price. The period with the lower salmon price is characterised by a low number of released smolt, which leads to lower supply than demand and the price will increase again. Taken to mind, it is assumed that the forecasted period will contain both an increase and decrease in the salmon price.

8.3 Estimation of salmon price

Many market analytics describes the salmon price by high volatility. This imposes uncertainty and cost on the entire value chain of salmon farming. The salmon price has grown rapidly over the last couple of decades. Since 2012, the salmon price is almost twice as high. Ogelend & Sikveland (2018) studied the correlation between the spot price and volatility. The repercussion of a high spot price is high volatility, according to the studies.

8.4 Regression

The regression analysis's input is based on collected data from changes in global supply. The data for supply is collected from the Kontali-reports and the historical salmon prices are collected from Fish Pool. One factor that weakens the validity of the regression is the low number of observations. The number of observations could be higher, but the lack of professional tools, information and time, affected the regressions input.

	Coefficients	*P-value*
Intercept	0,2176	0,0027
Change Supply	-3,6329	0,0021

Figure 15 - Regression output

As of this, the estimated salmon prices are determined by this equation:

Δ Salmon price = 0,2176 – 3,6329 x Δ Supply

By collecting historical data from the change in global supply and the yearly average salmon price from Fish Pool**,** the essential data to run a regression is collected. The regression is run to find the correlation between the data. My regression model came out with an explanatory power, which is presented with the R^2, of 87,09%. According to my regression, the global supply explains 87,09% of the yearly average price from Fish Pool.

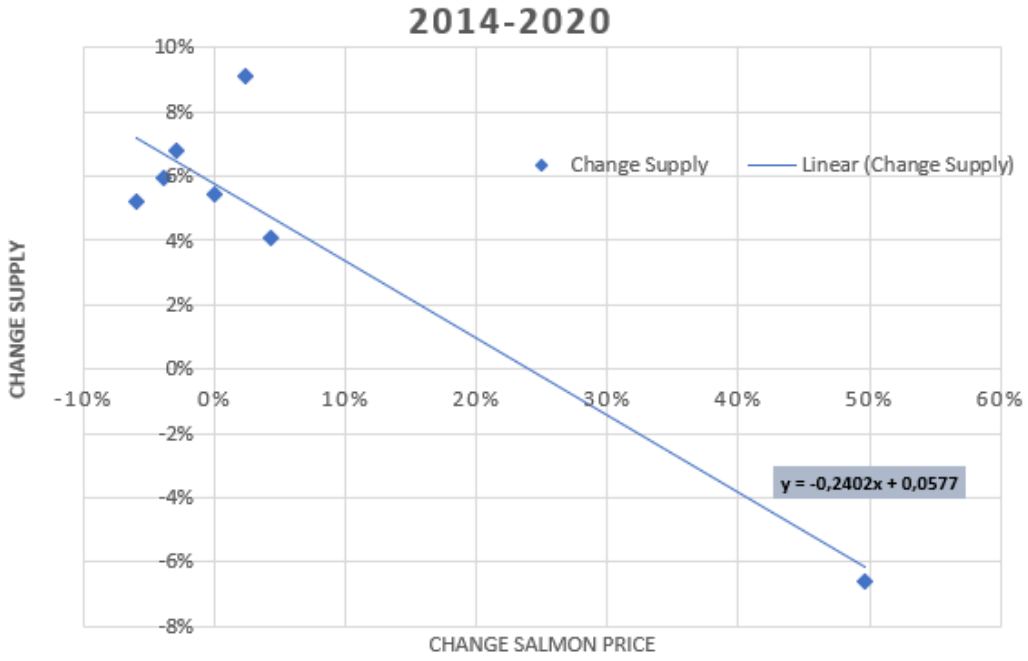


Figure 16 - Regression output, chart

8.5 Volume

There are good reasons to assume that the global volume will increase as the global macro trends are positive. There will be an increased global demand for food as the world's population is growing. Seafood is a healthy source of protein, vitamins, and omega-3 (MOWI, 2020).

By looking at historical data, 2016 is the only year with a decrease in the global GWT, as it ended up at -6,58%. From 2016 to 2020, the change in supply has been very stable, and it is assumed that this trend is continuing. The average growth in supply from 2014 to 2020 is 4,27%.

According to the Konali reports, the global volume of farmed salmon is supposed to increase by 4% by 2021. The result of the factors presented in the PEST analysis under *3.3.3 sociocultural factors* is a growing demand for farmed salmon in the future. NRS's estimated milestone for harvested volume is set to 50.000 MAB in Norway, 12.000 MAB from Arctic Fish at Iceland, and 4.500 MAB.

NRS' sold to harvested multiple has been at 2,65 from 2014 to 2020, but due to NRS's investment in Arctic Offshore Farming and Arctic Fish, it is assumed that this multiple will decrease in the forecasted period as they set to take more control over the value chain. If the multiple would have stayed at the same level in the forecasted period, the share price would end ut at an unlikely high price. The reason I find it unlikely to occur is presented in 3.0 strategic analysis.

Forecast	Estimated Harvested volume	Estimated Sold volume	Sold to Harvested	Growth Harvested %	Growth Sold %
2021E	38 000	92 460	2,43	N/A	N/A
2022E	43 000	95 234	2,21	*13,2 %*	*3,0 %*
2023E	44 000	100 005	2,27	*2,3 %*	*5,0 %*
2024E	47 000	103 995	2,21	*6,8 %*	*4,0 %*
2025E	47 000	107 125	2,28	*0,0 %*	*3,0 %*
2026E	48 500	110 318	2,27	*3,2 %*	*3,0 %*
2027E	50 000	113 638	2,27	*3,1 %*	*3,0 %*
2028E	50 000	114 731	2,29	*0,0 %*	*1,0 %*
2029E	50 000	119 366	2,39	*0,0 %*	*4,0 %*
Average	***46 389***	***106 319***	***2,29***	***3,57 %***	***3,25 %***

Figure 17 - Forecasted volume

The harvested volume is only for NRS facilities, not from their associated companies or Arctic Fish on Iceland. As the table above shows, NRS will reach its milestone in 2027 and the same volume will remain stable for the rest of the forecasted period.

