Norwegian School of Economics
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License to krill

A fundamental valuation of Aker BioMarine

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Master thesis, Economics and Business Administration,
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NORWEGIAN SCHOOL OF ECONOMICS

Abstract

In this master thesis, we have conducted an extensive strategic and financial analysis of Aker BioMarine. The thesis aims to estimate the fair intrinsic value of the equity and share price as of October 30, 2020. The fundamental valuation technique has been chosen as the preferred method and is supplemented with a relative valuation. The final estimation of the stock price was compared with the closing price on October 30 to find the appropriate trading strategy.

The thesis can be divided into two parts: The first part introduces the industry and its companies, along with an in-depth presentation of Aker BioMarine. After presenting the industry and the company, the frameworks and theories adopted in the thesis are presented. Further, the strategic analysis is conducted. The analysis includes both external industry analyses and an internal resource-based analysis complemented with an ESG assessment. The external analysis discovered that the industry has high entry barriers with a moderately competitive environment, indicating the possibilities to sustain a long-term competitive advantage. The internal resource-based analysis indicates that the brand name, value chain, patents, and strategic collaborations represent the vital competitive advantages Aker BioMarine possesses. However, the analyses suggest that competitive advantages will be decreasing in the long run. The first part of the thesis concludes with reorganizing and analyzing the company's historical financial performance. The analyses are key for understanding the investment case of Aker BioMarine but have their limitations for future projections as Aker BioMarine is a high-growth case.

The second part of the thesis commences with a forecast of the future performance of Aker BioMarine based on the strategic and financial analyses conducted in the first part. Further, the company's cost of capital and capital structure is forecasted to find the dynamic weighted average cost of capital. The fundamental valuation is presented after the cost of capital is presented using discounted cash flows, and economic value added. The last chapter before the conclusion of the thesis is the relative valuation.

Based on the analyses in the first part and the projections in the second part, we have valued the fair market value of the equity to be NOK 101.67 per share, indicating a potential upside of 23.98% as of October 30, 2020. The thesis concludes with a “BUY” recommendation and ends with comparing our valuation and the investment banks' estimates.

Acknowledgments

The thesis is written as a concluding part of our Master's degree in Economics and Business Administration at the Norwegian School of Economics (NHH). The thesis reflects the knowledge we have acquired throughout our five years of studies. The topic was chosen due to our mutual interest in both corporate finance and valuation. Aker BioMarine is a compelling investment case that has received lots of attention in the media since going public; thus, it was fascinating to take a closer look at the company. We want to thank Dr. Kjell Henry Knivsflå for providing us access to the course material in BUS440A Verdsettelse.

We would also offer our sincere gratitude to Dr. Tommy Stamland for his advice and support this semester. The feedback and support have been invaluable, helping us both to understand and produce a better thesis.

Finally, we would like to thank our family and friends for their support, patience, and understanding of our absence in the past months. We are convinced that the knowledge and experience acquired throughout this project will be helpful when launching our careers.

Bergen, December 2020

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Table of contents

1. Introduction

In the first chapter, the motivation for the topic, industry, and company will be rationalized. Further, the purpose of the thesis and its limitations is presented. Lastly, the thesis' structure and composition is presented so that the reader can navigate the thesis easier.

1.1 Motivation and choice of company

The master thesis is a concluding part of our Master's degree in Economics and Business administration at the Norwegian School of Economics. The thesis is based on the knowledge acquired through *BUS440A Verdsettelse, FIE402 Corporate Finance, FIE437 Venture Capital, Private Equity, and IPOs,* and *FIE443 Mergers and Acquisitions*. These courses aim to provide one with the knowledge and tools to make extensive and fundamental analyses of companies. Combining these courses has provided us with different approaches we can apply, which is essential in cases involving a high degree of uncertainty. Throughout the years at NHH, the authors have obtained a significant interest in financial statement analysis and valuations. We view it to be of high importance to both understand and have the ability to analyze complicated cases such as Aker BioMarine when commencing our careers. Lastly, concluding our studies at NHH with a valuation allows us to deploy and utilize the tools and knowledge acquired throughout our studies in a challenging valuation case.

There are multiple reasons we decided to write our master thesis about Aker BioMarine. The company was listed on Merkur Market, termed Euronext Growth from November 9, on July 6, 2020. During the first day of trading, the company lost of NOK 1bn in market capitalization (Bærland, 2020). Even with the weak opening in the stock market, industry analysts proclaimed the stock to be immensely underpriced (figure 40). The company is frequently mentioned in the media, and the potential of the company is vast, which makes an analysis of the company even more compelling and challenging. Before settling on a company, it was agreed that we wanted a challenging valuation case in an industry none of us were familiar with, as it is both motivating and fascinating to acquire new knowledge about an unacquainted industry. Aker BioMarine was a company that the analysts stated was trading for pennies on the dollar, which caught our interest. Was the company as underpriced as the equity researchers asserted?

1.2 The objective of the thesis

The master thesis aims to estimate the intrinsic value of Aker BioMarine's equity by deploying a fundamental valuation, supported by relative valuations. The estimation of the equity's fair market price reflects the company's fundamental economic qualities and future aspects. The thesis aims to represent the intrinsic value of Aker BioMarine, as the authors consider it to be. The valuation is based on projections and forecasts of an uncertain future, which is greatly influenced by the assumptions, expectations, and simplifications of the reality taken by the authors. To add more weight to our valuation, we utilized a relative valuation to support our final estimate of the intrinsic value. The valuation of Aker BioMarine is based on publicly available information, including everything up until October 30, 2020. Lastly, our estimation of the stock price's fair market value is compared to the closing price on October 30, 2020, to assess whether the stock is overpriced (underpriced) and recommend a trading strategy based on the findings. The thesis's research question is:

"*What is the intrinsic value of Aker BioMarine's equity on October 30, 2020?*"

1.3 Limitations

The information treated in the master thesis is exclusively based on publicly available information. This includes quarterly reports, annual reports, market data, and other available information for every external third-party. No information in the thesis is acquired from an insider or employee of the company. The only exception is the annual report of 2017, which was missing from the website. The cut-off date is set to October 30, 2020, and the estimated value of the equity will be compared with the closing price on the same date. Thus, we have utilized the Q3 report in the thesis, but the launch of their new segment, "Lysoveta," is not considered as it happened in late November 2020.

The thesis focused on two valuation methods: fundamental and relative valuation. Fundamental valuation is chosen as the primary technique and is only supplemented by the comparative method. Further, we have selected peers based on what we deem to be of future peers that are publicly available. The companies operating in the krill industry are largely private companies, making it difficult to assess their financial position. We needed to look outside the krill industry to find suitable peers to implement a relative valuation. The selected peers are Glanbia Plc, Midsona AB, Probi Plc, and DSM.

These companies will be analyzed together with Aker BioMarine in the thesis. Aker BioMarine is valued as a stand-alone company, even with Aker ASA being the majority owner with 77.8% (Aker BioMarine 2020a).

1.4 Structure of the thesis

The thesis consists of two parts: the first part consists of chapters 2, 3, 4, and 5. In the second chapter, the industry is presented together with Aker BioMarine and close competitors. The third chapter is the presentation of the theories and frameworks utilized throughout this thesis. The fourth chapter is a qualitative strategic analysis of Aker BioMarine. The chapter commences with external industry-oriented analysis where both PESTEL and Porter's five forces are employed to assess the macro-environment. The chapter continues with an internal resource-based analysis of Aker BioMarine. The chapter concludes with summarization in a SWOT analysis. The fifth chapter is the historical financial statement analysis, where the company ultimately is compared with the selected peers.

The second part of the thesis comprises of chapters 6, 7, 8, 9, and 10. The sixth chapter introduces the projections and forecasts of Aker BioMarine's financial statements and performance in detail. The seventh chapter introduces and computes the frameworks for estimating the cost of capital and approximating the company's capital costs. The eight chapter is the fundamental valuation, where both discounted cash flows and economic value added methods are utilized. The nineth chapter is the relative valuation, where the different multiples are implemented to assess Aker BioMarine against peers' selection. The thesis concludes with the presentation of a recommended trading strategy as of October 30, 2020.

It should be noted that all assumptions, expectations, and views presented in the master thesis are our own. If otherwise, a source is cited to credit the original author for its views and arguments.

2. Introduction to Aker BioMarine

This paper aims to determine the intrinsic and fair share price of Aker BioMarine and provide a buy/hold/sell recommendation. Before analyzing the company, it is vital to have a sound understanding of the industry in which Aker BioMarine operates. This chapter aims to provide the reader with a solid foundation of both the industry and Aker BioMarine's operations. This chapter will commence with the introduction of the industry before presenting the company. Lastly, we will give a brief introduction to the main competitors to understand the competitive environment.

2.1 Market introduction

The paper commences with an overview of the past, present, and future of the krill market, focusing on Aker BioMarine. The development of the market and its characteristics are essential in understanding how the company will develop further and grow. Antarctic krill (Euphasia Superba) are small crustaceans that live in the Antarctic Ocean. Although difficult to measure, krill's biomass is reported to be the largest on earth, with an estimated 350 to 400 million metric tons (MT) located in the Antarctic Ocean (CCAMLR, 2018). The market has an annual quota of 620 000MT, which is less than 1% of the estimated biomass. Today, the market operates as an "Olympic fishery," meaning the season is over when the quota is reached. The players in the market are few but large. Aker BioMarine is the industry's definite leader as they expect to catch ~63% of the quota by the end-2020 leaving the remaining 37% to the remaining competitors (Aker BioMarine, 2020b).

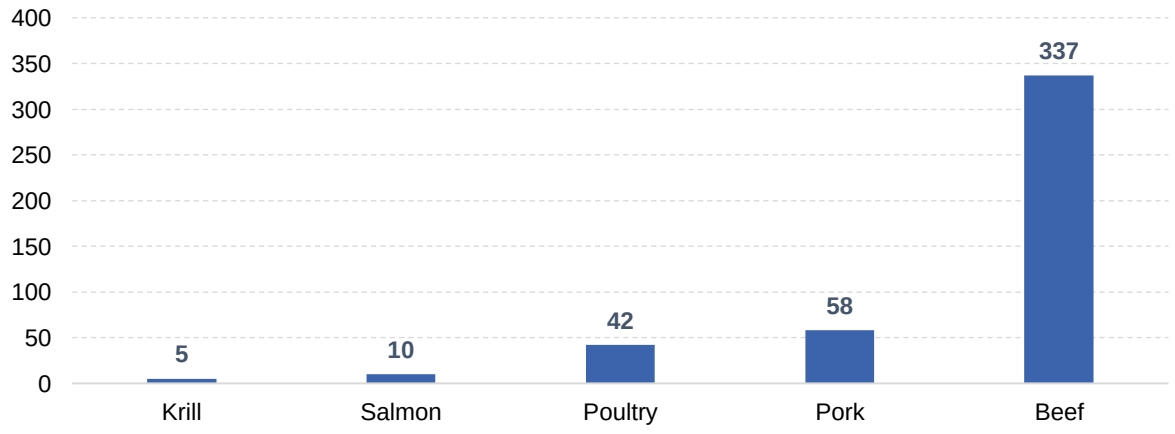
It is an industry with high entry barriers, and large capital bases are a requirement to play. The significant players embrace a rapid expansion in production capacity and manufacturing locations to gain a stronghold. Further, the industry is increasing its research and development ("R&D") efforts to expand its presence and maintain its market position according to consumer needs. In addition to high efforts in R&D, the industry has undergone significant consolidation in the past decade, with large players engaging in mergers and acquisitions ("M&A"). They acquire smaller players to consolidate their position in the krill oil market, and the increasing strategic alliances among players may intensify the competitive environment (Mordor Intelligence, 2020).

The harsh competitive environment in the market has incentivized product development to find new ways to monetize krill. For instance, Aker BioMarine recently introduced the powdered form of krill and is expected to launch a gummy paste of krill oil soon (Mordor Intelligence, 2020). The industry is also looking to leverage krill by creating food for the global population as the carbon footprint per gram of protein is amongst the lowest discovered (Figure 1). Since the beginning of the century, there have been significant R&D efforts to create both human and pet food out of krill, whereas only the latter is greenlighted for commercial production (Aker BioMarine, 2020b).

2.1.1 The market for human nutrition

The Sustainable Development Goals ("SDGs") presented by the United Nations are the blueprint for achieving a better and more sustainable future for the entire world. However, all the SDGs have one thing in common; they are indirectly affected by nutrition and food security. According to the Global Nutrition Report (2020), on a global scale, 1 in 9 people is malnourished, and 1 in 3 people is overweight or obese. The growing population and middle class disrupt the way people eat, and the food industry is already accounting for close to a quarter of global greenhouse gas emissions (Poore et al. 2018). Thus, it is necessary with actions by the industry and the population to reach the SDGs. Improving the wellbeing and nourishment of people and animals through sustainable development in products and supplements containing key nutrients is a considerable element to a healthy and prosperous life for us all.

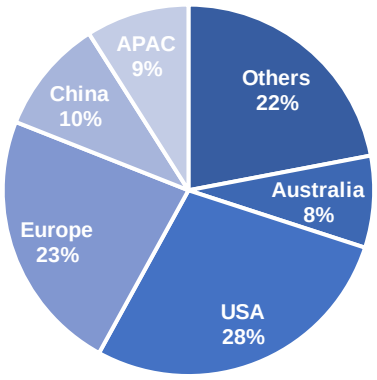
Figure 1: *Protein sources CO2 emissions: t Co2 C/t edible protein*



Source: Aker BioMarine (2020b)

The existing food system will struggle to deliver enough protein and nourishment to the growing population. The need for sustainable development is imminent, and krill could be a part of the solution. Krill has a low greenhouse gas intensity per edible protein, being only 1.48% and 50% of what beef and salmon require, respectively (Figure 1). The market participants are looking to solve these problems by introducing krill-based dietary supplements and upcoming protein foods for humans, primarily in oil or meal. The krill-based omega-3 has already been introduced to the market, but the potential for further expansion is vast as ~70% of the current global population is in a state of omega-3 deficiency (Hamilton et al., 2020). The market for omega-3 reached ~USD 4.1bn in 2019 and is expected to surge to USD 8.5bn in 2025. Implying a CAGR of 13.1%, according to Research and Markets (2019). In terms of the market share, the global omega-3 ingredients market for human consumption in 2018 was 111 210MT, where krill only held the fraction of 0.8% (859MT) in terms of volumes, but a significantly higher value at 7.4% (USD 102mn) (Research and Markets, 2019).

Figure 2: *Sales of EPA and DHA acids - market share per region (2018)*



Source: Research and Markets (2019)

There is an increased demand for high concentrated krill oil in omega-3 supplements, as it is beneficial to the general health and reduces the dosage of the capsule intake due to more potent antioxidants. Krill oil contains a potent antioxidant called "astaxanthin," which has been used to promote hearth health benefits, and various studies have proved better absorption of krill oil than fish oil (Mordor Intelligence, 2020). With the rise of nutraceuticals in the past decade, many manufacturers are exploring various ways to monetize and leverage the omega-3 fatty acid market.

Krill is not only a good source of protein and omega-3 but has also shown signs to combat several health problems. Since the beginning of the century, there has been a noticeable increase in krill oil research and promotion for its benefits (Kwantes et al., 2015). The research includes areas of management and treatment of conditions such as hyperlipidemia (Bunea et al., 2004), chronic inflammation (Banni et al., 2011 & Ulven et al., 2011), arthritis (Deutsch, 2007), and premenstrual syndrome (Sampalis et al., 2003). The focus of the research of krill oil has evolved around the content and form of the EPA and DHA acid (Bunea et al., 2004; Banni et al., 2011; Deutsch, 2007; Krill oil, 2010; Ulven et al., 2011; Sampalis et al., 2003; Maki, Reeves, & Farmer 2009). Using krill oil as a dietary supplement could be a cost-effective and organic way for patients to relieve symptoms without employing prescription drugs.

2.1.2 The market for pet nutrition

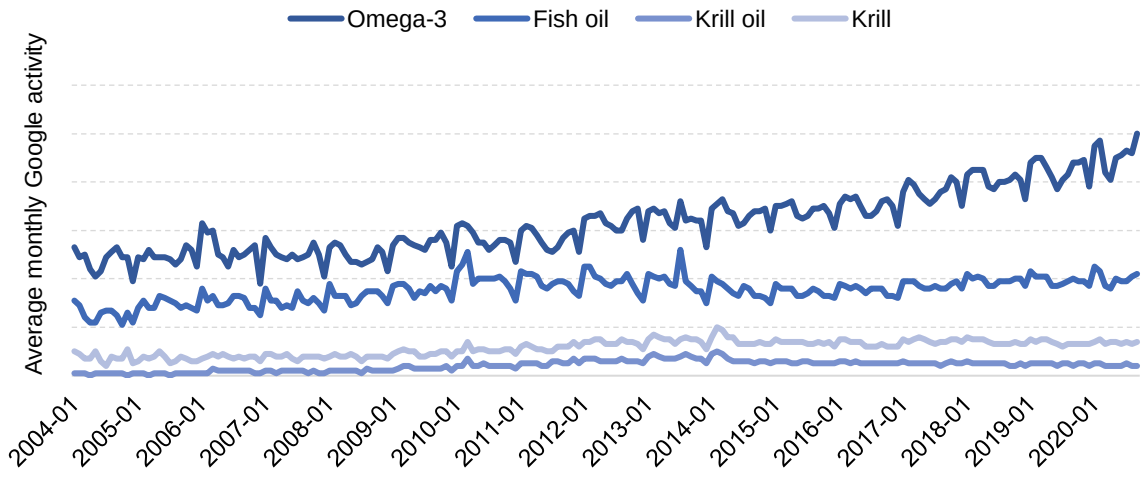
Krill is a relatively new ingredient in pet foods but brings healthy nutrients and fats to its meal. The nutrition market is traditionally a lesser value category than human foods, but it has experienced significant growth in the past years. The food ingredient in the production market for animal consumption has been dominated by soybean. The krill market is mostly untapped, and it could prove to be an attractive alternative to the soybean, given its high levels of protein and fatty acids. Pet feed is a new market for the industry, which is yet to be fully taken advantage of, and the global pet food market has grown by nearly 3.5% over the past years (Euromonitor, 2020a). Euromonitor (2020a) forecasts it to expand its growth to 4.2% per year from 2020 through 2025e globally. These numbers imply opportunities to monetize in this market, and players such as Aker BioMarine has already begun to tap into the market.