8.6 Income statement

8.6.1 Revenues

The revenues are a result of the assumption based on future growth in the harvested volume, sold volume, and the predicted salmon price. The market is heavily affected by the high volatility in the salmon prices, and since the forecasted revenues are salmon price times sold volume, it is some uncertainty in these assumptions. NRS is dependent on growth in the volume to increase their

revenues since it is assumed that the salmon price drops, but this assumption is affected by many factors.

NRS' forecasted harvested volume for 2021 is at 54 500 tonnes, where 38 000 tonnes come from their farming facilities in Norway, 12 000 from Iceland, and the last 4 500 from associated companies. This is a 45% increase from 2020, where farming in Norway is assumed to increases by 9 500 tonnes (31%) and farming in Iceland is assumed to increase by 8 300 tonnes (224%). NRS have applied licenses for almost 15 000 tonnes in Iceland which is assumed to be received by 2022. Their harvesting estimate at Arctic Fish is set to 24 000 tonnes by 2025. As of today, NRS's production capacity is set to 55 000 tonnes GWT.

Since NRS presented their applied licenses in their latest annual report, I find it reasonable to believe that they will be awarded the licenses due to earlier statements about applied licenses. NRS's production capacity, together with Arctic Fish, will be over 70 000 tonnes by 2025. I find it doubtful that they will reach that volume, but not so much under. The doubt is mainly connected with the increase of sea lice, which is assumed to still be a problem for the fish farming industry and that there will be produced less smolt, as presented earlier in the thesis due to cyclical periods in the fish farming industry.

The total forecasted volume for NRS and Arctic Fish is set to 78 500 tonnes in the terminal year, which is just above a 100% increase from 2020. The harvested volume is growing for each year, but no at the same rate for each year due to cyclical periods.

These numbers are given by the assumption that NRS will realise their plans with Arctic Offshore Farming and that they will be awarded their applied licenses. The first fish is expected to be released during summer 2021 and be harvested in the first half of 2022. The repercussion is that NRS will be able to utilize the increased harvest capacity.

For the last decade, the global volume has increased by 77%, with a compound annual growth rate (CAGR) at 7%. According to NRS' annual report for 2020, the harvested volume has been affected by COVID-19 and low salmon prices. The spot price in both Europe and America were reduced by 14%. Even with a reduced price, global consumption increased by 3,7% from 2019 to 2020. More

people eat salmon meals at home, as the retail sales increased by 20% during the pandemic (MOWI, 2020a).

The middle class is rising because of fast income growth in emerging countries. The health benefits of seafood are being promoted by global health authorities and the farmed salmon is a rich source of omega-3, vitamins, and minerals. The world's population is expected to grow to almost 10 billion people by 2050 (MOWI, 2020a). The repercussion of this is that the world needs more food sources. According to NRS's annual report (2020), the world's surface is covered with almost 70% water, but only 6,5% is used as a food source. Sustainable food from the ocean is a great source of food to meet the demand from the growing population and trends. This will lead to around a 40% increase in the demand for protein sources, but the United Nations assumes that the actual demand could be as large as 80% (MOWI, 2020a).

According to Fish Pool, the forward prices for 2021, 2022, and 2023 are set to 58,05-, 58,75-, and 58,80 NOK/KG. My prediction for the salmon price for the same years is set at 59,41-, 60,79-, and 59,99 NOK/KG. By this, I find my calculations for this period valid enough to be used further in this thesis.

Year	Change Supply in %	Change Salmon Price in %	Salmon Price
2021E	4,00 %	*7,23 %*	59,41
2022E	5,35 %	*2,32 %*	60,79
2023E	6,35 %	*-1,31 %*	59,99
2024E	6,83 %	*-3,05 %*	58,16
2025E	6,81 %	*-2,98 %*	56,42
2026E	5,78 %	*0,76 %*	56,85
2027E	5,75 %	*0,87 %*	57,35
2028E	5,73 %	*0,94 %*	57,89
2029E	5,71 %	*1,01 %*	58,47
Average	***5,81 %***	***0,64 %***	***58,37***

Figure 18 - Forecasted salmon price

Koller, et al., (2015) claims that history tends to repeat itself. Therefore it is predicted to be a drop in the price before it will increase for the rest of the period. As the table above shows, the salmon price will decrease in the period from 2023 to 2025, and increase from 2026 to 2029.

8.6.2 Operational expenses

For each operating expense on the income statement, we recommend generating forecasts based on revenues (Koller, et al, 2015, p. 238). The forecasted operating expenses are based on the historical average for each post in the percentage of revenues. The cost of goods sold has been 81,79% historically and is set to 82% in the forecasted period. Wages and other operating expenses are historically low as their average has been respectively 3,65% and 4,91% and therefore it is set to 4% and 5% in the forecasted period.

8.6.3 Depreciation

There are three options to forecast depreciation. Forecast depreciation as 1) a percentage of revenues, 2) percentage of property, plant & equipment (PP&E), or 3) equipment purchases and depreciation schedules (Koller, et al, 2015, p. 239).

The rate is calculated by the second alternative, as a percentage of PP&E. The rate has decreased for the last four years, and it was historically low in 2020 as it was 4,28%. The average for the historical period is 11,73% and therefore, reasonable to set this to 12% in the forecasted period.

8.6.4 Tax

The corporation tax for 2020 was 22% (Regjeringen, 2020). According to the principle of consistency, WACC is calculated with the same tax rate as of 2020. The tax rate is therefore 22% for the rest of the forecast period.

8.7 Balance sheet

The forecast of the balance sheet is mostly in % of the forecasted revenues. Net interest-bearing debt is calculated in % of NOA as this is what Koller, et al., (2015) recommends.

8.7.1 Property, Plant & Equipment

PP&E should be forecast as a percentage of revenues. A common alternative is to forecast capital expenditures (CAPEX) as a percentage of revenues. However, this method too easily leads to unintended increases or decreases in capital turnover (Koller, et al, 2015, p. 246).

PP&E will be calculated as a percentage of revenues in this thesis. PP&E has been very stable during the historical period, with 2020 as an exception. The average has been 12,91%, and for the forecast period, it is set at 13%.

8.7.2 Net-working capital

Net-working capital (NWC) typically fluctuates over the year, over economic cycles, and with revenue growth (Petersen, et al, 2017, p. 222). The NWC is a measurement of the firms' liquidity, operational efficiency, and financial health in short term. A positive NWC gives a firm the ability to fund its operations and invest in future projects and the ability to grow.