2.1.3 Recent developments

During the past decade, the health industry has introduced a broad, holistic approach to health and prevention, which has encouraged consumers to purchase vitamins and dietary supplements (Euromonitor, 2020b). Access to more information and constant connectivity is changing both the ways consumers purchase and what they demand. For instance, the US retail sales of omega-3 plunged between 2012-2014, following a 2012 study claiming an association between omega-3 fatty acid supplementation and the increased risk of major cardiovascular diseases, compounded by the 2013 Brasky prostate cancer paper.

The adverse combination of this sparked a market drop of 25-30% in the sales. Though, the conclusion of the 2012 report was proven misleading, and the sales recovered to an annual growth rate of 5% in the US (Euromonitor, 2020b). This supplement hype has been a vital part of the continued growth of krill companies. Looking at the global Google search activity, omega-3 has been steadily increasing since 2004, reaching an all-time high in 2020. However, the search activity for "krill" and "krill oil" has stayed constant in the past decade.

Figure 3: *Google search history – Global results*



Source: Google Analytics (2020)

The krill industry has experienced a high consolidation level with considerable R&D efforts to develop new products to penetrate new markets. The efforts have resulted in the recent entrance to the market for pet foods. The industry leader, Aker BioMarine, recently collaborated with the largest dog sledding race, The Iditarod, and other races. Their goals are to help the sport and community to grow, strengthen the race organizations, and showcase the world-class dog food they produce. The company uses the races to showcase how their dog food affects a dog's performance and health. According to Aker BioMarine, the nutritional ingredients have positive health benefits for dogs resulting in reduced muscle damage and inflammation.

Aker BioMarine became the first player in the industry with a fully integrated value chain in 2016, and the results have proven to be unmatched by any other competitor. Various Antarctic krill fisheries have been looking to expand their value chain to catch up with Aker BioMarine, and the increased R&D and capital expenditures (“Capex”) efforts have been deployed to do so. Due to the longevity of the R&D and capex deliveries, it may take years before the companies may reap what they sow.

2.1.4 Going forward

Typically, a few vessels have entered the market every year, but the added capacity has been offset by an equivalent number of vessels leaving the market, keeping the overall capacity almost constant. Aker BioMarine's new vessel, Antarctic Endurance, delivered in 2019, has demonstrated a significant capacity increase in the market. The significant scale advantage has led to the expected catch of 388 000MT in 2020, nearly 129 000MT per vessel, compared to competitors 17 000MT per vessel (Aker BioMarine, 2020b). There is now a pipeline of new vessels potentially entering the market over the coming years – where the first deliveries were in May 2020.

There are signals from the market that various players are increasing their efforts to catch up with Aker BioMarine's superior position. Shanghai Chonghe Marine Industry (CMI) placed an order for a krill-harvesting vessel in March 2020, the second krill trawler designed by Wärtsilä for CMI and considerably more extensive than the first one launched in Shanghai in 2020 (Wärtsilä, 2020). According to Wärtsilä, 2-3 vessels are now under construction or design in China, but no further information has been disclosed. Another large Norwegian player is Rimfrost, which entered a NOK 1bn agreement with Westcon to build a new krill fishing vessel (Rimfrost, 2019).

The global population is expected to reach ten billion by 2050, and the global demand for protein will double. We note that 70% of the earth's surface is oceans, and 11% of the landmass is farmed, while only 2% of food consumption stems from the ocean (FAO, 2017). We believe this creates a beneficial foundation and backdrop for growth in the aquaculture market.

2.2 Aker BioMarine

Aker BioMarine was established as an independent enterprise in 2006, after being a business unit in the Aker Group focusing on deep-water fishing. The previous business activities were organized under Aker Seafoods Holding (100% subsidiary of Aker ASA), apart from the biotech company Natural. Today, the company is a full-service marine biotechnology company and was relisted on Merkur Market July 6, 2020, after the 2012 delisting. Aker BioMarine is the industry leader within krill harvesting and processing, accounting for nearly 70% of all krill harvesting in Antarctica and 80% of the krill oil production (Aker BioMarine,

2020b). Globally, they operate 3 out of 13 krill harvesting vessels and owns a krill oil extraction facility in Houston, Texas.

Over the past decade, they have invested over USD 600mn to build up their industry leadership through an aggressive M&A strategy and large investments in new vessels. The group has four large vessels (three for harvest and one support), with another support vessel expected for delivery in 2021. The combination has yielded a superior position in terms of capacity, scale, and unit costs, with reduced earnings volatility backed by a strong portfolio of contracts that are decoupled from commodity prices (Aker BioMarine, 2020b). The majority of revenue come from long-term contracts (57%) or 1-year contracts or predictable volumes (33%), with only the remaining 9% of revenues from the spot market (Aker BioMarine, 2020b). The fully integrated value chain has resulted in an excellent position concerning efficiency, as the younger and more massive fleet has ~7-8x that their peers possess (Aker BioMarine, 2020b). Lastly, the biotech company also has 76 patents and more than 1 200 patent claims gained through 15 years with intensive R&D investments.

Aker BioMarine has also dedicated itself to four of the UN's sustainable development goals (2, 3, 12, and 14), and the company is highly dedicated to a sustainable agenda (Aker BioMarine, 2020b). Its core focus lies in preventing lifestyle diseases, increase resource utilization, and promoting sustainable fishery practices. Further, the company has kept a constant and close dialogue with environmental organizations such as WWF Norway and the Commission for the Conservation of Antarctic Marine Living Resources (“CCAMLR”) to ensure its operations have a low impact on both the climate and ecosystem in the Antarctic ocean.

One of the patents they hold is the so-called 'eco harvesting' technology, which reduces the by-catch and stress on the krill. Krill has traditionally been viewed as commercially inviable and environmentally challenging to sustain, but the company solved this through the new eco harvesting technology. Aker BioMarine is also regarded best-in-class for their management of the krill fishery, in an industry that has exceptionally well-managed fisheries (MSC, 2018).

Acquisition of Lang Pharmaceuticals

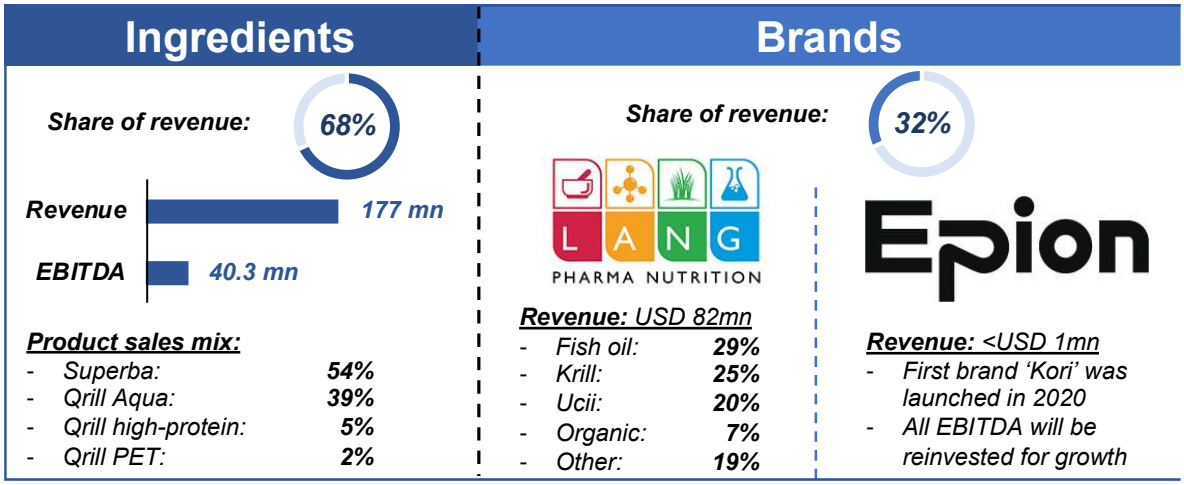
The 2019 acquisition of Lang paved the way for Aker BioMarine to gain access to pharmaceutical production capabilities and nearly 85% of retail stores in the US (Aker BioMarine, 2020b). Lang is a full service, mass-market private label, and corporate-brand

manufacturer. The firm produces 146 products across 15 categories for all major US retailers. By leveraging Lang's expertise, they established the fast-moving consumer goods ("FMCG") company Epion in 2020, intending to build a USD 100mn brand by 2025. Its strategy is to reinvest EBITDA in marketing, allowing for market development to deliver the targeted USD 100mn by end-2025. In Q2 2020, Epion launched a new brand: 'Kori,' a krill oil supplement for humans. The product has been rolled out to close to half of the targeted 85% of relevant US retail stores. It is a high gross margin product, and with full effects of Kori, it may deliver Aker BioMarine's targeted gross margin of >70% for Epion.

2.2.2 Segments

Aker BioMarine's two primary segments are "Ingredients" and "Brands." Ingredients primarily produce and market ingredients for humans, pet feed, and aquaculture. Its "Qrill" products range consists of krill meals, oils, and high-protein specialty meals. This segment also includes its wholesale B2B brand "Superba," which produces high-quality krill oil for human consumption.

Exhibit 1: *Overview of Aker BioMarine's divisions (All numbers from FY2019)*



Source: Aker BioMarine (2020a&b) and own creation

The segment accounted for ~ 70% of sales and 75% of the 2019 EBITDA. The latter segment results from the 2019 acquisition of Lang for USD 91.1mn, with an earnout of USD 60mn, and the segment experienced an 89% year-on-year ("YoY") growth in Q1 2020.

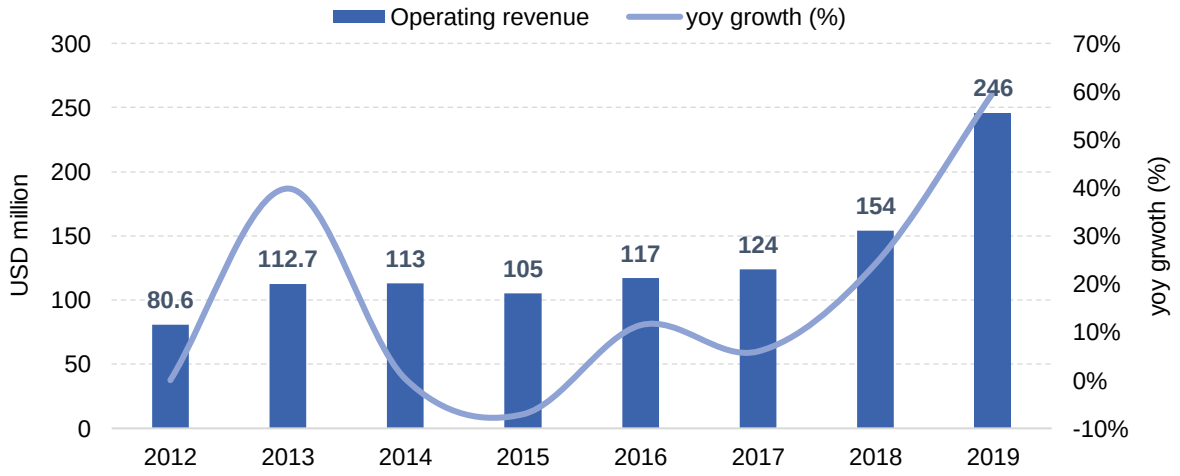
The acquisition provided direct access to the US retail market and strong relationships with its largest retailers. Aker BioMarine also produces its new krill oil supplement through its new FMCG company Epion. In the past years, the group has focused on its B2B operations to drive

revenues. However, with the recent Lang acquisition and the new Epion brand, there will be an increased focus on B2C to drive the margins going forward. The revenue split between the two segments is expected to be nearly 50%< Brands and 50%> Ingredients in 2024 (Aker BioMarine, 2020b).

2.2.3 **Revenue and production growth**

Aker BioMarine's revenue growth averaged at nearly 11% between 2012 and 2016 (Aker ASA, annual reports 2012-2016) before it augmented 30% in 2017 – 2019 (Aker BioMarine, annual reports 2017-2019). The significant boost can be attributed to the Lang acquisition in 2019, which contributed with ~USD 90mn. The organic growth in 2019 was 15% YoY, and in April 2019, the firm reported revenues of USD 24.5mn, up 31% from USD 18.7mn in 2018. The adjusted EBITDA margin averaged 16% in 2012 – 2016 and 20% in 2017 - 2019.

Figure 4: *Aker BioMarine's revenue development*



Source: Aker ASA annual reports and Aker BioMarine annual reports

Aker BioMarine owns and operates the purpose-built plant for krill oil production in Houston, Texas. The plant produces 85% of all krill oil globally, and can with its "Flexitech" technology, produce krill oil with high quality and a high content of beneficial compounds without any off-putting taste or scent. Aker BioMarine grew its total krill oil sales from USD 59mn in 2017 to USD 96mn in 2019, representing 63% growth. Lastly, they also presented a YoY growth of 63% of krill oil in Q1 2020.

Aker BioMarine has grown its production volume by nearly 40% from 29 200MT in 2017 to 40 900MT in 2019, lifted by delivering the new vessel "Antarctic Endurance." The production volume grew by only 6% YoY in Q1 2020 as the two vessels "Antarctic Sea" and "Saga Sea"

averaged 20 fewer fishing days in Q1 2020 YoY due to adverse weather conditions in Antarctica (Aker BioMarine, 2020b). It is important to note that the large discrepancies between the total catch volume and production are explained by the krill's large water content (~85%), which evaporates when the krill is processed (Aker BioMarine, 2020b).

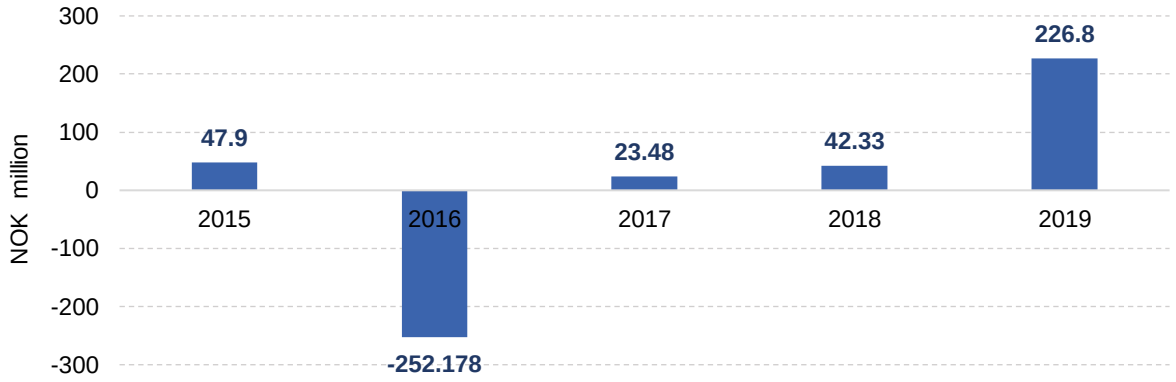
2.3 Other significant players in the krill industry

To wrap up the introduction, we will briefly present the main competitors in the krill industry. These firms harvest krill and produce krill oil but do not operate the whole value chain as Aker BioMarine does. We do believe it is essential to present these firms to give the reader a better understanding of the industry dynamics and the competitive environment. When selecting peers, one wants to choose companies comparable with Aker BioMarine along dimensions such as business characteristics and operations. However, the krill industry is a relatively young industry where the companies' different characteristics are vast, making it difficult to find perfect peers. Further, most companies are either private or a subsidiary of a conglomerate, making it difficult to derive the financials. Thus, the peers presented in the following subchapter is only to gain a better understanding of the industry and not for comparing financial- or operating metrics.

Rimfrost AS

Rimfrost is a private Norwegian vertical integrated biotech company based in Ålesund, established in 2001 by Stig Rune Remøy. Today, the firm only employs 11 people but has intentions to expand as the new vessel is delivered (Rimfrost, 2020a). Its core operations are krill-harvesting and production of krill derived products. Rimfrost is the second-largest producer in Norway and a significant player in the industry that produces both krill oil and omega-3 powder for humans and animal feed. They are also a pioneer within the R&D of krill products, as they have developed quality markers to test the krill oil for its quality. Lastly, Rimfrost was one of the first players to develop powder-based krill products for human consumption (Rimfrost, 2020b). Rimfrost presented negative revenues in 2016, which stem from a lawsuit from a customer in the US, which resulted in a reversing of the sales.

Figure 5: *Rimfrost AS' revenue development*



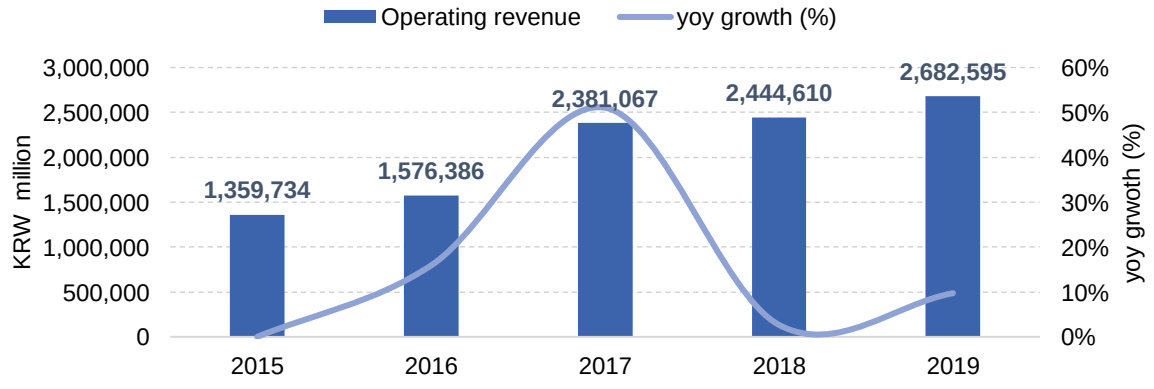
Source: Proff.no (2020)

Dongwon Industries ("DWI")

Dongwon industries CO is a South Korean deep-sea fishing company that produces and distributes fish, shellfish, crustaceans, and processed seafood. The company was founded in 1969 and has grown to be a significant player in the seafood industry. In 2009, the company acquired E. Farm Inc, a wholly-owned subsidiary of the company. The company recently invested NOK 50mn in the Norwegian on-land salmon farming company Salmon Evolution (Salmon Evolution, 2020). Dongwon Industries has three different divisions: Fisheries division, which catches, processes, and transports the marine products. Distribution division: which distributes the marine produces to Japan, the US, and Europe. Lastly, the logistics division is engaged in the transportation, warehousing, and shipping services.

The conglomerate does not operate the whole value chain in its krill operations. They only harvest the krill from Antarctica and produce krill oil. The company has no in-house R&D department for its krill operations or ingredient productions. Its sale of krill oil is wholesaled to department outlets, nor do they have their sales and marketing department.

Figure 6: *Dongwon Industries revenue development*



Source: Wall Street Journal Market Data (2020)

Shanghai Chonghe Marine Industry ("CMI")

Shanghai Chonghe Marine Industry Co., Ltd. is the parent company of Jiangsu Sunline Deep Sea Fishery Co., Ltd. ("Sunline Fishery"). It is a comprehensive enterprise with diversified business. Since its establishment, CMI has been focusing on shipbuilding and marine industry and has invested in ship repair, ship design, ship trading, ship financial leasing, ship management, marine mining, offshore wind power, polar fishing, marine aquaculture, environment, and other fields.

Sunline Fishery, managed by CMI, specializes in the development and utilization of Antarctic krill resources. Sunline is invested in an Antarctic krill fishing vessel called "Shen Lan," meaning "Deep Blue," launched from Shanghai previously this year. It is the world's largest krill fishing vessel, which uses onboard processing technology and is the only one in China. Deep Blue's goal is to sail in Antarctica by the end of 2020 and harvest krill. Sunline Fisheries is the leader of China's fully integrated Antarctic krill resources.

China has a set goal to become a global leader in the krill industry, and CMI has commenced the journey in 2020. CMI has planned its entry in the krill industry for years, as it already in 2017 entered a joint venture with Neptune Technologies and Bioresources Inc. to accelerate the sale of omega-3 products in China (Reuters, 2017). The company expects to be one of the industry leaders once the delivery of their ordered vessel arrives.

3. Choice of the valuation frameworks

By an in-depth examination of the highly influential theoretical valuation frameworks of Koller et al. (2020), Damodaran (2012), and related finance literature, we identify three valuation techniques of particular importance in modern valuation theory. The first approach is the *discounted cash flow* ("DCF")-based model, which has its foundation in the present value ("PV") rule and prices an asset based on its expected future cash flows. Secondly, the *relative valuation* approach values assets based on the market values of similar assets. The final method is the *contingent claim* approach to valuation, in which option pricing models are utilized to calculate the value of assets with option characteristics. Although these approaches have the same end goal of valuing an asset, the outcomes and applications can vary. In the following sections, we will discuss these models' attributes and our choice of methodology in greater detail. The chapter will be closed off with an introduction to the step-by-step approach that we will utilize to derive our final valuation estimate.

3.1 DCF-based valuation approach

The discounted cash flow valuation methodology focuses on an asset's fundamentals to derive an estimate of the asset's intrinsic value. DCF involves taking the expected future cash flows of an asset and discounting them with the right discount rate to arrive at the present value of cash flows (Damodaran, 2012). The general DCF model is expressed through the following equation:

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

Where, n = *Asset life*

CF_t = *Period t cash flow*

r = *Discount rate*

While a range of discounted cash flow approaches exists in today's financial literature, the literature is generally divided between four commonly used DCF-based methods (Koller et al., 2020): the equity valuation method, the enterprise discounted cash flow method, the

discounted economic profit method, and the adjusted present value method. Appropriately implemented, all the methods mentioned in this sub-chapter will yield the same value.

3.1.1 The equity valuation approach

The equity valuation method is used to value only the equity claims on the business. The equity cash flows show the expected amount of additional cash the firm will have on-hand to conduct repurchases of shares or to pay dividends within each given year. Given that these projected cash flows represent payments to equity holders, the correct discount rate should be the equity cost of capital (Berk & DeMarzo, 2020). The discounted cash flow to equity formula is presented below:

$$Equity\ value = \sum_{t=1}^{t=n} \frac{CF\ to\ equity_t}{(1 + k_e)^t} \qquad Eq.2$$

Where, n = *Asset life*

$CF\ to\ equity_t$ = *Period t cash flow to equity*

k_e = *cost of equity*

Although the firm and equity models use different cash flow definitions and discount rates, both models should produce the same output in terms of equity value as long as the valuation assumptions are used consistently. Cash flow to equity is calculated by adding non-cash expenses to net income to determine the gross cash flow. Working capital investment is then subtracted, along with fixed assets and non-operating assets. To this, debt increases and increases other non-equity claims are added, whilst any decreases in debt or other non-equity claims are subtracted to finally arrive at the cash flow to equity (Koller et al., 2020).

In the discounted cash flow to equity formula, the cost of equity is used as the correct discount rate, as this method does not adjust for non-operating assets or debt contrary to the WACC-based enterprise model. This is frequently pointed out as one of the model's risk aspects, as it does not take into account any potential changes in the debt-to-equity ratio unless the cost of equity is adjusted accordingly to mirror the risk inflicted on equity holders. Moreover, the equity model is also problematic because it prices non-operating assets, as the non-operating and operating cash flows are incorporated in the cash flow to equity and are discounted at the

same discount rate. Consequently, the equity methodology can be challenging to implement correctly in certain investment cases (Koller et al., 2020).

3.1.2 **The enterprise discounted cash flow model**

In the enterprise DCF approach to valuation, the firm's entire value is estimated by discounting the cash flows to all firm claim holders at the weighted average cost of capital ("WACC") rate. By doing this, the value effect of the debt tax benefits and debt risk is incorporated into the firm valuation. Although the firm and equity models use different cash flow definitions and discount rates, both models should produce the same output in terms of equity value as long as the valuation assumptions are used consistently. Koller et al. (2020) describe a four-step process in order to derive the value of a company's equity using the enterprise DCF approach:

Estimation of the value of the firm's operations

The value of the operating assets of a firm is estimated by discounting the free cash flow to the firm at the cost of capital. This value estimate represents the value of all firm investors' claims independent of company financing, including debt holders and equity holders. In the most general case, the model can be written as follows (Damodaran, 2012):

$$Value\ of\ firm\ = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+WACC)^t} \qquad Eq.3$$

Where, n = *Asset life*

$FCFF_t$ = *Period t free cash flow to the firm*

WACC = weighted average cost of capital

Identification and valuation of non-operating assets

Further, to arrive at the enterprise value, the value of non-operating assets is added to the firm's discounted free cash flow. These non-operating assets are assets that possess value but are valued separately and are not enclosed in regular operating profits or accounting revenues. Among the most frequently encountered non-operating assets, we have marketable securities, excess cash, investments in public firms and private firms, and tax loss carryforwards.

As these non-operating assets all have different characteristics, individual asset characteristics will have to be considered when valuing them (Koller et al., 2020).

Identification and valuation of debt and other non-equity claims

Before extracting the enterprise DCF approach's equity value, the value of all non-equity claims needs to be calculated. Although non-equity claims are a broad concept, it can be divided into four categories (Koller et al., 2020). The first category is traditional corporate debt, which can be raised directly as private debt from banks or groups of investors or public debt in the public marketplace. Standard corporate debt instruments include mortgage bonds, debentures, notes, and asset-backed bonds (Berk & DeMarzo, 2020). The second one, debt equivalents, is the same as regular debt but without the same formal requirements. Debt equivalents encompass operating leases, provisions, contingent liabilities, and preferred stock. Further, the portion of the minority interest in other entities must also be identified and valued. Lastly, hybrid financial claims such as convertible bonds and stock options should also be considered when valuing non-equity claims.

Extraction of the shareholder's equity value

Finally, once a value is attached to the non-equity claims, the shareholder equity value can now be calculated by deducting the value of non-equity claims from the firm value. Although the enterprise DCF model and equity model use different cash flow definitions and discount rates, both models should produce the same output in terms of shareholder's equity value as long as the valuation assumptions are used consistently. The price per share can be calculated by dividing the total shareholder's equity value by the firm's most recent number of undiluted shares outstanding. Using the undiluted shares outstanding is essential to avoid a double-counting problem, as we remember having already subtracted the stock options and convertible debt from firm value by the deduction of non-equity claims.

The enterprise discounted cash flow is the preferred valuation method among both academia and practitioners as it builds upon a company's cash flow, contrary to the accounting-based earnings in the economic profit model (Koller et al., 2020). Although the firm and equity models use different cash flow definitions and discount rates, both models should produce the same output in terms of equity value as long as the valuation assumptions are used consistently.

3.1.3 The discounted economic profit model

While the enterprise discounted cash flow builds upon a company's cash flows, the discounted economic profit model, or economic value added ("EVA") model, spotlights the origin and timing of value creation through the use of accounting-based earnings. It uses the DCF methodology explained in the previous subchapters and will, through proper implementation, yield the same shareholder's equity value as *Eq.2* and *Eq.3*. It is based on the economic profit measure, which is expressed through the following equation (Koller et al., 2020):

$$Economic\ profit\ =\ Invested\ capital\ \times\ (ROIC\ -\ Cost\ of\ capital) \qquad Eq.4$$

Where, *ROIC = Return on invested capital*

Now, by making use of the general DCF model, as illustrated in *Eq.1* along with algebraic transformations, we end up with the following general formula for discounted economic profits:

$$Value_0\ =\ Invested\ capital_0 + \sum_{t=1}^{\infty} \frac{Economic\ profit_t}{(1+WACC)^t} \qquad Eq.5$$

Economic profit is a measure of a company's value creation in a single period. This valuation measure is beneficial when examining if value creation in specific businesses has changed from one year to the next. However, one issue is that it does not do an outstanding job describing variation in economic profit for different size businesses. Nonetheless, since the discounted economic profit model is derived from the DCF formula, both models' valuation output should be identical when implemented correctly (Koller et al., 2020).

3.1.4 The adjusted present value model

The adjusted present value model ("APV") is a flexible valuation method with a particular focus on considering corporate tax and financing side-effects. The APV is calculated by combining the levered firm's value with the present value of tax benefits and deducting the present value of financial distress costs. The APV is expressed through the following equation:

$$Adjusted\ present\ value = V^U + PV(ITS) - PV(CFD) \qquad Eq.\ 6$$

Where, V^U *= Unlevered value*

$PV(ITS)$ = *Present value of interest tax shield*

$PV(CFD)$ = *Present value of costs of financial distress*

To arrive at the adjusted present value using the equation shown in *Eq.6*, we estimate the firm's value in three steps (Damodaran, 2012).

Value of the unlevered firm

The first part of the APV approach requires estimating the firm value with no leverage, essentially valuing the firm as if it had no debt. To complete this step, the free cash flows will have to be discounted by the firm's cost of capital if it was without debt financing, known as the unlevered cost of capital (or "pre-tax WACC"). The following equation returns the unlevered cost of capital:

$$Unlevered\ cost\ of\ capital\ = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D \qquad Eq.7$$

Where, E = *Market value of equity*

D = *Market value of debt*

r_E = *cost of equity*

r_D = *cost of debt*

Further, the expected free cash flows of the firm are discounted at the unlevered cost of capital as follows to arrive at the value of the unlevered firm:

$$Unlevered\ value\ = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+r_U)^t} \qquad Eq.8$$

The present value of interest tax shield

After calculating the value of the unlevered firm, the next step is to examine today's value of the interest savings from debt financing. The benefit of the interest tax shield is calculated by multiplying the interest payments with the firm's corporate tax rate. The interest tax shield is discounted by the appropriate cost of capital to reflect the riskiness of interest payments.

To provide a general example, a firm that manages a target leverage ratio will have to apply a cost of capital that reflects the risk of the firm's cash flows, that is, the unlevered cost of capital.

Vice versa, if debt-levels are fixed in advance, the interest tax shield should be discounted using the cost of debt (Berk & DeMarzo, 2020).

Effect of borrowing and expected cost of bankruptcy

The third and final step is to examine the effect of bankruptcy costs. There are three key components in evaluating bankruptcy costs: The first is the probability of bankruptcy, the second is the expected cost in the case of bankruptcy, and the third is the appropriate discount rate for bankruptcy costs (Berk & DeMarzo, 2020). In practice, calculating the components mentioned above is considered challenging, and most practitioners ignore the use of expected bankruptcy costs due to various reasons (Koller et al., 2020). Meanwhile, the APV approach is appreciated by many due to its flexibility in considering side-effects from tax and financing. When these three steps are concluded, the adjusted present value can be determined using *Eq.8*.

3.2 The relative valuation approach

The previous subchapter explained the discounted cash flow-based model's recognition among investors as a flexible and insightful valuation methodology. For a simpler and easier-to-understand approach to valuing an asset, an investor may look to relative valuation instead. In relative valuation, an investor deploys a relatively quick and easy method of evaluating an asset by comparing the asset in question with similar assets already priced in the marketplace. One of the critical aspects of successful relative valuation is transforming prices into standardized ratios and multiples of firm measures such as sales, earnings, and book values. Damodaran (2012) lists four different categories of standardized multiples:

Multiples of earnings

As the most common group of multiples in relative valuation, earning multiples take use of the earnings measures such as earnings, EBITDA, and EBIT to measure relative value. The most well-known of these ratios is the price-earnings ("P/E") multiple, in which market price per share is the numerator and earnings per share is the denominator. The P/E multiple can be derived from both historical earnings, known as a trailing multiple, and forward-looking estimates of earnings, which is defined as a forward multiple (Gaughan, 2017).

Earnings multiples based on enterprise value ("EV") are also common, such as the EV-to-EBITDA and EV-to-EBIT multiple. The latter is perceived to be a more reliable guide to a

firm's relative value than P/E multiples since it allows for a better comparison of firms with different capital structures (Koller et al., 2020). The valuation outcome of different earnings multiples may vary significantly. The various earnings measures are affected by accounting rules and principles to a lesser or greater degree. As one goes further down on the income statement, the probability increases that special non-recurring effects may distort the multiple (Kaldestad & Møller, 2016).

Multiples of book values

In the relative valuation universe, book value multiples are based on values recognized in financial statements are historical, and not market values. The most recognized book value multiple is the price-to-book ratio ("PB"), which is defined as the market price per share divided by the book value of equity per share. This metric's general investor perception may be useful in revealing undervalued and overvalued stocks in the market. That is, firms trading in the market at less than their book value or firms trading higher than their book value, respectively.

While easy to understand, comparing the book values ratios across firms may prove to be challenging. Damodaran (2012) addresses three challenges one might face when conducting relative valuation using book value multiples. The first reason is that book values are based on financial statements and accounting principles, which may differ between firms. Following, firms in specific asset-light sectors, such as information technology, may not be meaningful to assess based on their tangible assets' value. Lastly, as equity book value can potentially become negative, the metric may not come out as meaningful.

Multiples of revenue

In the preceding categories, the focus has been on financial measures based on accounting principles. For revenue multiples, the presence of implications due to accounting practices is lower. In particular, the general literature on revenue multiples is split between the ratios Price-to-Sales ("P/S") and EV-to-Sales, defined as price divided by sales and EV divided by sales, respectively. As mentioned, under the prior relative valuation methods, some firms may have negative earnings or negative book values.

In some instances, comparable analysis using sales as the denominator may provide a more meaningful outcome as a revenue figure is present for firms in all stages of a business cycle. Despite its upside of being applicable to most firms, the use of revenue multiples is not free

from complications. To exemplify this, using revenue multiples can easily lead to high valuations for firms that are creating high revenues but at the same time are losing money over a more extended period and that are inevitably destroying shareholder value.

Sector-specific multiples

For some sectors, the broad scope of the earnings, book value, and revenue multiples will cause valuation estimates to not become meaningful for companies in that specific sector. The reasons for this can vary, but generally, new or specific sectors with financial characteristics such as negative earnings, negative book values, and negligible revenues may need sector-specific multiples. However, as these multiples apply only to the companies in the sector, they could potentially cause substantial over-or undervaluation of specific sectors compared to the overall market. Moreover, controlling for differences across firms could prove problematic when using such multiples (Damodaran, 2012).

3.3 The contingent claim approach

The contingent claim approach, also known as option-based valuation, is based on using financial option theory to derive a firm's value with optionlike qualities (Damodaran, 2012). Black & Scholes (1972) popularized a financial option is defined as a right, but not an obligation, to buy or sell a stock at a given price. This same methodology has later been translated for use on operational assets, which is called real options in today's financial theory. Central to this theory's wide-spread recognition is the presumption that a contingent claim approach will value assets with payoffs dependent on specific events better than valuation methods such as the DCF-based models. I.e., such methodology will be beneficial for the valuation of assets such as patents and unexploited attractive natural resources.

One challenge in option-based valuation is that there is high uncertainty attached to the variables that are to be estimated. First, there is no liquid market for the real option as there is for traditional financial options. Some of these challenges are also caused by estimating the value of the exercise price and challenges in applying a correct volatility and estimating the asset's useful life.

3.4 Choice of valuation methodology

As showcased in preceding subchapters, any choice of valuation methodology has its positives and negatives. While the three main valuation frameworks we presented all share the same end-goal of valuing an asset, they are still doubtful to produce the same valuation output in the end. Thus, selecting an appropriate valuation methodology for the asset in question is considered a critical step in the process of valuing an asset. Damodaran (2012) points out three business characteristics that are essential in choosing the right valuation approach: the marketability of assets, the firms' cash flow generating capacity, and its uniqueness.