	2014	2015	2016	2017	2018	2019	2020
Net working capital	269 911	370 239	580 757	563 578	659 449	396 800	738 440
Growth		*37,17 %*	*56,86 %*	*-2,96 %*	*17,01 %*	*-39,83 %*	*86,10 %*
NWC to revenues	10,38 %	11,53 %	13,75 %	11,41 %	12,98 %	7,10 %	14,43 %
Average NWC to revenues	**11,65 %**						

Figure 19 - Historical Net-Working Capital

The average NWC for the historical period ends up at 11,65% and as we can see from the table above, it is very stable with 2019 as an exception. The drop in 2019 is mainly due to a significant increase in the short-term receivables on 238% and a decrease in tax payables and short-term liabilities on respectively 68% and 46%.

	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
Net working capital	598 248	644 032	672 721	688 919	688 297	714 397	727 532	764 046	779 327
Growth		*7,65 %*	*4,45 %*	*2,41 %*	*-0,09 %*	*3,79 %*	*1,84 %*	*5,02 %*	*2,00 %*
NWC to revenues	11,50 %	11,50 %	11,50 %	11,50 %	11,50 %	11,50 %	11,50 %	11,50 %	11,50 %
Average NWC to revenues	**11,50 %**								

Figure 20 - Forecasted Net-Working Capital

As the historical numbers are as stable as they are, it is reasonable to assume that they also will be stable in the forecasted period and is therefore set to 11,50% of the revenues as the table above shows.

8.7.3 Net interest-bearing debt

The net interest-bearing debt (NIBD) has been very different over the historical period due to the positive operational EBITDA over the period. The annual report of 2019 claims that 2019 is connected with the positive operational EBITDA, dividends received from associated companies, and cash received from the sale of Region South since it dropped so dramatically. 2020's NIBD is very much a result of the investment in Arctic Offshore Farming.

	2014	2015	2016	2017	2018	2019	2020
NIBD	634 488	478 146	265 764	619 072	410 357	27 706	1 504 672
Growth		*-24,64 %*	*-44,42 %*	*132,94 %*	*-33,71 %*	*-93,25 %*	*5330,85 %*
NIBD to NOA	38,49 %	28,72 %	11,49 %	25,06 %	15,03 %	0,82 %	32,46 %
Average NIBD to NOA	**21,72 %**						

Figure 21 - Historical Net Interest-Bearing Debt

Historically, NIBD has been 21,72% of invested capital, but this is very different from each year which makes the predictions more unsecure but it is set to 22% of invested capital in the forecasted period.

8.7.4 Capital expenditure

Capital expenditure (CAPEX) has been at a very low level until 2019 and 2020 as these years are connected with the investments in Iceland, Smolt facility, and Arctic Offshore Farming. These projects are already paid for, but their cost connected with the maintenance will continue. I also assume that NRS's investment activities will continue due to the milestone in the harvested volume and their potential for future growth presented earlier in the thesis.

9.0 Calculating WACC

9.1 Risk-free rate

Due to the historically low 10-year government bond given by the Norwegian Bank at 0,82% before tax, I have chosen to use the average for the last 5-years for the 10-year government bond given by the Norwegian Bank which is 1,46% before tax. The risk-free rate after tax ends up at 1,14% after-tax and is what I am going to use further in the thesis (Norges Bank, 2021).

Risk-free rate before tax last 5 year average	1,46 %
Tax adjustment	0,32 %
Risk free rate after tax	**1,14 %**

Figure 22 - Risk-free rate after-tax

9.2 Market Risk Premium

For the tenth year in a row, PWC and NAFA, have completed a survey with the respective members of NAFA, to estimate the risk premium in the Norwegian market. Once again, the market risk premium ended up at 5% (PWC, 2020). Koller, et al., (2015) explains that there are many different suggestions on how to measure market risk premium, but a level of 5% is common. Damodaran (2020a) does not agree and claims that it should be higher when the risk-free rate is low. The well-known professor claims therefore that the market risk premium should be at 4,72%. When calculating the market risk premium, I have used the three sources presented above, and they are weighted equally.

Calculating market risk premium	Estimated	Weighted
Damodaran (2020)	4,72 %	1/3
Koller, et al., (2015)	5,00 %	1/3
PWC	5,00 %	1/3
Market risk premium	**4,91 %**	

Figure 23 - Weighted Marked Risk Premium

A market risk premium before tax at 4,91% is inside the interval presented by Dimson, Marsh & Staunton, and Marshall Blume (Koller, et al., 2015, p.288). Taking this to mind, it is assumed that the value is satisfied enough for the thesis. To calculate the market risk premium after-tax, the 22% corporation tax is multiplied with the risk-free rate at 1,14% and then added to 4,91%.

Market risk premium	**4,91 %**
Risk-free rate before tax	1,46 %
Tax adjustment	0,32 %
Market risk premium after tax	**5,23 %**

Figure 24 - Market Risk Premium after-tax

Country risk premium (CRP) is an additional required rate of return demanded by the investors to reflect the compensation for the higher risk associated with their investment in a foreign country. This is the risk related to political instability, the risk for high inflation, the risk for default probability, the risk for currency fluctuations, etc. NRS export 85% of their salmon and it is, therefore, necessary to add this to the discount rate.

Collecting the CRP from the different countries and weigh them up to the percentage of their country's contribution to NRS' total revenue and calculated the average of the different countries. The average CRP ended up at 1,05%.

This results in a market risk premium after-tax with CRP at 6,28%.

Contry Risk Premium	Revenues	% of total revenue	CRP	Average
Norway	733 524	13,1 %	0,00 %	0,00 %
Western Europe	3 503 415	62,7 %	0,94 %	0,59 %
Eastern Europe & Russia	336 281	6,0 %	3,08 %	0,19 %
Asia & Middle East	1 004 067	18,0 %	1,53 %	0,27 %
Other countries	9 382	0,2 %	1,04 %	0,00 %
Total Revenues	**5 586 669**	**100,0 %**	**6,6 %**	**1,05 %**

Figure 25 - Country Risk Premium after-tax

9.3 Calculating beta

The unlevered beta is equal to a firm's equity beta since the unlevered beta (also referred to as the asset beta or operating beta) measures the market risk for a firm without debt. (Koller, et al., 2015, p.301). Further, Koller, et al., (2015) claims that the unlevered beta can be averaged across an industry, assuming the industry competitors have similar operating characteristics.

Company name	Raw Beta	D/E ratio	Asset Beta
Salmar	0,676	0,10	0,61
Lerøy Seafood	1,035	0,13	0,92
MOWI	1,014	0,19	0,85
Bakkafrost	0,699	0,07	0,65
NRS	0,474	0,18	0,40
Grieg Seafood	0,977	0,40	0,70
Median			**0,675**
Average		*0,179*	*0,69*

Figure 26 - Unlevered Beta

The unlevered beta (asset beta) in this thesis is used as the median of the comparable firms in the fish farming industry, of recommendations from Koller, et al., (2015).

$$\text{Asset Beta} = \frac{\text{Raw Beta}}{(1+ \text{D/E Ratio})}$$

Formula 11 - Asset Beta

The levered beta is found by adjusting the unlevered beta for the average debt to equity ratio for the comparable firms. After adjusting the unlevered beta to levered beta, another adjustment needs to be made, and it is the Blume adjustment.

9.4 Beta Adjustment

Beta smoothing-mechanism dates to Marshall Blume's observation that betas revert to the mean. The regression betas have shown that they tend to move towards the market-beta value at 1. Companies do tend to be more diversified over time by spreading their investments.

Levered beta = Unlevered beta * (1+ average D/E ratio)

Formula 12 - Levered Beta

The levered beta is an outcome from the unlevered beta which has been adjusted for the average debt to equity ratio for NRS peers. The average debt to equity ratio ended up at 0,179 which is presented in figure 20 – unlevered beta.

Unlevered beta	0,675
Levered beta	0,800
Adjusted beta	**0,863**

Figure 27 - Blume adjusted Beta

$$\beta_{adj} = 0{,}33 + 0{,}67 \times \beta_{raw}$$

Formula 13 - Blume Adjusted Beta

9.5 Cost of Equity

The cost of equity is now ready to be calculated with the assumptions above. The calculated cost of equity is set to be: **r_e = 1,14% + 0,863 * 6,28% = 6,56%**

Risk-free rate after tax	1,14 %
Market risk premium after tax	6,28 %
Adjusted Beta	0,863
Cost of Equity	**6,56 %**

Figure 28 - Cost of Equity

9.6 Cost of Debt

The cost of debt is calculated with the first approach Koller, et al., (2015) recommends, which is to take what NRS have paid on their interest-bearing debt for the historical period.

The result is a Cost of Debt ratio (r_d)= 4,27%.

	2014	2015	2016	2017	2018	2019	2020
Interest paid	-22 211	-26 387	-17 329	-20 871	-19 360	-26 901	-26 474
Total Interest-bearing debt	700 877	699 880	351 416	803 858	653 568	248 860	1 605 333
Cost of debt	3,17 %	3,77 %	4,93 %	2,60 %	2,96 %	10,81 %	1,65 %
Average Cost of Debt	**4,27 %**						

Figure 29 - Average Cost of Debt

9.7 Calculating WACC

After putting all the components which are required for calculating WACC together, I am now able to calculate WACC.

Calculating WACC	
Cost of equity - r_e	6,56 %
Cost of debt - r_d	4,27 %
Debt to Value - D/V	13 %
Equity to value - E/V	87 %
1-tax	78 %
WACC	**6,13 %**

Figure 30 - Calculating Weighted Average Cost of Capital

9.8 Criticism with the WACC estimate

The cost of equity ratio is highly based on assumptions which can lead to inaccurate results. One of the assumptions is the risk-free rate. The used risk-free rate before tax is the average for Norwegian government bonds for the last five years. It could be argued that the thesis should have used the average for 2021 (January to May), but due to the principle of consistency and since the valuation of NRS is set to 01.01.2021, I find it more reasonable to use the average for the last 5 years since it is what practitioners use. This risk-free rate is historically low, and Koller, et al., (2015) recommend using a normalized synthetic risk-free rate, as this claims that the economy will return to its normal. The future is unsecure, so the rate could stay at this level for a long time, but it is impossible to say. The market risk premium is, as presented, very hard or impossible to estimate. It could be too low or too high.

Also, the targeted capital structure, which is used as the median of NRS peers is another assumption that can be criticised, together with the low corporate tax rate, but due to simplifications, it is done this way.

The assumption that the investors do not have any unsystematic risk is one of the problems with using the CAPM. This is considered a problem in the fish farming industry, and especially in salmon farming since, commonly, the biggest investors place their capital in one investment.

10.0 Valuation

Based on the previous parts of the thesis, the following part contains the valuation of NRS. The valuation is mainly based on the DCF model as this is where the fundamental value of the equity is calculated. Further, a relative valuation with multiples is performed to see if there are any different values from the DCF model.

10.1 Present Value

All of the present value approaches share the same characteristics: the value of a firm, or asset, is estimated as the present value of the future cash flow. The estimated market value of equity is found by discounting expected cash flows by the owners' required rate of return (Petersen, et al., p. 26). The approach states that an amount of money is less worth in the future, compared to today, thus, receiving money today is more beneficial than receiving the same amount in the future. This is claimed because if you receive money today, the same amount can be invested to provide the investor with more money than the original amount.

10.2 Discounted Cash Flow

The table below shows a summary of the DCF model and the outputs. For the full table, see appendices.

NOK 1000	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
Revenues	5 202 155	5 600 275	5 849 746	5 990 603	5 985 189	6 212 151	6 326 364	6 643 882	6 776 760
EBITDA	572 237	616 030	643 472	658 966	658 371	683 337	695 900	730 827	745 444
EBIT	466 113	501 785	524 137	536 758	536 273	556 609	566 842	595 292	607 198
NOPAT	**363 568**	**391 392**	**408 827**	**418 671**	**418 293**	**434 155**	**442 137**	**464 328**	**473 614**
CAPEX	*-468 194*	*-504 025*	*-526 477*	*-539 154*	*-538 667*	*-559 094*	*-569 373*	*-597 949*	*-609 908*
FCFF	**493 622**	**531 399**	**555 071**	**568 436**	**567 923**	**589 459**	**600 296**	**630 425**	**643 033**

Figure 31 - Discounted Cash Flow output

The calculations made in the DCF model give me an estimated value per share for NRS at 256,74 NOK. As of this, the NRS stock is undervalued in the market as it trades for 214,6 NOK as of 01.01.2021. The share price has been dropping as the share price of 28.05.2021 is 182,7 NOK.