Firstly, Aker BioMarine possesses many traits usually seen in businesses that are considered growth businesses and expect growth both in the short and long term. The firm intends to have a long-term position as the krill industry leader, and using a discounted cash flow analysis is fitting as such. As a publicly-traded company, it fits into Damodaran's category of firms with a cash flow generating capacity suitable for a valuation using DCF methodology. In addition to this, Aker BioMarine operates in a specific segment where a limited amount of similar assets are trading. Although the company is comparable to a range of firms through its activity in end-markets such as human nutrition, aquaculture, and pet food, a limited number of firms are available for direct comparison. In such cases, discounted cash flow valuation may also be preferred to arrive at better value estimates (Damodaran, 2012).

Based on relevant theory combined with our reasoning, we assign the enterprise DCF model and the economic profit model to derive our fundamental valuation estimate of Aker BioMarine. Since the FCFE model may be sensitive to errors in estimating leverage changes, we deem this model less relevant for our valuation (Damodaran, 2012). Besides, we also exclude the APV method due to its more complicated nature and less insightful methodology. Furthermore, we recognize multiples as a practical approach to provide a complementary view and validation of our DCF valuation analysis. This can be a great check on our principal valuation analysis and may potentially give us clues if there is something wrong with our model, which in turn would prompt further research and explanation (Damodaran, 2012).

A relative valuation approach would require a selection of directly comparable firms with similar firm characteristics to Aker BioMarine to provide us with a meaningful value estimate. No other krill firms with a fully integrated value chain are trading in the market today, making a multiple-based valuation less applicable for Aker BioMarine. However, since multiple firms operating in the same end markets and similar sectors are listed in the marketplace, these could provide much insight as a supplement to a DCF or option-based approach. Therefore, we decided to complement the fundamental valuation with a relative valuation estimate based on relevant peers. While a contingent claim approach may be suitable to value assets with growth options and promising underlying, Kaldestad & Møller (2016) argue that there are considerable challenges linked with the option-based method's assumptions. Building on this, our view is that an option-based approach may not be the aptest tool in the case of Aker BioMarine.

3.5 Valuation framework

As mentioned, our valuation approach will be based on the discounted enterprise model and the discounted economic profit model, with a supplemental relative valuation. To execute this analysis, it will require us to do an in-depth examination of Aker BioMarine's fundamental information extracted from all publicly available sources, such as annual and quarterly reports, admission documents, historical financial information, and company presentations. This information will be examined in five steps, which will ultimately result in a fundamental valuation of the company and our recommended investment action choice. The steps are summarized below.

3.5.1 **Selected step-by-step valuation approach**

1. Strategic analysis

As a first step toward our valuation analysis, we will conduct a qualitative analysis of Aker BioMarine's business model's market and firm-specific elements. By utilizing publicly available information, we will understand the company's operational performance, its surroundings, and its crucial value drivers. This analysis will be split between an internal analysis of the company’s competitive position and an external analysis of macro factors affecting industry performance.

Also, we have included an analysis of internal and external ESG factors to provide context as to how this may affect the valuation of the company both in the marketplace and in the valuation performed in this thesis.

2. Financial statement analysis

Our financial statement analysis is a quantitative analysis of Aker BioMarine's historical financial information, with the overall goal of understanding the firm's past to successfully forecast its future (Koller et al., 2020). This will include a reorganization and adjustments of financial statements to prepare them for the investment analysis, and an in-depth examination of historical performance.

3. Forecasting and cost of capital

On the basis of our findings in the strategical financial statement analysis in the two precedent steps, we will perform forecasting of financial statements and estimate the future cost of capital. We do this by following relevant valuation guidelines to produce estimates of Aker BioMarine's free cash flows, economic profits, and the weighted average cost of capital.

4. Valuation analysis

Our selected approach for deriving an estimate of Aker BioMarine's equity value is the enterprise discounted cash flow model and the discounted economic profit model. Ultimately, this will enable us to derive our fair value of the company's stock. Moreover, we will also test how specific input variables will impact our valuation estimate by means of a sensitivity analysis. As a supplement to our fundamental valuation analysis, we will also perform a relative valuation of the firm using multiples.

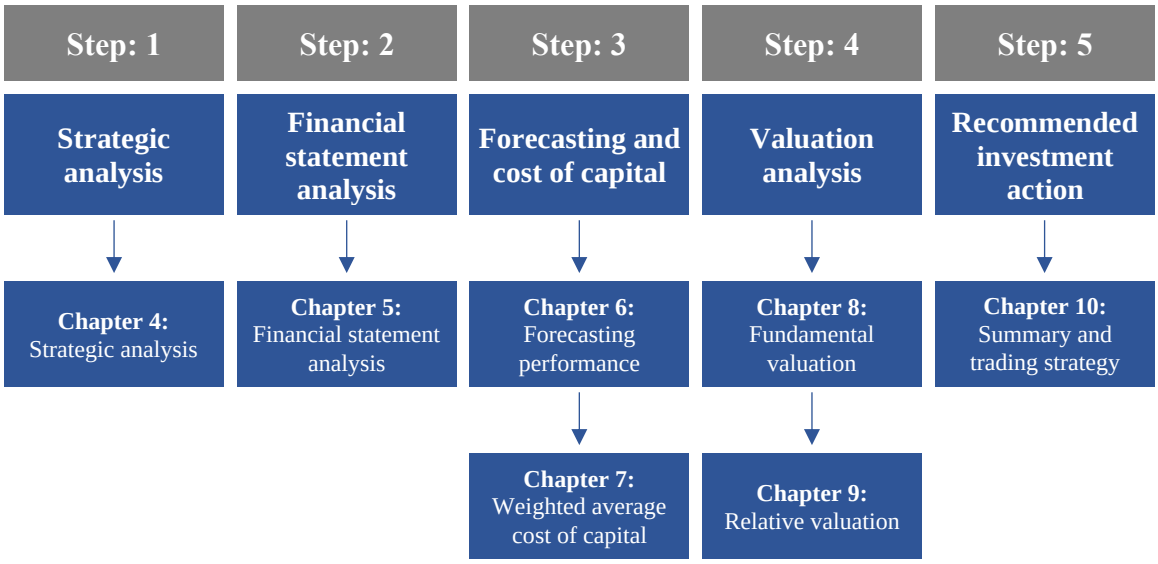
5. Recommended investment action

After arriving at our fair price of Aker BioMarine's stock, we will discuss our recommended investment action for the stock and form a conclusion of our valuation analysis. This involves an assessment of our findings and our valuation estimate against the price at which the company's share is trading in the marketplace and our recommended investment strategy in the form of either a BUY, HOLD or SELL recommendation. We conclude the final part with an overview of analysts' target prices and a short note on the company's share price development after our analysis.

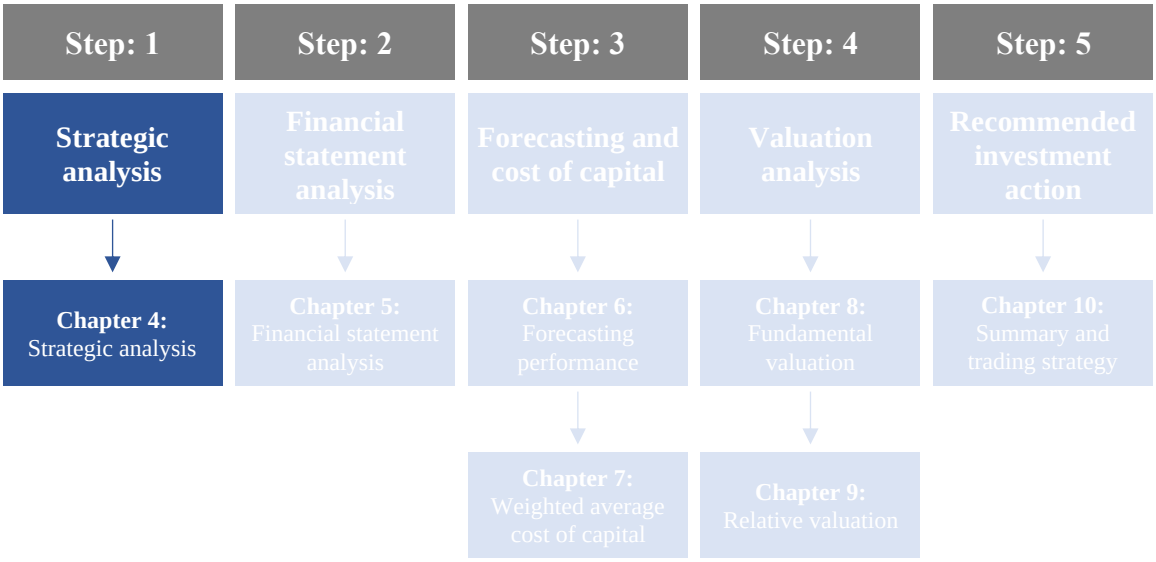
3.6 Visualization of the valuation framework

Exhibit 2 gives a visual presentation of the structure of our thesis based on the step-by-step valuation framework presented above:

Exhibit 2: *Aker BioMarine valuation framework*

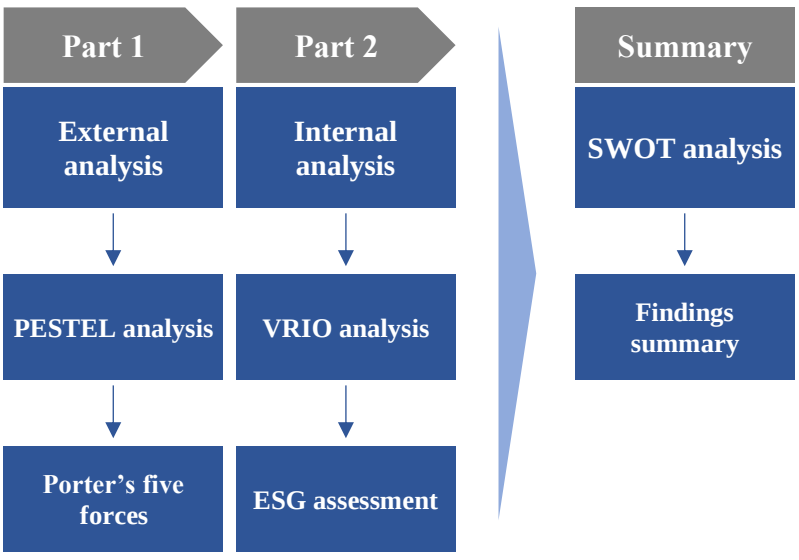


4. Strategic analysis



This analysis is conducted in two parts, namely through external and internal analysis. The external analysis will be performed utilizing two widely recognized frameworks, the PESTEL framework and Porter's five forces. Following an analysis of Aker BioMarine's macro environment and industry-specific factors, we utilize VRIO analysis as our tool to uncover the company's internal strategic capability. The VRIO analysis is followed by a SWOT analysis, where we summarize the findings in our internal and external analysis and determine how the underlying factors affect the company's competitive position. On top of this, we will perform an ESG assessment of Aker BioMarine and explain how we see this to play a vital role in our valuation analysis.

Exhibit 3: *Aker BioMarine valuation framework*



4.1 Key drivers and risk in the krill industry

Deploying the PESTEL framework, we will analyze the external factors affecting Aker BioMarine and the krill industry. A PESTEL analysis intends to help uncover macroeconomic aspects crucial to the firm's competitive environment both today and in the future (Løwendahl & Wenstøp, 2010). The framework is based on six categories of factors affecting a firm's macroclimate: *political*, *economic*, *sociocultural*, *technological*, *environmental*, and *legal* aspects. In this chapter, we dive into each of these categories and discuss how they affect Aker BioMarine and the krill industry.

4.1.1 **Political and legal factors**

Licenses and quotas

Krill fishing operators in Antarctica are dependent on regulations from national authorities in the company's country of origin, in addition to regulations set by CCAMLR, and the international treaty includes 25 member states. An operator first needs to receive a krill fishing license issued by its home authorities. In the case of a Norwegian operator, a license is to be issued by Norwegian authorities. It will include certain country-specific conditions and regulations, such as minimum ownership requirements from Norwegian investors and compliance with Antarctic krill fisheries' regulations. Any breach of these conditions may result in permanent or temporary suspension or modification of current license agreements.

Moreover, all krill harvesting operators must also adhere to rules and regulations imposed by the CCAMLR. This includes the CCAMLR's current annual quota restriction of 620 000 MT, resembling >1% of the total krill biomass of 379 million tons (CCAMLR, 2018b). As with country-specific regulations, any operator breaking with the CCAMLR regulations may face the consequences in the form of restriction on fishing activity or even withdrawal of licenses. Despite the fact that today's harvest limit has never been reached before, this quota may still be subject to future changes. The quota limit is conditional to recommendations issued by CCAMLR's Scientific Committee, which is derived from the leading scientific data and research available. On top of this, the Antarctic ecosystem is considered vulnerable, and potential political pressure may force regulators to impose further regulation on krill fisheries in the Antarctic (Norwegian Ministry of Foreign Affairs, 2015).

International trade wars and regulations

In recent years, the international trade war has impacted the state of global trade and regulations dramatically. After decades of increasing international trade and acceleration of free-trade agreements, the focus has been shifting towards more restrictions and re-negotiation of existing international trade deals among the world's biggest economies. Most prominently, the recent US-China trade war initiated by the Donald Trump administration has caused the US and China to impose stricter regulations and tariffs on each other. Although a "first-phase" trade deal was struck between the US and China in early 2020, considerable uncertainty is still present in the trade relationship between the two economic superpowers (Donnan et al., 2020). While this conflict is mostly a matter of tension between the US and China, the rising US protectionism has also sparked fears of a more widespread de-globalization trend affecting international trade and regulations (Steinbock, 2018). Today, the krill industry depends on global trade and exports to grow and increase total krill demand. Factors such as adverse changes in international trade and de-globalization are viewed as scenarios that could potentially damage the industry.

COVID-19 policymaking

The ongoing coronavirus ("COVID-19") pandemic poses several risk factors to all global business operations, including the krill industry. Since the virus was recognized as a pandemic on March 11, 2020, global trade has been falling dramatically, with the October 2020 trade volume forecast indicating a fall of 9.2% in world merchandise trade volume in 2020, according to the World Trade Organization (2020). The pandemic does not only pose a global health threat and causes financial market uncertainty, but it also managed to bring attention to stricter international trade regulation by policymakers worldwide (Jean, 2020).

Even though it may be too early to determine the long-term effects of COVID-19 on global trade policies, some experts assert that the coming months will be crucial for global policymakers in shaping the global trade landscape going forward. More so, they claim that if the right actions are not taken, the world might be facing longer-lasting consequences in the form of a slower than expected economic recovery, political tension, and increased social differences, which may ultimately affect economic growth and global trade (Rogoff, 2020). The future development of the krill industry is likely to be affected by the political and regulatory outcome of the COVID-19 pandemic, as such.

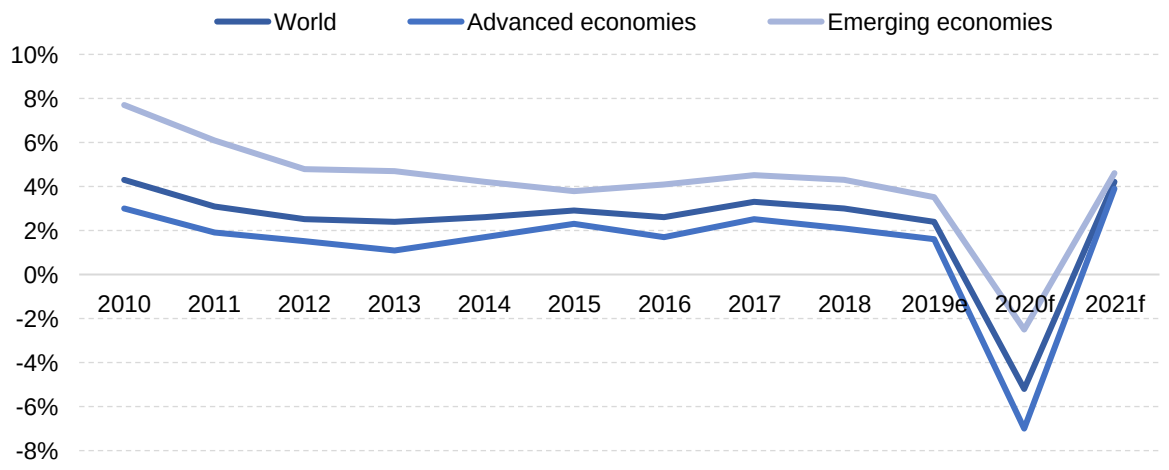
4.1.2 **Economic factors**

Macroeconomic aspects: GDP Growth

As of October 30, 2020, over 46.1 million people have been infected, and more than 1.2 million people have lost their lives due to the novel coronavirus (Johns Hopkins University, 2020). While the outbreak of the virus has not only turned into a global health crisis, it has also had an enormous impact on the global economy and GDP growth. This economic impact is attributable primarily to the far-reaching measures introduced by governing powers worldwide, including travel bans, social distancing measures, and lockdowns. In turn, this has had a direct negative impact on activity in industries such as airlines, hotels, and restaurants, with indirect adverse effects on many more. Moreover, although this crisis has prompted record-breaking economic measures and stimulus from governments worldwide, it has also caused record-breaking job loss numbers and a historically steep fall in GDP growth (Gambino & Singh, 2020).

As illustrated in figure 7, GDP growth has been stable in the last years, following a drop after the financial crisis of 2008-2009. In this same period, emerging economies have had the highest annual GDP growth, performing above the world average, followed by advanced economies posing a slightly lower GDP growth. From this graph, the coronavirus's macroeconomic impact is evident, with real GDP growth forecasted by The World Bank to be negative in 2020. Yet, they expect GDP growth to be back to normalized levels already in 2021, with the world economy envisioned to recover moderately (The World Bank, 2020a).

Figure 7: *Real GDP growth*

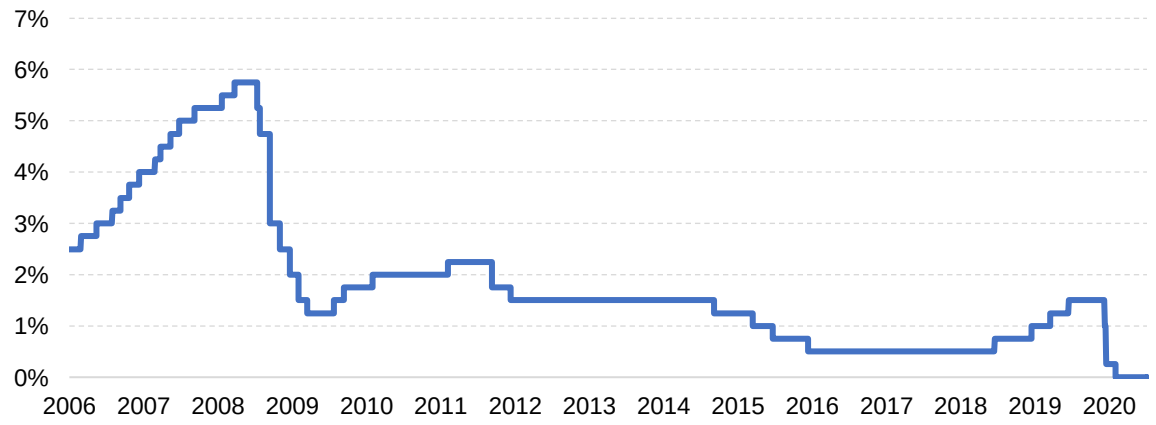


Source: World Bank (2020)

Macroeconomic aspects: Interest rates

In Norway, the Central bank's policy rate is viewed as the main instrument in monetary policy and is defined as the interest rate on deposits from banks in the Central bank up until a certain amount (Norges Bank, 2020b). The rate is set based on an assessment of economic development, and a decision on whether to change it or not is typically made eight times a year. The interest rate can be significant for businesses considering whether to undertake investment or not, and a lower interest rate environment may provide an attractive opportunity to fund specific investments. As observed from figure 8, the policy rate fell from a 5.75% level in 2008 to a near 1% level in the years following the financial crisis of 08/09. The rate has been falling further in recent years, breaking the 1% and further-reaching a historical 0% in 2020 due to the abrupt fall in activity due to COVID-19. As of September 2020, the Norwegian Central bank predicts that the policy rate will remain at the 0% level in some time going forward to stimulate activity during the crisis (Norges Bank, 2020c).

Figure 8: *The Norwegian Central bank's policy rate*



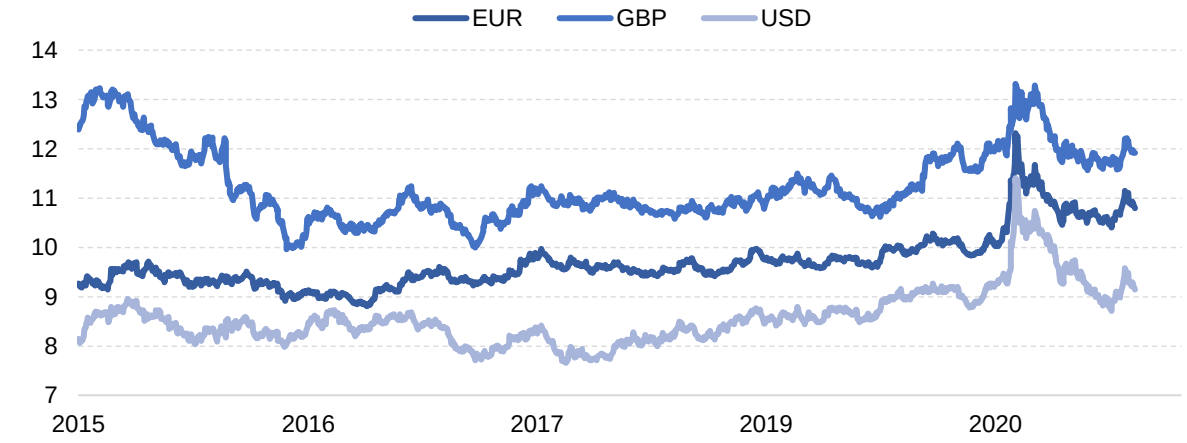
Source: Norges Bank (2020a)

Exchange rates

Krill companies operating in an international market will be impacted by currency fluctuation, both directly and indirectly. They are affected directly through sales of krill, ingredients, and end-products to the global market and investment in new vessels and equipment. For Norwegian krill companies, many products are exported to the US, Europe, and APAC, making changes in exchange rates of importance for the krill industry's economic performance. The krill industry is mainly affected by fluctuations in the major currencies, such as the Euro, US dollar, and Great British pound.

A weak Norwegian krone (NOK) is favorable for Norwegian businesses exporting to other countries. The significant effect of the weak NOK is confirmed in a Nofima report from 2016, showcasing that out of an increase in NOK 22.4bn seafood exports in 2012-2015, NOK 14.1bn was attributable to a weaker Norwegian krone (Nofima, 2016).

Figure 9: *NOK exchange rate development (EUR/GBP/USD)*

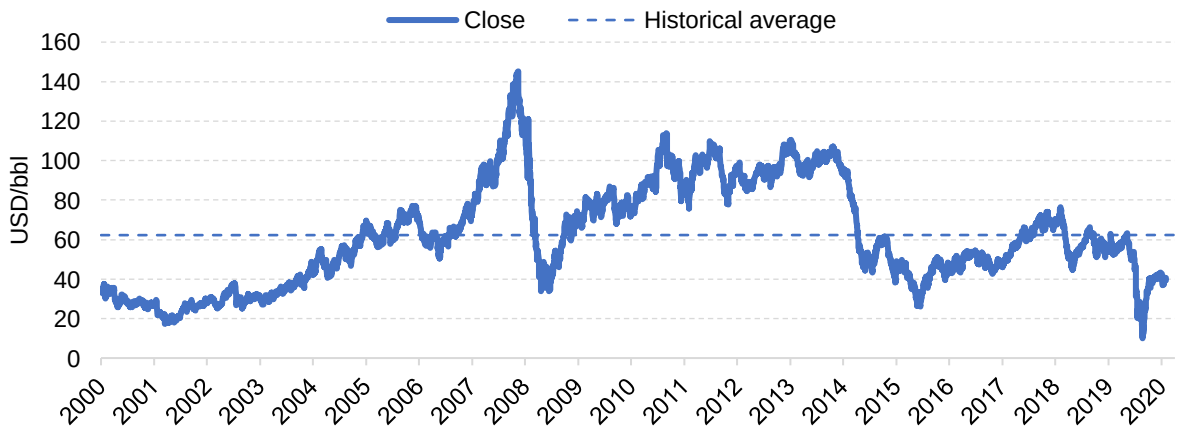


Source: Norges Bank (2020d)

Oil price

A sizeable amount of a vessel's operating expenses are attributable to fuel costs. I.e., fuel costs contributed to ~30% of Aker BioMarine's offshore operating expenses in 2019. Each vessel expects to consume ~35,000 metric tons of fuel annually going forward (Aker BioMarine, 2020b). While limited data is available for fuel consumption for other companies in the krill industry, we expect that fuel cost is just as crucial in the krill industry overall as it is for Aker BioMarine, given that all competitors have considerably older fleets. Thus, increases in oil prices could put noticeable pressure on the profitability of the krill industry.

Figure 10: *Crude oil price development (USD/bbl)*



Source: Yahoo Finance (2020a)

4.1.3 **Sociocultural factors**

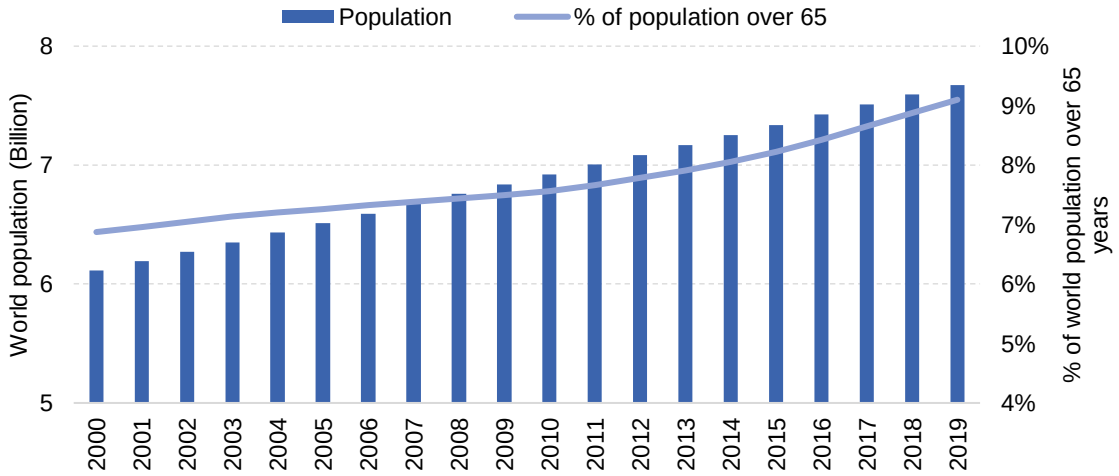
Demographic aspects

According to The World Bank, the world's population was at a staggering 7.67 billion by the end of 2019. From a total population of 6.11bn in 2000, today's population represents more than a 25% growth in population since the 2000s (The World Bank, 2020b). Furthermore, the population growth is not expected to come to a halt any time soon, as the Food and Agriculture Organization of the United Nations ("FAO") expects the world population to reach almost ten billion by 2050. This does not come without implications for the world's food security, with food production expected to grow by 70% by 2050, and the demand for protein anticipated to double in the same period (FAO, 2019). For the krill and seafood industry, this leaves considerable opportunities to be a part of the solution in meeting the expected increase in demand.

Another demographic trend shaping the demand is the middle class' growth in emerging markets, particularly in the rapidly growing BRIC countries, Brazil, Russia, India, and China. With a total population of close to 3.1 billion people (Statista, 2019), shifting demographics in these markets may enable significant changes in demand for various goods and services, including foods and proteins. As the middle class is expanding in these sizeable markets, it shifts eating habits towards more nutritious, healthy, and protein-rich foods, such as seafood, eggs, and meat. Consumption of high-quality proteins is expected to increase, as such (Mowi, 2020).

Moreover, an increasingly aging population is placing healthy eating and living on the agenda for an increasing number of people. Estimates released by the World Health Organization in 2018 predict that the global population over 60 years of age will almost double between 2015 and 2050, from 12% up to 22% (Word Health Organization, 2018). In such an environment, an industry with a value proposition such as the krill industry may play a critical role in the increasing health focus among the aging population.

Figure 11: *Population (billion) and % of the population above 65 years*



Source: The World Bank (2020b)

Consumer consciousness concerning health and wellbeing

Through a vast amount of research and studies over the last years, various types of seafood have been recognized as healthy due to their high content of specific nutrients. Research shows that intake of fish, fish oil, EPA, and DHA (or so-called "essential fatty acids") is known to reduce the risk of death due to heart diseases and reduce the risk of other forms of heart failure (Helsedirektoratet, 2018).

As a consequence of the build-up of research and evidence in recent years and the increased focus on healthy food intake, public health authorities worldwide are increasingly promoting the intake of fish and seafood. In a report from 2019, the EAT-Lancet Commission advocated that seafood is to be an auspicious source of protein in the coming years. This was validated due to seafood's broad health benefits as a dietary component and its high nutritional properties, with the unique attributes of omega-3 fatty acids being stressed (Troell et al., 2019).

As krill is loaded with omega-3 fatty acids (EPA & DHA), phospholipids, astaxanthin, and choline, the krill industry could find itself in an attractive position as public health authorities are putting healthy living on the agenda and as the general consumer focus on health and wellness increases.

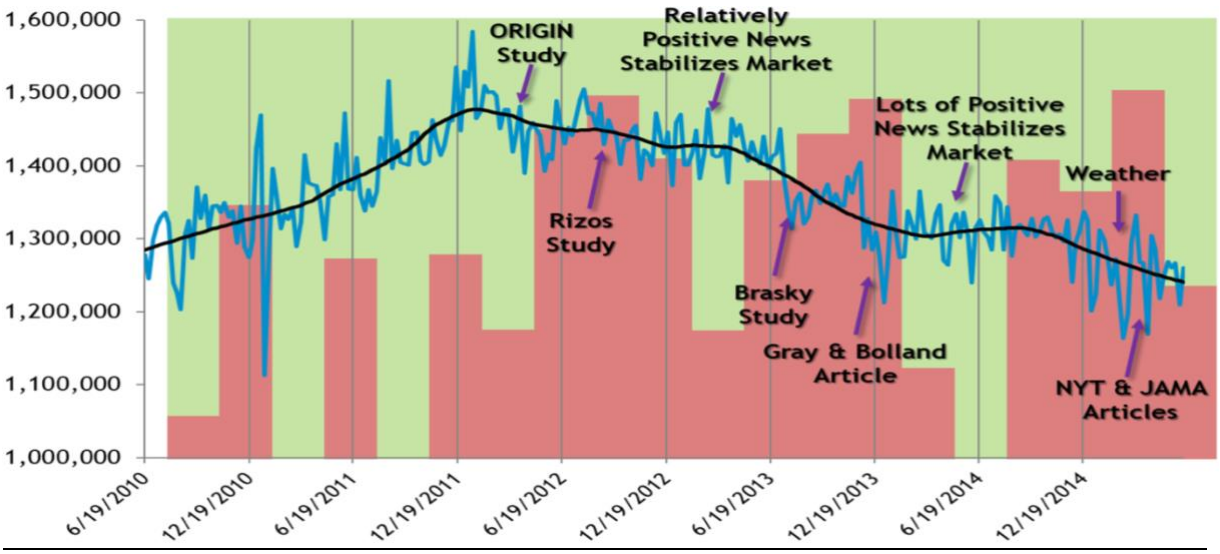
Change in consumer trends due to negative research

Another sociocultural aspect that we consider relevant to the krill industry's future development is changing consumer trends due to negative news and research. However, the positive health effects of omega-3 are considered well documented by many. Historical evidence showcases that the demand for omega-3 supplements has experienced volatility in

the past as an effect of negative news, new studies, and opposing researcher views (GOED, 2017). As seen in the graph below, omega-3 sales in the US fell steadily from 2012-2014 on the back of various studies scrutinizing the health effects of omega-3, such as the ORIGIN study in 2012 which concluded that daily supplements of omega-3 did not reduce the rate of cardiovascular events (The ORIGIN Trial Investigators, 2012).

This is not a new phenomenon in the seafood industry, and in recent years the Norwegian salmon industry has been subject to negative media coverage on several occasions. While the exact impact of this sort of coverage has not been straightforward to measure, we find examples where researchers have raised the question of whether negative media attention may have caused reduced demand for Norwegian salmon in specific countries (Nofima, 2019). Krill oil has a different delivery form from traditional fish oil, phospholipids, which also provides an opportunity to differentiate. The different delivery may allow krill oil to be either more or less affected by news and studies on the health effects of omega-3, as such.

Figure 12: *US omega-3 retail sales and media sentiment*



Source: GOED Analysis of Meltwater and Factiva data (2017)

4.1.4 **Technological factors**

Vessel and fishery technology

Out of the 13 krill fishing vessels operating globally today, the median time since the vessels' build year is over 30 years. Only three vessels operating in the market today were built after 1995 (CCAMLR, 2020). While some vessels have been rebuilt and refit with new technology in more recent years, the current krill fleet is still ripe for renewal, at least in the latest technological advances in newbuilds. With a relatively old fleet operating in the krill industry,

technological innovation in fishery management, CO_2 emission, cost, krill welfare, and more may significantly reshape the industry from how we know it today. Since fisheries in a vulnerable environment such as the Antarctic are subject to strict regulations and standards, adapting to such regulations whilst still bolstering profitability will be a vital issue in the bigger picture.

The technological innovation has been limited in the krill industry, although several technological and innovative practices are currently considered today. The push toward innovation is predominantly coming from nations such as Norway and China, who in recent years have been vocal about their ambitions to lead the krill industry going forward (Godfrey, 2020). Out of several significant projects in the works today, projects involving big data and artificial intelligence ("AI") are anticipated to increase knowledge and carry the krill fishing industry into the data-driven era.

The technological advances involve large-scale data analysis of information collected through monitoring technology such as drones and echo sounding to collect a vast amount of data on the krill's location and behavior. In turn, analysis through big data and AI may significantly increase the effectiveness, accuracy, fuel efficiency, and sustainability of krill fisheries (Orlowski, 2020).

Technological development in krill product offerings

Another central part of the krill industry's future development is technological development and innovation in end-markets and product categories where its raw material may be applicable. For the demand for Antarctic krill to increase, demand in end-markets such as in the omega-3 supplement industry, the aquaculture industry, and the pet food industry is key. In recent years, several R&D initiatives have been set out to life to elevate the krill oil market. As the clear market leader in this segment, Aker BioMarine has continuously tried to reshape and innovate krill oil product offerings. Recent initiatives such as its ongoing pilot-scale protein powder factory and newly developed Flexitech technology (Aker BioMarine, 2020b). In addition to this, R&D and technological advances are likely to become a critical issue in the future as competing companies, industries, and segments battle for consumer demand and attention.

4.1.5 **Environmental factors**

Climate impact on krill stocks

The focus on the environmental issues that the seafood industry is facing is more significant than ever before. Today, seafood industries undermining the environmental challenges the world is facing may be held accountable in numerous ways. Climate issues are no longer just a priority for environmentalists and scientists but also high on the agenda for consumers, investors, and governments.

Climate change is also putting the current krill biomass and life in the Antarctic Ocean at risk. Atkinson et al. (2019) claimed in a report released last year that several Antarctic species, including krill, are increasingly impacted by global warming. More specifically, krill has moved approximately 440 kilometers southward during the last 90 years, with most of this contraction believed to have taken place since the 1970s. The study concludes that "rapid climate change, with associated nonlinear adjustments in the roles of keystone species, poses challenges for the management of valuable polar ecosystems" (Atkinson et al., 2019, p. 1). Further, if this contraction process continues, it may have disastrous consequences for the Antarctic krill stock as we know it today, and businesses operating in this environment will have to take necessary measures to comply.