As the table shows, NRS will increase its revenues each year, and based on my assumptions, its revenues will reach an all-time high level in 2029. This implies that NRS will continue to grow in the future although the salmon price will not be so high since it does not go over 60 NOK/KG in the whole forecasted period.

Net present value of *future* cash flows	kr 3 847 632		
Terminal Value	kr 15 572 426		
Discounted terminal value	kr 8 854 805		
Estimated enterprise Value	**kr 12 702 437**		
Terminal value in % of enterprise value	*70 %*		
Estimated market value of equity	kr 11 186 760	WACC	6,13 %
Net interest-bearing debt (NIBD)	-kr 1 515 677	Expected future growth	2 %
Numbers of share outstanding	43 572	FCFF in the terminal year	643 033
Fair value per share	**kr 256,74**	Discount factor terminal year	1,76

Figure 32 - Discounted Cash Flow Output - Fair Share value

10.3 Relative valuation

As Petersen, et al., (2017) claims, the relative valuation method is often referred to as multiples. One assumption while using multiples is that perfect substitutes should sell for the same price. The estimation of a firm's value could be estimated by applying the price of its comparable firms. Damodaran (2018) describes comparable firms as the other firms in the specific firm's industry.

Selecting the right peer group is critical to coming up with a reasonable valuation using multiples. A good peer group must not only operate in the same industry but also have similar prospects for ROIC and growth (Koller, et al., 2015, p. 352). I have used 6 firms in my model, 5 without NRS. All of the firms are Norwegian salmon farmers. MOWI, Lerøy Seafood, SalMar, Bakkafrost, and Grieg Seafood.

My model contains four multiples: P/E, P/B, P/S, and EV/EBITDA. The multiples used in the model are the median for the comparable firms. This is the recommended way to use multiples by many theorists.

10.4 Price to Earnings

Price to earnings (P/E) is the most common multiple which is the value of a company divided by its earnings (Koller, et al., 2015, p. 351). Further, a high P/E ratio could imply that the firm's stock is overvalued or that the firm's future is predicted to be characterised by high growth rates. Price to earnings ratio mixes capital structure and non-operating items with the expectations of operating performance and therefore it is less reliable than other multiples (Koller, et al., 2015, p.357).

According to this multiple, NRS share is overvalued as it is 45% lower than the share price of 01.01.2021.

Price to earnings	
Multiple	68,54
Net profit	74 687
Value of equity	5 119 047
Shares outstanding	43 572
Value per share NOK	**117,48**

Figure 33 - Price to Earnings

10.5 Price to Book

Price to book (P/B) is another commonly used multiple as this measures the market value of the firm relative to its book value. According to Damodaran (2018), the market value is often higher than the book value of the firm's equity. If the firm's market value is higher than the book value, it is overvalued and if the ratio is close to 1, it is considered as a solid investment.

The estimated value for the NRS share is set to 251,12 NOK by using the P/B multiple, which is 17% over the value per share per 01.01.2021 and is therefore considered undervalued by this method.

Price to book	
Multiple	3,50
Book value of equity	3 130 692
Value of equity	10 941 769
Share outstanding	43 572
Value per share NOK	**251,12**

Figure 34 - Price to Book

10.6 Enterprise Value/EBITDA

Many practitioners use EBITDA multiples because depreciation is, strictly speaking, a non-cash expense, reflecting sunk costs, not future investments (Koller, et al., 2015, p.360). Another factor is that this multiple is not affected by the different depreciation methods that different firms may use.

The EV to EBITDA multiple values an NRS share to 288,12 NOK and indicates that the NRS share is undervalued as it is 34% lower than its fair value based on this multiple.

EV to EBITDA	
EV	12 702 437
EBITDA	345 451
Multiple	40,73
Debt	1 515 677
Minority interest	45 949
EBITDA x Multiple	14 068 480
Value of equity	**12 553 758**
Shares outstanding	43 572
Value per share	**288,12**

Figure 35 - EV to EBITDA

10.7 Price to Sales

The Price to Sales ratio (P/S) measures the share price of a company to its revenues. Koller, et al., (2015) claims the ratio shows how much an investor is willing to pay for every NOK compared to NRS sales.

The ratio shows that the NRS share is undervalued, as the output is a value that is 39% higher than the NRS share price of 01.01.2021.

Price to Sales	
Revenues	5 118 867
Shares outstanding	43 572
Revenue per share	117,48
Multiple	2,55
Value per share NOK	**298,99**

Figure 36 - Price to Sales

11.0 Uncertainty calculations

11.1 Sensitivity analysis

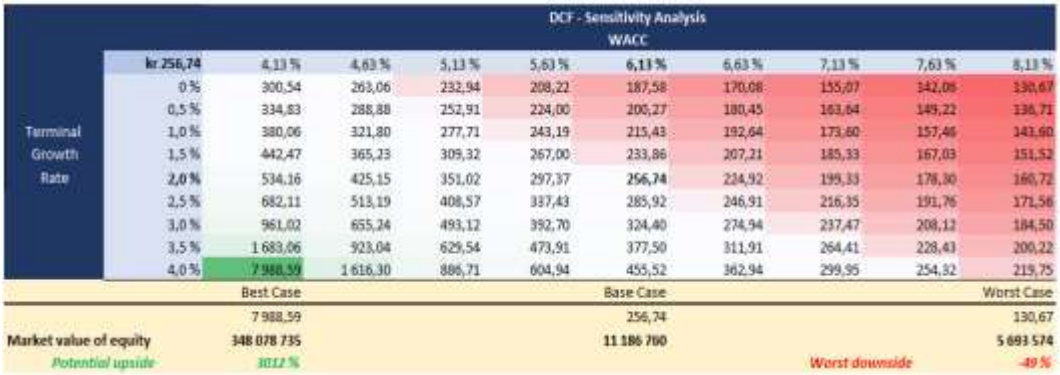
A valuation should always be accompanied by a sensitivity analysis that examines the valuation consequences of changing some of the key-value drivers (Petersen, et al., 2017, p.334). The sensitivity analysis shows me how much change in either WACC or terminal growth affects the share price for NRS. The valuation is based on many assumptions which are made out of the available information, thus, the assumption may be considered good with *that* information. On the other hand, the thesis' shall answer if an investor should buy, hold, or sell the NRS share. The

input in the model is great to see if how much the different level of either WACC or the terminal growth rate affects the share price, based on my calculations.