Overfishing and depletion of marine stocks

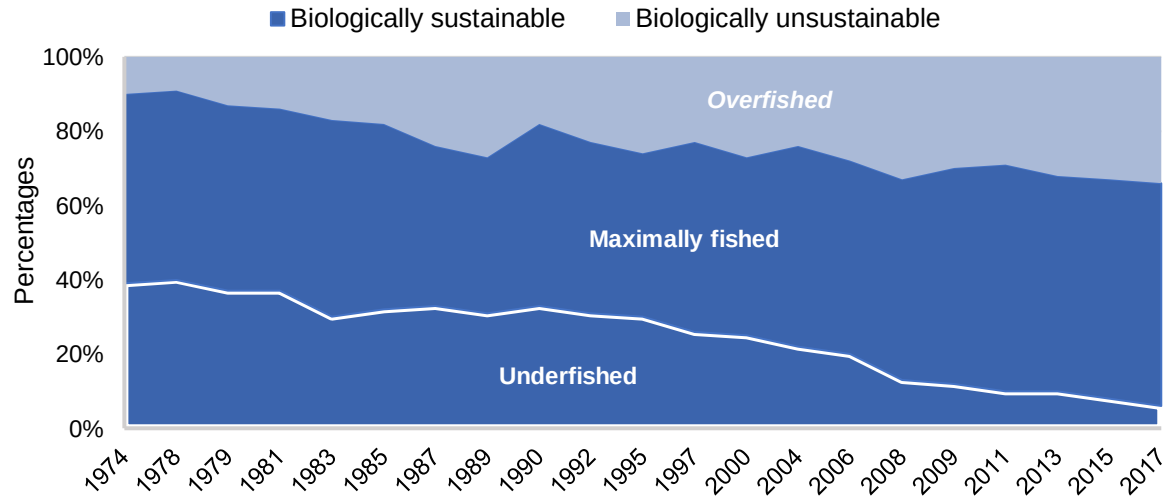
On several occasions in the last 50 years, krill fisheries in the Antarctic have been scrutinized by researchers, environmentalists, and various climate initiatives. This scrutiny comes even though Antarctic krill fishery at present is the only fishery globally to be classified "in excellent condition" by the Sustainable Fisheries Partnership, is reported to have had a biomass increase of ~10 million in the past ten years (Havforskningsinstituttet, 2019) and is subject to a much stricter catch limit relative to other less sustainable fisheries.

It should be noted that fishing in the Antarctic is subject to hefty surveillance due to several reasons. Krill plays an important part in the Antarctic ecosystem, as several Antarctic species depend on it as its primary source of food, such as seals, seabirds, and whales. Naturally, this means that considerable interference with the current krill biomass may constitute a threat to the broader wildlife in Antarctica. This raises concerns among several scientists and environmentalists, and some researchers have even argued that the present allowed krill fishing limits might increase the risk for the depletion of numerous predator populations in the

Southern Ocean (Klein et al., 2018). According to the CCAMLR, today's quota is based on current leading research and is consensus-based, meaning that the quota today should represent a limit that is not considered harmful for the krill biomass (CCAMLR, 2018).

Depletion of wild fish stocks has been an issue of global magnitude for decades. Since the 1970s, overfished fish stocks have steadily increased year by year. According to the FAO (2020b), fisheries in the Mediterranean and the Black Sea have the highest percentage share of unsustainable fishing activity. While krill fishing in Antarctica does not contribute to these unsustainable fishing practices, the global overfishing trend may contribute risk to the future practices of the krill fishing operators.

Figure 13: *Global trends in the state of the world's marine fish stocks (1974-2017)*



Source: FAO (2020b)

4.2 Porter's five forces analysis

Porter's five forces is an analytical framework consisting of five external elements related to competitiveness utilized to better understand the competitive dynamics in an industry. Porter refers to these forces as the microenvironment and that they are forces that affect a company's ability to serve its customers and generate a profit. The industry dynamics are integral for a company when deciding how to position themselves (Roos et al., 2014).

The cumulative intensity of the external aspects is what decides the profit potential in the industry. The five forces are threats from new entrants, threats of substitutes, customers' bargaining power, suppliers' bargaining power, and competitive rivalry. If an industry has a strong presence of these forces, it will be a highly contested market and be unpleasant to

operate within. Industries with a lack of these forces will be more profitable and more comfortable to operate in (Roos et al., 2014).

Figure 14: *Illustration of Porters five forces*

Source: Marketinfo Group (2020)

4.2.1 Threats from new entrants

Barney (2011) defines new entrants as companies that have recently established themselves in an industry or threaten to establish themselves in one within a short period. New entrants usually have to employ many resources and capacity to capture market shares in the industry. When there is a new entrant in an industry, it is often followed by downward pressure on prices or increased investments as the competitive situation is intensified. The result is often a reduction in the industry's profit potential (Roos et al., 2014). The threat from the establishment of new entrants is determined by entry barriers in that specific industry, such as government policies, capital requirements, economies of scale, and extensive knowledge of a product.

Government policies

All aquaculture activities require licenses, and no company can harvest krill from the Antarctic ocean without authorization from the government. This is the largest and most vital barrier to

entry in the krill industry. The government assigns krill harvest licenses if the companies that have applied for them fulfills the requirements. In 2019, it was opened for companies to apply for krill harvesting licenses, which was the first time since 2007. Only three Norwegian firms applied, Aker BioMarine, Rimfrost, and Fish Group of Norway AS. The latter was initially denied a license before but won the appeal case and received a license. To receive a license, one needs to comply with strict requirements regarding technology and environmental standards.

On a global scale, there is a fixed annual quota for krill harvesting set by CCAMLR. When an operator has received a license to harvest, one can harvest until the annual quota is fulfilled. The quota is industry-specific and not company-specific, such that the industry operates as an Olympic pool where the operators try to catch as much krill before the cumulative quota is met, as clarified in the PESTEL analysis.

These attributes imply that the threats from new entrants as of today are medium. These high demands to acquire a license in Norway do not reflect what is required in every country. Consequently, it might be easier to acquire a license through another country, and as the industry quota is set for the industry as a whole – it is a zero-sum game for the participants. China has a stated goal to become the number one nation in krill harvesting, and this may challenge Aker BioMarine's position as the industry leader in the future.

Capital requirements

The krill industry is capital intensive as there are high requirements for the harvesting vessels, production, R&D efforts, and licenses. It takes time to create customer relationships, develop their products, and penetrate new markets. Hence, new entrants need robust financial resources that allow the investors to wait for years before generating returns on their investments. Even though a company may have enough resources for necessary investments, it may take time to generate profits. Even the industry leader, Aker BioMarine, has experienced a negative net profit the past three years. The massive economic barriers in the establishing phase make it somewhat challenging for new entrants to establish themselves.

Economies of scale

A large part of the operating expenses (“Opex”) is tied to offshore production and fuel cost. Participants can take advantage of economies of scale to obtain a competitive benefit. It is instinctive to assume that large companies can gain quantum discounts regarding fuel. Fuel

made up ~15% of the total opex in 2019 (Aker BioMarine, 2020a). Implying, it is a significant expense for krill harvesting companies.

Moreover, a lot of the production of the krill takes place offshore on the vessels. Once the vessels are launched from the port, a lot of the costs are fixed. It is necessary to harvest and process as much krill as possible. There is no 1-to-1 relationship between the vessel's size and fuel consumption and crew members' need so that the larger vessels can process krill for a lower cost per kilo than the smaller vessels. The economies of scale make it difficult for new entrants to establish themselves in the industry.

Extensive knowledge

Already established industry participants will have a competitive advantage with their extensive knowledge of the dynamics and requirements to run the operations efficiently compared to new entrants. Thus, the established companies will have a competitive edge. In addition, advanced and valuable technology makes the entrance ever more problematic as this takes time to develop and acquire. Accordingly, we deem that the established participants' advantages make it complicated for new companies to establish themselves in the krill industry.

4.2.2 **Threats from substitutes**

Substitutes are products that cover the same function and needs as the product the initial industry does. Substitutes reduce the industry's potential for profits as they cap their products' prices (Roos et al., 2014). Factors such as product differentiation, price, and the cost of changing the products are central in the substitution assessment in each industry. What substitutes are considered alternatives to krill products vary a lot. Krill products are the ones who are new on the block, trying to capture market shares. As of today, it is primarily used to produce omega-3 oils for human nutrition. Omega-3s come in several forms today and are found in fish, green-lipped mussels, mammalians, algal, and alpha-linolenic acids. The aspects that differ from the individual capsules are omega-3, amount and form of omega-3, freshness, and sustainability. The average individual perhaps does not view the difference between the source of the omega-3 as important but looks at all omega-3 supplements as equal. As a result, it might be difficult for omega-3 companies to differentiate their products.

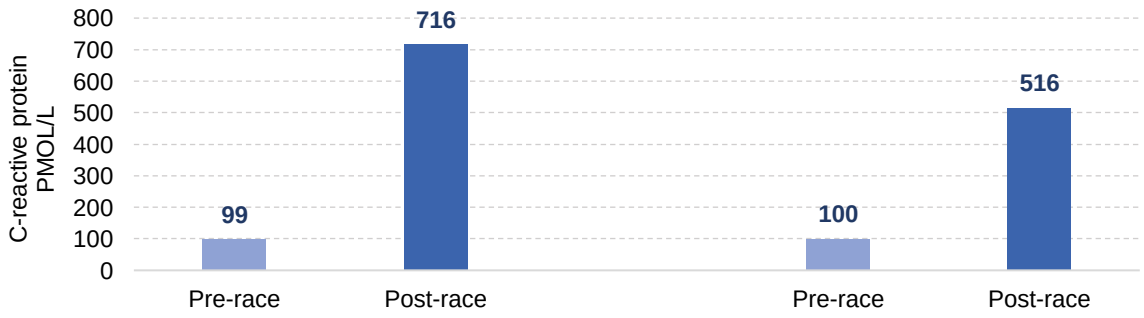
Today, fish oil is the most common way of consuming omega-3 supplements, either through capsules or liquid form. Natural fish oil contains the fatty acids EPA and DHA and vitamins

A and D. This type of fish oil is better for the consumers than the processed fish oil that is vulnerable to oxidation, and is more problematic for the body to absorb. This is where krill oil differs from its leading rival, the fish oil, as krill oil is naturally low in contaminants and contains potent antioxidants easily absorbed in the body. Even though there are distinct differences between the omega-3 supplements, the everyday consumer does not necessarily possess this information or is unwilling to pay a premium for these features. We consider fish oil to be a nearly perfect substitute for krill oil, which impedes the industry to charge a considerably higher price for their products even though it is healthier than other sources.

Further, the industry is currently penetrating the market for pet and aquaculture feed. Pet feed made from krill is, again, the new contestant on the market and the threats of substitutes are high. Numbers from Aker BioMarine indicate that dog feed made of krill can significantly reduce inflammation and muscle damage after sled racing. The everyday dog does not require these features, and the research itself was performed with a small sample and cannot be considered absolute truth. Krill is also used to supply the seafood industry with feed for the fish. The fish feed may be an essential input factor for the industry, and krill has proven to be superior, looking at growth, yield, and fish heart health (Aker BioMarine, 2020b). However, only a minority portion of the total fish feed in the industry is from krill, which implies that other alternatives are employed.

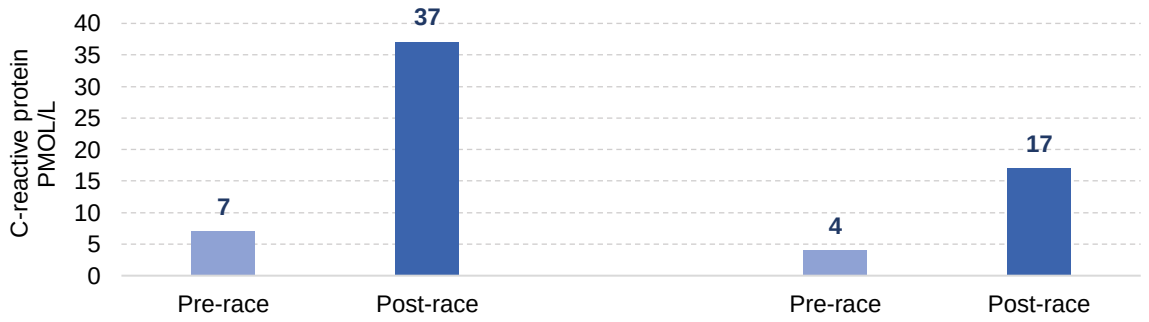
The threats from substitutes are reasonably high at this time. This can be ascribed to the other omega-3 oil supplements, pet feed products, and aquaculture feed at the market. As the public interest in health and health supplements increases, we believe the people will recognize krill oil to be superior and distinguish itself more from the others.

Figure 15: *Qrill Pet reduces muscle damage: Control group (left) vs. Qrill Pet (right)*



Source: Aker BioMarine (2020b)

Figure 16: *Qrill Pet reduces inflammation: Control group (left) vs. Qrill Pet (right)*



Source: Aker BioMarine (2020b)

4.2.3 **Bargaining power of buyers**

The buyer power represents a threat towards the profitability potential in an industry as the consumers are interested in putting pressure downwards on the prices and increasing the products' quality. The costumers enjoy a strong position if the costumers of the product are concentrated, purchase large quantities, if the total costs of the products represent a significant fraction of the customers' total costs, or if the product is standardized or there are numerous suppliers (Roos et al., 2014).

In this industry, the customers are frequently brand-owners and contract manufacturers that buy oil in bulk to encapsulate the oil in soft gels before sold as dietary supplements. When the manufacturers face more demand in the market, they order from their suppliers who stock the krill oil. The krill industry is a relatively new and small industry that presently experience more supply than demand, which provides the customers of the krill oil with enhanced bargaining power. The oil from the supplier is sold in the same way as most other natural resources, where the price is set per kilo and fluctuates and reflects the market tensions. When the demand for krill oil is low, downwards pressure is put on the oil suppliers while the customers enjoy the upper hand. There are few exclusive relationships and contracts in the industry as lots of the relationships are trust-based, which further strengthens the customers' position as they already face a surplus of krill oil.

Further, the cost of switching a supplier is low in the industry as the harvested krill and produced oil all origins from the same place. The difference between the various suppliers is low, and the production sites are primarily on the vessels found in the Antarctic ocean. The customers are a growing market for the suppliers of omega-3 oil as we focus on health and nutrition is at an all-time high. Both the krill companies and the customers are trying to develop

new products and innovations to solve diseases and similar issues, and it is now utilized for more than only human consumption. The customers' bargaining power is enhanced as they can decide what supplier they want to work with to achieve the best price and quality on their krill.

Looking at the fish- and pet feed market, we have two completely different situations. Firstly, krill is an established alternative in the fish feed market, and Norway's Aker BioMarine has a market share between 22% ~ 32% in Norway (Marine Harvest, 2017).

This contrasts with the new pet feed market that krill just entered. In this market, krill is the challenger with lots of substitutes, and the buyers are limited. These attributes of the buyer's bargaining power make it rational to categorize it as moderate to high. If the demand for krill increases amongst the end-consumers, it is natural to believe that the manufacturers will require larger margins, and there are few indications that this would benefit the krill harvesting companies. Subsequently, there is a real threat to the harvesting companies that their customers will hijack parts of the value creation, affecting the industry's real profitability potential.

4.2.4 **Bargaining power of suppliers**

Suppliers in an industry may affect the potential for earnings if they can squeeze the profits. Reduced profitability may happen in increased prices or reduced quality of the supplies or services delivered. The bargaining power of suppliers is dependent on multiple factors such as the number of participants in the industry, how easy it is to change suppliers, and the importance of the product the supplier delivers to the companies (Roos et al., 2014).

The krill industry differs from other industries because they are the first part of the value chain and have few suppliers. The leading suppliers to the krill industry consist of fuel suppliers and the shipyards that construct and build the vessels. Crude oil is refined to make fuels like petrol and diesel for machines and other vessels. Today, fuel makes up roughly ~30% of the opex in the krill industry, a significant portion (Aker BioMarine, 2020a). The price of oil is merely conditional on the supply and demand from investors, and the only way a company may position itself is with hedging. A krill harvesting company knows it needs fuel in the coming years, and a way to lock in a price is to buy futures contracts in the market. This is a free market, and the supplier-buyer relationship is purely transactional. The only discount they achieve is a quantum discount, but it is unlikely to vary between suppliers.

The second significant supplier is the shipyards when the harvesting companies decide to expand or modernize their fleet. It is challenging to analyze the relationship between the krill harvesting companies and the shipyards as there is not much publicly available information. It would not be unreasonable to assume that the harvesting companies will shop around amongst the shipyards with proper competency to create and manufacture the vessels. In this way, they may achieve a better price and quality and have the upper hand in the negotiations.

The suppliers' bargaining power might be the most problematic factor to analyze in Porter's five forces as there is inadequate public information about the suppliers. We still contend that the relationship favors the krill harvesting companies that can shop around with the shipyards when deciding to order a new vessel. The way the oil market is constructed makes it hard to gain the upper hand. Larger fleets may achieve a quantum discount, but the differences between suppliers are implausible to be sizeable.

4.2.5 **Competitive rivalry**

Competitive rivalry is related to how companies in an industry chose to position themselves to capture market shares. Product launches, guarantees, and low prices are methods companies use to attract customers. A high degree of competition will create uncertain outlooks for the industry and make it less profitable. The degree of competition in an industry is decided by growth prospects, the level of concentration and competition, and how complicated a potential liquidation would be (Roos et al., 2014).