11.2 Scenario Analysis

The sensitivity analysis presented below shows how the share price is affected by different levels of WACC and terminal growth rate. The DCF model I used had a WACC of 6,13% and a terminal growth rate of 2%. The fair value for an NRS share ended up at 256,74 NOK. The table below shows the changes in the share price as both factors change with 0,5%, either up, or down.

By using a terminal growth rate with 0% to 4% growth together with a WACC of 4,13% to 8,13%, the potential best-case ended up at nearly 8000 NOK per share, which is highly unusual to occur. As presented below, that is a 3009% increase. Therefore, I found it reasonable to adjust the input in the model.



DCF - Sensitivity Analysis										
		WACC								
	kr 256,74	4,13 %	4,63 %	5,13 %	5,63 %	6,13 %	6,63 %	7,13 %	7,63 %	8,13 %
Terminal Growth Rate	0 %	300,54	263,06	232,94	208,22	187,58	170,08	155,07	142,08	130,67
	0,5 %	334,83	288,88	252,91	224,00	200,27	180,45	163,64	149,22	136,71
	1,0 %	380,06	321,80	277,71	243,19	215,43	192,64	173,60	157,46	143,60
	1,5 %	442,47	365,23	309,32	267,00	233,86	207,21	185,33	167,03	151,52
	2,0 %	534,16	425,15	351,02	297,37	256,74	224,92	199,33	178,30	160,72
	2,5 %	682,11	513,19	408,57	337,43	285,92	246,91	216,35	191,76	171,56
	3,0 %	961,02	655,24	493,12	392,70	324,40	274,94	237,47	208,12	184,50
	3,5 %	1 683,06	923,04	629,54	473,91	377,50	311,91	264,41	228,43	200,22
	4,0 %	7 988,59	1 616,30	886,71	604,94	455,52	362,94	299,95	254,32	219,75
		Best Case				Base Case				Worst Case
		7 988,59				256,74				130,67
Market value of equity		348 078 735				11 186 760				5 693 574
Potential upside		3012 %						Worst downside		-49 %

Figure 37 - Sensitivity Analysis, large

The adjustment made in the model was to reduce the number of factors. It is unlikely that NRS will stop growing in the future and it is also unlikely that they will grow by 4% forever. Taking this to mind, the output is more precise.

DCF - Sensitivity Analysis						
		WACC				
	kr 256,74	4,13 %	5,13 %	6,13 %	7,13 %	8,13 %
Terminal Growth Rate	1,00 %	380,06	277,71	215,43	173,60	**143,60**
	1,50 %	442,47	309,32	233,86	185,33	151,52
	2,00 %	534,16	351,02	**256,74**	199,33	160,72
	2,50 %	682,11	408,57	285,92	216,35	171,56
	3,00 %	**961,02**	493,12	324,40	237,47	184,50
		Best Case		***Base Case***		***Worst Case***
		961,02		256,74		143,60
Market value of equity		**41 873 686**		**11 186 760**		**6 256 906**
Potential upside		*274 %*		*Worst downside*		*-44 %*

Figure 38 - Sensitivity Analysis

The output from the sensitivity analysis shows that the potential upside is significantly higher than the potential downside.

11.3 Monte Carlo-simulation

The Monte Carlo simulation is a method of probability analysis done by running a specific number of variables through a model to determine the different outcomes as each variable is affecting the outcome. The outcome shows the different possibilities that can occur and the decision-maker takes their decision based on the risk they are willing to take to get to the required outcome.

The simulation is used to understand the uncertainty to a random value. It can be run thousands of times to predict different outcomes and it is done repeatedly to provide a valid estimate. The simulation's input is variables that have an impact on the fundamental value of NRS' equity and the simulation was run with 100 000 iterations.

The terminal growth rate, risk-free rate before tax, market risk premium before tax, and WACC are unsecure variables that have an impact on the estimated value. These are the variables that are used as input in the Monte Carlo simulation.

The terminal growth rate is set to 2% but is interesting to see how a terminal growth rate in the interval between 1% and 3% will affect the outcome of the simulation, thus, the standard derivation is set to 1%. The market risk premium is set to 4,19% before tax, and the standard derivation is set to 1,5% to see the different outcomes of the different values of the variable.

The risk-free rate before tax is set to 1,46% and it is run in the simulation with a standard derivation of 0,5%. The standard derivation reflects the historical fluctuation in the 10-year government bond in the historical period from 2014 to 2020. The WACC estimated for the simulation is set to 6,13%, with a standard derivation of 2% as this also is used in the sensitivity analysis.

11.3.1 Monte Carlo Output

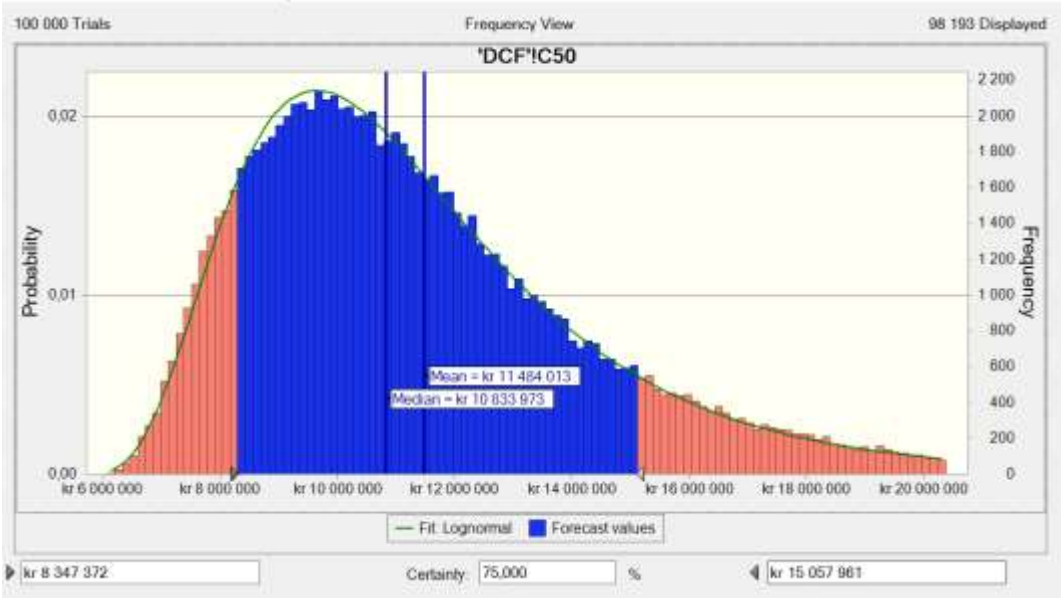


Figure 39 - Output Monte Carlo Simulation

The outcome of the Monte Carlo simulation shows that I can say that the market value of NRS' equity is between 8.347 MNOK and 15.057 MNOK with a 75% certainty. The standard deviation was set to 3.173 MNOK.

The share price for an NRS share is between 192,64 NOK and 348,06 NOK according to the outcome from the Monte Carlo simulation. According to the simulation, we can say that the NRS share can be either 38% undervalued in the market or 12% overvalued in the market.

12.0 Discussion of the analysis result

Based on the DCF model, multiples, and sensitivity analysis, the NRS seems to be undervalued in the market. The market value of NRS equity in the DCF model ended up at 11.187 MNOK. The value per share in the DCF analysis ended up at 256,74 NOK, and that is almost 20% over the value per share at 01.01.2021.

The multiples show that three out of four ratios indicated that the NRS share is undervalued in the market. It was only P/E who indicates that the NRS share is overvalued. The fundamental value of NRS equity ended up at 10.410 MNOK and the fair value per share is 238,93 by using the multiples in this thesis.

The sensitivity analysis with the terminal growth rate and the WACC as important variables shows that the potential upside significantly higher than the potential downside. A low WACC and a high terminal growth rate will naturally lead to a very high share price and vice versa. This type of analysis will only let me change one variable at a time, and therefore it is more suitable with a Monte Carlo simulation that will change several variables at the same time and therefore it will provide me with a lot of random simulated values.

The Monte Carlo simulation came out with an average of 11.484 MNOK and this results in a fair value on the NRS share at 265,56 NOK. This implies that the share is undervalued in the market.

The outcome from the analysis shows that the share is undervalued in the market, but the market may change, the result of the pandemic is unsecure, Even that the analysis made in the thesis shows that the future for salmon farming is bright, it should not be taken for granted that it will happen.

13.0 Conclusion

The market value of NRS' equity is 11.186 MNOK and the fair value per share is set to 256,74 NOK. This implies that the NRS share is undervalued in the market. The DCF model is used as the foundation in the thesis, with relative valuation as a supplement. The relative valuation approach shows that NRS shade is undervalued with EV/EBITDA (38%), P/E (17%), and P/S (39%). The P/E shows that the share is overvalued by 45%. As an average, the relative valuation claims that the NRS share is 39% undervalued in the market.

At least, the average in the Monte Carlo simulation shows that the market value of NRS equity is 11.484 MNOK which implies that NRS share is 19% undervalued in the market. This means that the outcome from the DCF analysis is strongly supported by the additional approaches.

	DCF	EV/EBITDA	P/B	P/E	P/S	Monte Carlo
Market value equity	11 186 760	12 553 758	10 941 769	5 119 047	13 027 517	11 484 013
Fair value per share	*256,74*	*kr 288,12*	*kr 251,12*	*kr 117,48*	*kr 298,99*	*kr 263,56*
Recommendation	Buy	Buy	Buy	Sell	Buy	Buy

Figure 40 - Summary of the valuation

The estimates in this thesis indicate that NRS is undervalued in the market. As of this, I would recommend the investor who has the desire to maximize profitability to buy the NRS share.

14.0 Critics

There have been some weaknesses and criticism in the thesis that has been pointed out in the text, however, to get a better overview, I have tried to make a summary here.

The valuation is based on my assumption on the data I have collected, how I have evaluated the market, and so on. There is no certainty that the estimates will happen, or when they might happen, and therefore, the thesis should be read as a possibility *if* my assumption happens.

As presented earlier, the CAPM is not that valid as it should be. Research shows that there can be misleading in the calculations of the potential rate of return and the fundamental assumption for using CAPM are unrealistic in practice. Also, theorists have their different meanings and procedures on the different parts of the valuation process – but the thesis is based on the framework from the recognised McKinsey Company with Koller, Goedhart, and Wessels as authors, with a supplement of Petersen, Plenborg, and Kinserdal's Financial Statement Analysis.

The forecasted input in the DCF model is where the most uncertainty is. Some parts of the input are based on historical data, where the average is either rounded up or down a percentage, but some assumptions are set 2-5% percentages up from the historical average. The future is uncertain and it can be questioned if the historical data is good enough for predicting the future, but as Koller, et al., (2015) claims, history tends to repeat itself.

The salmon price is where most of the uncertainty lays due to the high volatility. To simplify the thesis, the WACC is assumed to keep a constant level during the forecasted period, this, however, is a bit unrealistic. The capital structure is also very hard to predict and since the WACC affects NRS' capital structure, this leads to another uncertainty. This can be seen as a guessing game due to the complexity of predicting these ratios.

The thesis is based on public information, but the output of my models would be different if I had any inside information from NRS. As presented above, this thesis is based on my assumptions from what I have learned during my subjects in economics and finance at BI business school, therefore, a professional analysis would have made a more accurate estimation.

14.1 Academic books

The thesis is mainly based on two academic books. One of them is Valuation: measuring and managing the value of companies from McKinsey & Company INC. The other is Financial Statement analysis: valuation – credit analysis – performance evaluation by Fagbokforlaget.

14.2 Public reports

The thesis is based on public reports from NRS, comparable firms, and reports about the industry. Due to different types of standards for each company, there might occur some errors in the calculation.

15.0 Appendices

Aperitif (2020). *Slik revolusjonerte norsk laks japansk sushi*. Retrived from: https://www.aperitif.no/artikler/slik-revolusjonerte-norsk-laks-japansk-sushi,463387

Aperitif. (2021). *Slik revolusjonerte norsk laks japansk sushi*. Retrived from: https://www.aperitif.no/artikler/slik-revolusjonerte-norsk-laks-japansk-sushi,463387

Bakkafrost. (2021). *Financial Reports.* Retrived from: https://www.bakkafrost.com/en/investor-relations/reports-and-presentations/

Baksaas, K., M. & Ø. Hansen. (2015). *Finansregnskap med analyse*. (2. utg). Gyldendal Akademisk.