Industry growth

If the degree of growth in an industry is low, the competitive environment will limit itself to acquire market shares from each other. Limited growth represents a threat to the industry's profitability (Roos et al., 2014). The demand for krill products globally is growing, and the total krill harvest is at its highest since 1991 (Aker BioMarine, 2020b). Further, Tharos, a world-known krill consultancy, estimates that the Chinese demand for krill oil will exceed the current global production by 250% and 300% for krill meal production in the coming decade (Godfrey, 2019). If the krill market has a growth outlook and CCAMLR inflates the total catch quota, the industry participants do not have to limit the competition to acquire market shares from each other. Increased demand for krill products and a potential expansion of the quota, as the current quota is <1% of the total biomass and UN believes ~10% are sustainable (Aker

BioMarine 2020b), would indicate that competitive rivalry between the participants is moderate. This can partly be attributed to the Olympic pool quota system in the industry.

Level of concentration and competition

If many companies operate in the same industry or enough participants are the same size, the industry's degree of rivalry is enhanced. Still, if a few large players dominate the industry, the rivalry is lessened (Roos et al., 2014). Aker BioMarine chiefly dominates the krill industry, the company harvest ~63% of all krill (Aker BioMarine, 2020b), and the remaining ~37% are caught by the remaining companies. The degree of concentration is therefore significant, and the development of the past years is trending towards further concentration with M&A activity consolidating the industry. The recent development converges towards fewer but larger participants in the industry, which indicates an immense potential for earnings in the industry.

Liquidation possibilities

The liquidation possibilities in the industries are viewed to be moderate, which indicates modest competitive rivalry. The limited number of purpose-built krill vessels and support crafts makes them sought resources, and if a participant wants out of the industry, it will likely be straightforward to unload these vessels to competitors. The industry players are currently expanding their operations and investing in new resources to meet the future demand for krill. We view the liquidation possibilities in the industry to be reasonable, which indicates a softer competitive rivalry.

The analysis of these three characteristics indicates that the competitive rivalry in the industry is limited. The dominance of Aker BioMarine, the current consolidation trend, and the adequate liquidation possibilities indicate low rivalry. The industry is regulated in a way that encourages a highly competitive environment with the Olympic pool model. Nevertheless, in the past years, the quota has not been covered, and the humble quota is expected to be increased with the global surge in demand for krill products. Hence, we argue the competitive rivalry in the industry to be limited.

4.3 Summary of external industry analysis

The external industry analysis has mapped and assessed external factors that create potential advantages in the krill industry. Both the PESTEL analysis and Porter's five forces contributed to analyzing any competitive advantages in the krill industry that can be utilized. Together

with Aker BioMarine's internal resources advantages, the advantages presented are an estimation of Aker BioMarine's combined competitive advantage in the global economy. In the PESTEL analysis, we identified and presented various macroeconomic factors that affect the krill industry's earnings.

We consider political, sociocultural, and technological aspects of playing the most critical role in the industry's performance in the foreseeable future. Political factors such as trade barriers and political decisions on the allowed krill fishing volumes in the Antarctic may have the ability to drastically change the "rules of the game" for the krill operators. Moreover, we also perceive sociocultural developments in population growth, public health, and consumer perception on omega-3 and the industry, in general, to be of substantial strategic importance, as we expect these factors to be some of the critical drivers of krill demand in the future. Evolution in efficiency, productivity, and accuracy due to technological advances and innovation could also play out as critical factors in shaping the industry's future. More so, advances in technology have the potential to increase competition and drive profits remarkably.

While economic factors such as GDP growth and interest rates are likely to be closely linked with consumer spending and business prosperity, we believe it will have a more bounded impact on the krill industry in the foreseeable future. This is mainly due to our belief that the krill industry is somewhat cyclical and that economic factors such as fuel prices are of significant effect. In terms of legal factors, we expect a similar effect, in which we perceive legal developments to be relatively predictable and of limited scope. Lastly, the krill fisheries are at the forefront of global fisheries in handling environmental factors. Hence, we see a relatively little impact of environmental aspects on the future of the industry.

4.3.1 PESTEL analysis summary

Exhibit 4: *Expected importance of PESTEL factors (1: Low – 5: High)*

Elements	1	2	3	4	5
Political				X	
Economic			X		
Sociocultural				X	
Technological				X	
Environmental		X			
Legal			X		

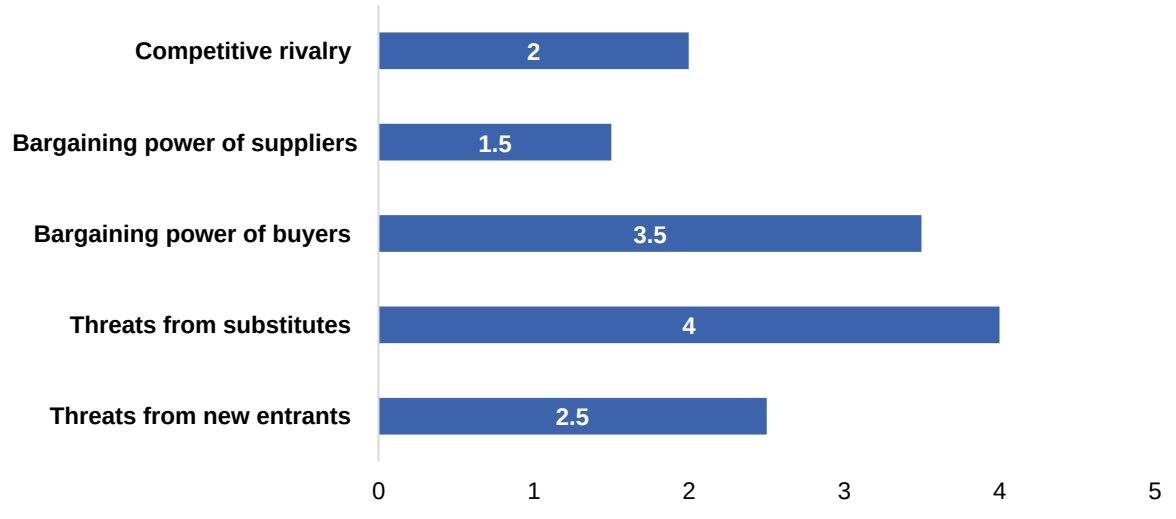
Exhibit 4 summarizes our assessment of each of the PESTEL aspects on the krill industry, with ”1” symbolizing a low impact of the external factor and “5” symbolizing a high impact of the external factor on the krill industry going forward.

4.3.2 **Porter's five forces summary**

Porter's five forces framework facilitated an industry analysis to identify what characteristics affect industry profits and competition. Today, a license is required to operate in the aquaculture industries, and it requires significant capital to get started, making the entry barriers are substantial. The threats from substitutes are significant as there are multiple alternatives for omega-3 sources other than krill. As of today, the most deployed source is fish. Further, the animal feed segment is also easily substitutable. We deem it to be a considerable threat to the profitability of the industry. The buyers' bargaining power is relatively high today as there is more supply than demand for krill, and it is limited how widespread the krill products are today.

The negotiating power from suppliers is limited. This is since krill harvesting is the first stage in the value chain, and the suppliers consist of fuel suppliers and shipyards that build the vessels. Thus, we believe this to be a low threat to profitability. Finally, the industry's competitive rivalry is low as there are few players in a growth industry dominated by one larger player. We also maintain that the industry's liquidation possibilities are reliable as the need for new vessels has increased, and krill vessels need to be purpose-built.

Figure 17: *Summary of Porter’s five forces*



4.4 Internal resource analysis

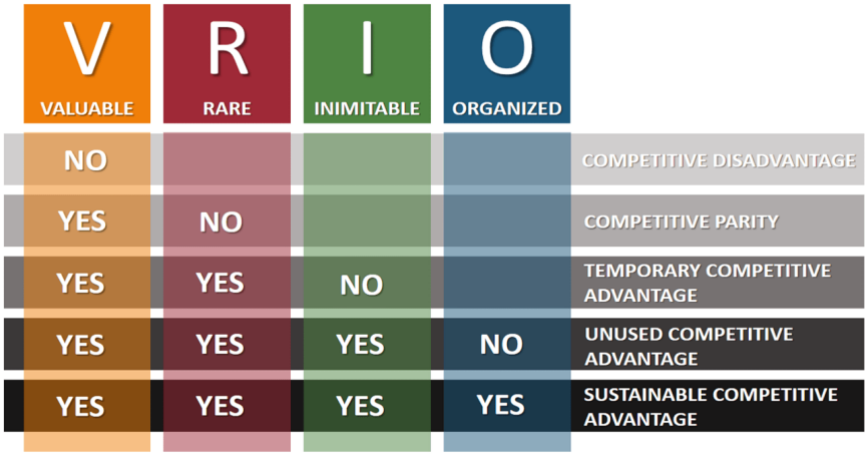
The internal resource and competitive advantages are frequently employed as the theoretical frameworks used to explain the variation in earnings and profitability between companies in the same industry. The analysis identifies and maps out the resources which the company disposes of and aims to identify if and how a company may develop and (or) sustain a temporary or permanent competitive advantage. A resource is defined as every input factor the company uses to generate value for its consumers, including employees, brand name, patents, company culture, products, and real capital. Resources can be characterized as "strategic resources," which implies that the resource may be the source of competitive advantage, leading to increased earnings.

Analyzing companies in an industry with this approach may explain some of the differences in earnings and profits. Competitive advantages are difficult to quantify, but numerous studies have tried finding the link between strategic resources and earnings. The link to profitability may also be problematic to measure as strategic resources may only increase their portion of the value creation and do not necessarily increase how much value is generated. An increase in the captured profitability could be assigned to other parts of the value chain, not the specific resource. A company will have a resource-based competitive advantage if they have better profitability than the industry. To outline Aker BioMarine's position in the market, we will deploy the VRIO framework. We will use this analysis to forecast what we expect of Aker BioMarine compared with the industry. In the external analyses, we investigated how the industry is expected to perform compared with other industries while focusing on the individual company in this analysis. One of the most frequently used frameworks to identify sustained competitive advantages is the VRIO framework. VRIO is an acronym for "valuable", "rare", "inimitable", and "organized".

The first step in the analysis is to assess if a resource is valuable, meaning it can be used to charge premium prices, reduce costs, or increase earnings. If the resource is unable to do any of these, - it is not valuable. If the resource passes the first test, it goes through to the second stage, which is "rare." This implies that it is not easy for competitors to get their hands on that specific resource. The third stage implies that the resource is difficult to replicate or copied by competitors. If the resource passes this stage, it moves on to the final stage. It needs to be organized. If the company has not organized it so that it is possible to capitalize on the resource, it is considered an unused competitive advantage. Only when the resource has passed

all four stages may it be classified as a sustained competitive advantage that the company can quickly capitalize on.

Figure 18: *Illustration of the VRIO framework*



Source: Business-to-you (2020)

4.4.1 **Brand name**

Aker BioMarine is one of the companies that focus on building a strong brand in the krill product industry. It differentiates itself from its competitors by offering different products under unique brand names. The "Qrill" product range offers "Aqua" as nutrition to the aquaculture feed segment, "High Protein" is also aquaculture feed, focusing on enhanced growth and increased feed uptake. The final product in the Qrill product range is "Pet," which is pet feed, focusing on dogs. Their product ranges are directed towards humans called "Superba Krill" and the new "Kori" brand. We believe Aker BioMarine is wise to separate the individual brands instead of offering it all underneath its brand. In this way, consumers are not thinking of pet feed when they see Superba Krill or Kori as these product lines are directed towards the human segment.

Aker BioMarine has spent a lot on marketing to build these brands, and they may soon be able to reap what they have sown as they enter the pet feed market. They have created a responsible and trustworthy position for their brands globally. If a company can create a strong brand name and reliable reputation in the market, it may lower the risk of a product as it is perceived as safe and sound. As more individuals consume a product, the product's own risk will also be lowered as it will be regarded as reliable. Further, a firm brand name might also increase customer loyalty and high margins leading to higher profitability. Aker BioMarine's strong

brand appears to be important, rare, and efficiently organized. Even though it is expensive, complicated, and time-consuming for other industry players to obtain such a mighty brand name and the same level of brand recognition, we cannot argue that it is inimitable. The resource will only provide a competitive advantage short-term.

4.4.2 **Product portfolio and development**

In addition to Aker BioMarine's investments in building strong brands, they have the past years invested heavily in product development to enter new markets. The development of new products will be a crucial part of securing its future growth and the demand for krill products. The acquired pharmaceuticals manufacturer, Lang, produces over 146 products across 15 different categories for significant retailers, contributes to the well-positioning of Aker BioMarine as they now have a close relationship with major retailers. They are now in a good position when introducing new products to the market as they already have a well-established relationship with all the major retailers and an in-house pharmaceuticals manufacturer. No other competitor in the industry has its own fully vertically integrated supply chain, some only harvest while some only sell the end-product. It has the whole chain and offers both human nutrition in omega-3 tablets and nutrition for aquaculture and animals.

Today, Aker BioMarine has the broadest product range in the krill industry, with even more products under development, such as protein powder for humans. In this way, they cover a larger part of the market than what their competitors do and have a better-diversified portfolio of products than their rivals can offer. A diversified portfolio of products makes it easier to enter new markets as their brand is familiar, and they have loyal customers that are willing to embrace their new products. Finally, a broad selection of products will also make Aker BioMarine less vulnerable to changes in market preferences, which will mitigate some of the company's exposure to risk.

These attributes do create a strategic resource for Aker BioMarine in the krill industry. Even though a broad and diversified portfolio of products is rare and vital, the competitors will likely follow. Having a broad product portfolio is not inimitable, although it will be both expensive and time-consuming to catch up with Aker BioMarine as none of the industry players today has a fully vertical supply chain. We deem this to be a short-term competitive advantage as we see the other industry participants following Aker BioMarine, and it is more comfortable and less time-consuming to follow up Aker BioMarine's breakthrough products

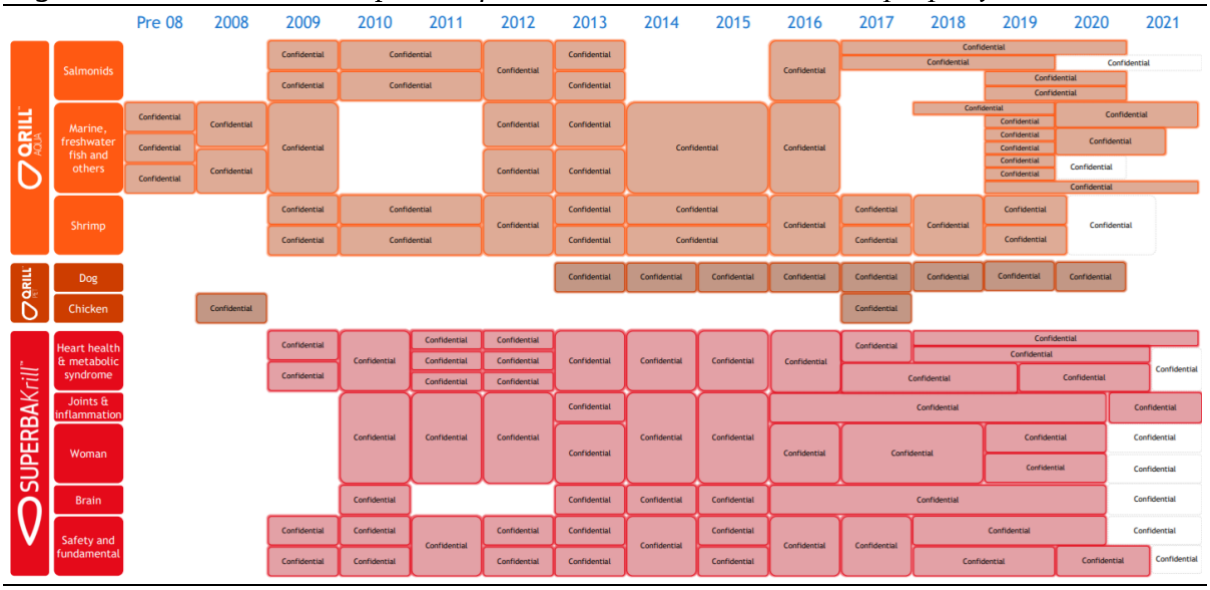
than it is to innovate new ones. Thus, we do not believe it will be able to hold this competitive advantage permanently.

4.4.3 **Ability to innovate**

Since the launch of Aker BioMarine, the biotech company has heavily invested in R&D and has been a pioneer in several industrial fields. They have broadened the knowledge about the health and nutrition potential of krill. As of today, they hold 76 patents and 1,200 patent claims. Aker BioMarine has also been at the forefront of introducing new products and penetrating new markets, such as pet feed.

The best example of its ability to innovate may be the eco-harvesting technology, which enables them to harvest the krill with minimum eco-footprints. They are also currently developing a new protein powder for humans, which, again, they will be the first to introduce to the market. By implementing innovation as a strategy such as Aker BioMarine has done, they can improve their core competencies and engineer the business structure to respond to new market conditions and customer demands (Evangelista et al., 2010). Besides, companies that innovate are better at penetrating new markets, maintain existing market share, and increase their competitive advantage. Innovation in the implementation of strategy can act as a strategic weapon to achieve a sustainable competitive advantage in the global competition (Kuratko et al., 2005).

Figure 19: *Historical development of Aker BioMarine's intellectual property*



Source: Aker BioMarine (2020b)

Aker BioMarine's ability to innovate and create new products are rare. The ability to produce patents and innovate is not inevitably rare in the industry, but the ability to produce both so many and patents that can be utilized as a resource is rare. The strategic resource is rare, valuable, and organized, but again, it is not inimitable in the long run. Competitors can be able to catch up with Aker BioMarine with enough R&D investments. The combined portfolio of patents has taken ~15 years to create, but it is unlikely that any rival will catch up in the foreseeable future. Collectively, the ability to innovate only provides a temporary competitive advantage.

4.4.4 Input factors and value chain

Aker BioMarine is a vertically integrated company that controls its whole supply chain, from harvesting, R&D, and to the production of its end-products. Having absolute control over the value chain can increase competitiveness and profitability in the marketplace. They achieve economies of scale by lowering their per-unit fixed cost. They can do this to buy supplies in bulk and spread the cost over a larger quantity. Further, it may allow them to cut costs by eliminating costly markups from intermediaries, consolidating management and staff, and optimizing and engineering the operations to their corporate structure. Vertical integration also allows Aker BioMarine to quickly expand geographically by adding distribution centers in new areas or acquiring a new brand. The recent acquisition of Lang Pharma allowed entering the US pharmaceuticals production.