Berk, J., & DeMarzo, P. (2017). *Corporate Finance: Global edition (4th ed).* New Jersey: Pearson Education Inc.

Damodaran, A. (2018). *The Dark Side of Valuation* (3rd ed.). New Jersey: Pearson Education Inc.

Damodaran, A. (2020b). *Country Default Spreads and Risk Premiums.* Retrived from: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

Eriksen, S. (2021). *Laks som trimmer vokser fortere.* Retrived from: Laks som trimmer vokser fortere (forskning.no)

Fish Pool (2021). *About Fish Pool ASA.* Retrived from: https://fishpool.eu/about/

Fishfarming expert (2021). *Traffic lights signal production rise in Norway.* Retrived from: https://www.fishfarmingexpert.com/article/traffic-lights-signal-modest-production-increase-in-norway/

Fiskedirektoratet (2021). Tall og analyse: akvakultur. Retrived from: https://www.fiskeridir.no/Akvakultur/Tall-og-analyse

Grieg Seafood. (2021). *Annual Reports.* Retrived from: https://grieg.no/annual-reports/

Ilaks (2021). Dette er verdens 20 største lakseoppdrettere. Retrived from: https://ilaks.no/dette-er-verdens-20-storste-lakseoppdrettere-2/

Kaldestad, Y., & Møller, B. (2016). *Verdivurdering: teoretiske modeller og praktiske teknikker for å verdsette selskaper* (2. utg.). Fagbokforlaget

Kontali (2021). Salmo World 2020. Retrived from:
file:///C:/Users/Julia/Downloads/demo-Salmonworld%20(1).pdf

Kontali. (2020). Production and market update (2020).

https://www.kontali.no/publications/monthly-publications

Laks (2021). Norsk laks fra fjord til bord. Retrived from:
https://laks.no/lakseproduksjon/

Lerøy Seafood. (2021). *Annual Reports*. Retrived from:
https://www.leroyseafood.com/no/investor/rapporter-og-webcast/arsrapporter/

MOWI. (2021). *Reports*. Retrived from:
https://mowi.com/investors/reports/

MOWIa (2021). Annual report 2020. Retrived from:
https://corpsite.azureedge.net/corpsite/wp-content/uploads/2021/03/Mowi_Integrated_Annual_Report_2020.pdf

Norges Bank (2021). *Statsobligasjoner månedsgjennomsnitt*. Retrived from:
https://www.norges-bank.no/tema/Statistikk/Rentestatistikk/Statsobligasjoner-Rente-Manedsgjennomsnitt-av-daglige-noteringer/

Norges Bank. (2021). *Endringer i styringsrenten*. Retrived from:
https://www.norges-bank.no/tema/pengepolitikk/Styringsrenten/Styringsrenten-Oversikt-over-rentemoter-og-endringer-i-styringsrenten-/

Norway Royal Salmon. (2015). *Annual Report 2014*. Retrived from:
https://norwayroyalsalmon.com/files/9/NRS_AnnualReport_2014.pdf

Norway Royal Salmon. (2016). *Annual Report 2015*. Retrived from:
https://norwayroyalsalmon.com/files/9/NRS_AnnualReport2015.pdf

Norway Royal Salmon. (2017). *Annual Report 2016*. Retrived from:
https://norwayroyalsalmon.com/files/9/NRS_AnnualReport2016.pdf

Norway Royal Salmon. (2018). *Annual Report 2017*. Retrived from:
https://norwayroyalsalmon.com/files/9/NRS_AnnualReport_2017.pdf

Norway Royal Salmon. (2019). *Annual Report 2018*. Retrived from: https://norwayroyalsalmon.com/files/9/NRS%20Annual%20Report%202018.pdf

Norway Royal Salmon. (2020). *Annual Report 2019.* Retrived from: NRS_2020_Årsrapport_siste_NO.pdf (norwayroyalsalmon.com)

Norway Royal Salmon. (2021). *Annual Report 2020.* Retrived from: https://norwayroyalsalmon.com/files/9/NRS%20Annual%20report%202020.pdf

NRK. (2020). Skal bruke over 5 milliardar på det største anlegget for landbasert oppdrett. Retrived from: https://www.nrk.no/vestland/her-byggjer-dei-det-storste-landbaserte-oppdrettsanlegget-i-noreg-1.15220247

Oglend, A. (2013). *Recent trends in salmon price volatility.* Aquaculture Economics & Management.

Petersen, C., Plenborg, T & Kinserdal, F. (2017). Financial Statement Analysis: Valuation - Credit Analysis – Performance Evaluation. Fagbokforlaget, Bergen.

Porter, M.E. (1998) Competitive advantage, Simon and Schuster.

PWC (2020). *Risikopremien i det norske markedet.* Retrived from: https://www.pwc.no/no/publikasjoner/pwc-risikopremie-2020.pdf

Regjeringen (2014). Skattesatser 2015). Retrived from: https://www.regjeringen.no/no/dokumentarkiv/regjeringen-solberg/fin/skattesatser-2014/id748052/

Regjeringen (2015). Skattesatser 2016. Retrived from: https://www.regjeringen.no/no/dokumentarkiv/regjeringen-solberg/fin/Skattesatser-2015/id2005680/

Regjeringen (2016). Skattesatser 2017. Retrived from: https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/skattesatser-2017/id2514837/

Regjeringen (2017). Skattesatser 2018. Retrived from: https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-ogavgifter/skattesatser-2018/id2575161/

Regjeringen (2018). Skattesatser 2019. Retrived from: https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-ogavgifter/skattesatser-2019/id2614444/

Regjeringen (2019). Skattesatser 2020. Retrived from: https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/skattesatser-2019/id2614444/

Regjeringen (2020). Skattesatser 2021. Retrived from: https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/skattesatser-2021/id2767458/

SalMar. (2021). *Latest Reports.* Retrived from: https://www.salmar.no/en/latest-reports/

World Bank. (2021). *Global Economic Prospects.* Retrived from: https://openknowledge.worldbank.org/bitstream/handle/10986/34710/9781464816123-Ch01.pdf

16.0 Figures & Formulas