Further, Aker BioMarine recently opened a new distribution hub in Chennai, India, to keep the region well-stocked with its Qrill Aqua products. The new center will strengthen its local presence while also enabling it to serve its customers across the region more efficiently. By expanding to India, the customers in Asia will benefit from a steady supply of the products, from vessel to warehouse delivery-ready and already customs cleared. The increased speed in the distribution provides easy access for customers, who can also benefit from the local service and support instead of relying on cross-continental support.

The current structure also allows for more straightforward quality control. If a business is a pastry depot getting cake deliveries, one is at the risk of the supplier cutting down or substituting the eggs. This would alter the final product, and the pastry depot cannot control it without having to temporarily sell substitutions to control it or offer it to customers without quality control. Aker BioMarine is the supplier of the needed components to the end-products

and is therefore in control of the production process and can maintain a higher quality standard. Finally, it is an excellent way to protect proprietary processes and recipes. As stated, it holds 76 patents and has 1 200 patent claims, which in some cases are secret and valuable. To keep these trade secrets, outsourcing their manufacturing would be unthinkable.

Aker BioMarine is today the only company in the industry that controls the full value chain, and we regard this to be rare. Based on the presented arguments, we say that it is valuable to control the whole value chain even though it presents some additional risk considerations. The value chain is also organized and ready to be capitalized on as it is fully operating. Finally, we cannot regard the access to input factors and their value chain to be inimitable as other competitors are in the position to develop their integrated value chain.

4.4.5 **Locations**

Aker BioMarine's supply chain stretches from the krill harvesting vessels in the Antarctic waters through the logistics hub in Montevideo, Uruguay, to the krill oil manufacturing plant in Houston, Texas. The custom-built krill vessels produce the krill meals instantly after the krill has been brought on board from the waters, as it ensures optimal quality. Aker BioMarine has a fleet of three harvesting vessels and two support vessels, with a fully equipped manufacturing plant. A lot of the production done at the top-modern vessels saves both time and costs, compared to having it shipped to a facility to produce the krill meals. In addition to the logistics hub in Montevideo, it recently opened a new warehouse in India, which acts as India's main distribution center. This effort is increasing its presence and local relationship with the Indian population and Asia in general.

The current locations cannot be scarce, as the on-vessel production is not uncommon in the industry. The element that separates it from its industry peers is the production plant in Houston, Texas. Nevertheless, again, this must be viewed in the context of the vertically integrated supply chain. Some of its peers only sell their harvest, while others also produce Omega-3 krill oil. We view the locations of Aker BioMarine only to be valuable and organized but not rare and inimitable. Implying the locations alone provide them with a competitive parity.

4.4.6 **Strategic collaborations**

Aker BioMarine has multiple strategic collaborations with various allies throughout its supply chain. In Q1 2019, Aker BioMarine and Cognite, an IT company with Aker ASA as its majority owner, signed an agreement to digitalize the harvesting and manufacturing operations to enhance the sustainability efforts already implemented. Similarly, the data science company NextBridge analytics also joined forces in a strategic alliance. The initial goal for Aker BioMarine is to use data contextualization with AI to increase the vessels' efficiency, including the reduction of fuel consumption. To optimize the harvesting patterns, production flow, and maintenance, the company hopes the deployment of live data and machine learning will be of value.

Further down the supply chain, Aker BioMarine has entered an R&D collaboration with Lupus Research Alliance when launching a new clinical study in 2018. The goal is to examine how phospholipid-rich krill oil can benefit individuals with lupus can lessen the severity of the symptoms associated with chronic disease. If the study results proved to help people affected by this illness, it would be great news for both the individuals and Aker BioMarine, who profits a new segment. With the ongoing penetration of the pet feed market, Aker BioMarine teamed up with the world's largest dog sledding race, The Iditarod, as well as other races in Minnesota (John Beargrease), Norway (Femund Race), and Russia (Volga Quest) to create a new championship. QRILLPAWS (Qrill **P**et **A**rctic **W**orld **S**eries) is the new championship aimed to help the sport and community grow and showcase and market their new world-class dog feed (Aker BioMarine, 2020b). The event was broadcasted on CBS Sports Network, and according to Aker BioMarine, it has more than 9.5mn views on YouTube and aired four hours of highlights on both CBS and in Russia. Aker BioMarine also used the races to test their feed to determine if it affected the dog's health and performance – meaning it does not test on dogs in cages.

These strategic collaborations throughout the value chain with different allies that all enable Aker BioMarine to generate value through either exposure and marketing or cost-cutting. The collaboration with the dog sledding community may prove to be especially important as this is a new market for the industry, and it is critical to get a good foothold in the market to become the preferred krill pet feed. The ability to map out and create the right strategic collaborations is both time and resource-demanding and challenging to find good allies. We deem this to be difficult to imitate short-term. It should be noted that it is rational to assume the competition

will create valuable relations. All this combined, we consider this to be a temporary competitive advantage.

4.4.7 **Financial position**

The industry is capital intensive and requires the operating companies to make significant investments in licenses, harvesting vessels, and equipment. To follow the development in the industry, it is vital to have a robust financial position. In the fiscal year of 2019, Aker BioMarine had an equity ratio of 22.46%, and a high equity ratio lowers the risk of default as the firm can withstand losses in a more extended period. 62.8% of the assets are also property, plant, and equipment ("PPE"), which are favored over intangible assets by debt holders and lending institutions, as it holds value. However, as 37.2% are intangible assets implies that when Aker BioMarine encounters hard times, the intangible assets can be at risk for a significant decline as they would have to depreciate. The equity would suffer the same destiny in that case. An integral part of the assessment of the financial strength also revolves around who the shareholders are. Today, Aker ASA is the majority owner, and which is a powerful financial conglomerate with stable profits and balance sheet.

Aker BioMarine would operate and expand its operations with losses for years to come if Aker is backing the decision and looking at it as an investment in the future. We contend that the financial position is valuable for Aker BioMarine, but as the other peers are private, we cannot go through the financial position to determine whether it is rare. We note that other krill harvesting companies are backed by large conglomerates as well, so we cannot conclude that it is in a rare position for now. Thus, we consider the financial position of Aker BioMarine to give them a competitive parity.

4.4.8 **Conclusion**

The VRIO analysis illustrates that Aker BioMarine's brand name, ability to innovate, product portfolio, access to input factors, and strategic collaborations represent some of the company's essential competitive resources. These are also rare to possess in the same volume and extent as Aker BioMarine has today, and with a short-term view, they are challenging for peers to copy. The resources are also considered to be organized in such a manner that they are fully exploited. Aker BioMarine separates itself from its peers as it is the industry giant capturing most of the harvest and market shares, but they have not differentiated themselves in a way

that no peer will ever be able to copy with enough time and capital. All their resources are, with adequate capital and time, possible to imitate.

Looking at all the analyzed aspects of the VRIO analysis demonstrates that Aker BioMarine has internal resources, which gives them a temporary competitive advantage, but not a permanent one. We expect Aker BioMarine to perform better and grow faster than the rest of the industry. This is an industry with enormous growth potential and many investments currently going into it, it is problematic to say something about the long-term competitive situation. We argue that Aker BioMarine's current internal resources will give them a competitive advantage going forward but expect it only to provide competitive parity looking long-term.

Exhibit 5: *Summary of VRIO analysis*

Resource	Valuable	Rare	Inimitable	Organized	Competitive implications
Brand name	X	X		X	Short-term competitive advantage
Product portfolio	X	X		X	Short-term competitive advantage
Ability to innovate	X	X		X	Short-term competitive advantage
Input factors and value chain	X	X		X	Short-term competitive advantage
Locations	X			X	Competitive parity
Strategic collaborations	X	X		X	Short-term competitive advantage
Financial position	X			X	Competitive parity

4.5 ESG assessment

The ESG assessment is based on the framework of Schoenmaker et al. (2019) and the knowledge acquired from *FIE459 Sustainable Finance*. Environmental, social, and governance ("ESG") criteria are a set of standards for a company's operations that socially conscious investors employ when screening for potential investments, and these standards vary a lot from industry to industry. The environmental criteria consider how a company performs as a steward of nature. This may include a company's carbon footprint, waste management, natural resource conservation, and animal treatment. It may also be used in

evaluating any environmental risks a company might face and how it manages those risks. The social criteria assess how the company manages its relationships with employees, suppliers, customers, and its communities. Lastly, the governance criteria deal with a company's management, corruption, audits, internal control, and shareholder rights. Investors want to know that a company uses accurate and transparent accounting methods and that stockholders are given the right to vote on important issues. No single company may have a top score in every category, so investors and companies need to decide what is important for them.

4.5.1 **Context**

It all began with the call to action in 2004 by then-UN Secretary-General Kofi Annan, who wrote to the CEOs of considerable financial intuitions to take part in an initiative to integrate ESG into capital markets. Since then, ESG has moved and evolved from the sidelines to the forefront of decision-makers for asset managers, institutional investors, and corporate management. ESG considerations are being integrated into the charter of a growing number of entities, included in their practice, and applied to due diligence when assessing investments. In 2015, the global ESG investments were ~USD 18.4 trillion, growing by 25% to USD 23 trillion in 2017, accounting for one-quarter of all professionally managed investments globally (Colby, 2017).

World economies face a growing indebtedness and unsustainable asset prices as we have entered a disconcerting geopolitical reality where nationalism and populism are on the rise, leading to alleviate the escalating military, economic, and commercial tensions. Simultaneously, the world is failing to mitigate climate change and global warming, which continues to grow as it threatens global stability. As we enter this grim reality, it is clear that the ESG criteria are well-suited to effectively assess a company's resilience, adaptability, long-term sustainability, social-awareness, and capacity for growth. All of this requires a forward-looking, qualitative, expansive approach for corporate governance and investing that examines what-if scenarios and relies less on past performance and historical data as a prophet of future performance.

Aker BioMarine has an outspoken mission to continue being the ESG-leader in the krill industry as the first Marine Stewardship Council (“MSC”)-certified krill supplier (Aker BioMarine, 2020e). The certification is only given to the fisheries that comply with the most stringent sustainability standards. Before throwing the first fishing net, they initiated a

dialogue with WWF Norway to ensure the operations would have a low impact on the Antarctic ecosystem. They have set ambitious goals to overcome the global challenges the world faces, such as loss of biodiversity, resource scarcity, lifestyle disease threats, and climate change. Aker BioMarine intends to be a part of the solution to these challenges with its eco-harvesting technology and marine conservation practices (Aker BioMarine 2020b). With the rising importance of a company's ESG standards, an ESG assessment is an essential step in the strategic analysis.

4.5.2 **Environment ("E")**

Several environmental factors are critical when assessing the seafood industry. We will highlight what we argue are the most significant elements, describe risks the industry is facing, and potential risk mitigation measures.

Fleet and production

Like most other industries, the seafood industry is pushed towards reduced its CO2 emissions and carbon footprint. Seafood's carbon footprint is primarily affected by fuel consumption. The reality is that large vessels traveling the high seas to catch krill will burn a lot more fuel than vessels traveling less distance to catch local species. The further the vessels travel from the port to the catch, the larger gas consumption and emissions. As the krill are found in Antarctica, it is not easy to do something about the port's distance if we exclude the option to relocate. The key driver to lower the emissions can be found in new and modern vessels and higher catch volumes per day/vessel, as this will reduce the CO2 emission for the end-product. Further, the tools utilized to catch the krill does also have a variable climate impact. So, another element in classifying seafood as climate-friendly involves how it was caught. Finally, where the catch is processed and the end-product produced will also affect the carbon footprint. Even if caught without large distances, shipping product for foreign processing and importing it for sale may skyrocket fuel and energy consumption, leading to higher emission rates.

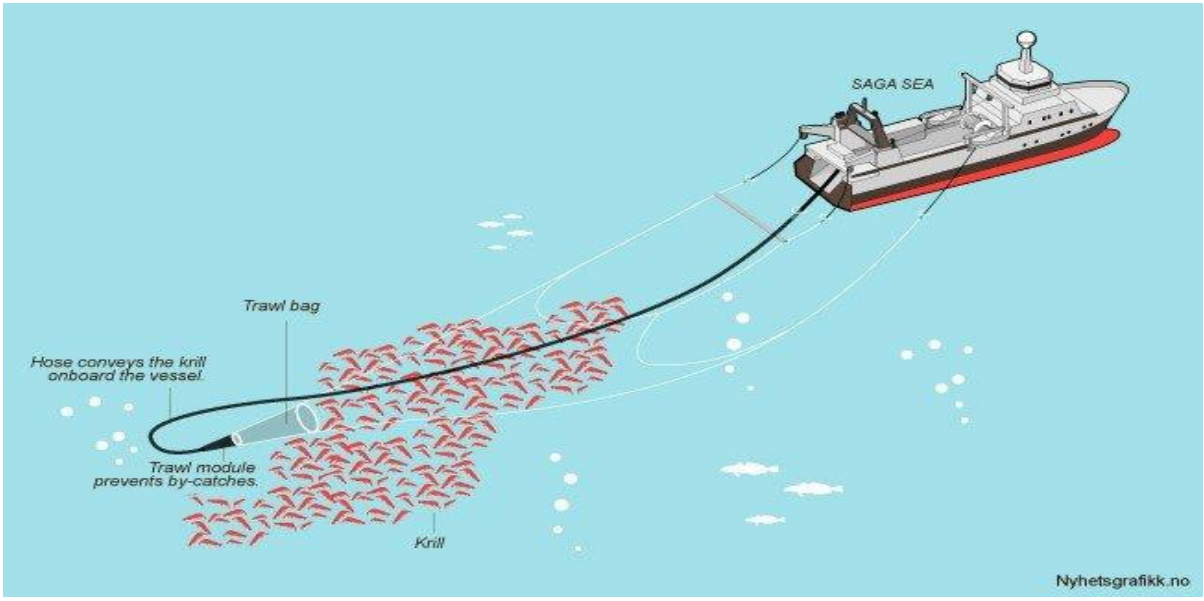
Aker BioMarine has the newest and most modern fleet in the industry, with an additional expected delivery of a support vessel in 2021 (Aker BioMarine, 2020b). Their modern fleet catches far more krill per vessel than the competitors. Further, with the new support vessel's delivery, the need for krill vessels to go to the port will be eliminated as the support vessels

will bring supplies, new crew, and fuel to the krill vessels. This will enhance the catch volumes per vessel and reduce the combined end-CO2 emissions per end-product.

The patented eco-harvesting technology developed by Aker BioMarine secures the krill to be caught with an environmentally friendly method and protects the Antarctic fishery from disadvantageous environmental impacts. Traditional trawling is not considered suitable for krill, as the enzymes will "self-destruct" before they can be processed. However, the eco-harvesting system allows the fishing net to stay in the water during the whole operation, with the krill being pumped up through a hose live to the vessel for instant processing.

This increases the catch's quality, which has more fat and oil collected during the processing, consequently preserving vital nutrients in the end-product and preventing enzymatic degradation. Thus, the method is the most sustainable and efficient way to catch krill and almost eliminates any by-catch.

Figure 20: *Aker BioMarine's eco-harvesting*



Source: Repstad, T. Superba Krill (2018)

The company's purpose-built manufacturing facility in Houston, Texas, is a complete-chain operation, implying it does not ship and distribute parts of the production elsewhere, which would significantly increase the end-product's carbon footprint. The facility itself is also highly sustainable, recycling and re-using the vast majority of ethanol and water need for the production. As presented in Figure 1, krill only emits half of the CO2 per MT of edible protein as salmon and only 1.48% of what requires for beef (Aker BioMarine, 2020b). So, krill is a low-intensity greenhouse gas product, but the way of harvesting and production to end-product

matters a lot in the ESG assessment. Aker BioMarine has executed various measures to increase efficiency and lower emissions, which is reflected in the certifications they have attained.

Overfishing

Sustainable fisheries leave enough fish and crustaceans in the ocean, respecting the habitats without disrupting the ecosystem and ensuring people who depend on fishing can maintain their livelihood. A fishery's sustainability can be assessed regardless of its size, geography, or the harvesting method employed. In the process of assessing the sustainability of a fishery, three main principles are deployed. The first thing to consider is the krill stock, the harvesting must be at a level that ensures it can continue to live indefinitely, and the krill population can remain productive and healthy. Krill harvesting appears to be operating sustainably, as the cumulative annual catch is well below the conservative set quotas target, according to Lloyd's Register (Chu, 2020). The organization also granted the company a certificate stating its krill harvest is sustainable and well-managed and meets the requirements set out by the MSC. According to Sustainable Fisheries, Antarctic krill is the only fishing industry ranked “A” for its sustainability, with best-in-class supervision and stock status (MSC, 2019).

Secondly, sustainable fisheries must minimize their environmental impact. The harvesting activity must be managed carefully so that other species and habitats within the ecosystem remain healthy and in large enough stock to reproduce. The wild catch's environmental impact is predominantly related to potential damage caused by dredging, bottom trawling, or unintended harvest of vulnerable species. Aker BioMarine has addressed this with the invention of eco-harvesting. Finally, to be viewed as a sustainable fishery, the operations must be well-managed and transparent. The company must comply with relevant laws and be able to adapt to changing environmental circumstances and standards. We will dive deeper into this when we present the “governance” aspect of the ESG assessment.

4.5.3 **Social ("S")**

Assessing the social aspect of the seafood industry, we chose to elevate four considerations.

Occupational safety

Health and safety are paramount as the occupation is one of the most dangerous occupations globally, supported by high rates of accidents and fatality rates in most countries (FAO, 2020a). Aquaculture processing has been highlighted as one of the vital hazardous industries,

and the industry is taking significant steps in generating awareness and building capacity for workspace health and safety measures. In addition to safety hazards, workers in the industry are often exposed to high noise levels resulting in hearing loss, ergonomic hazards causing musculoskeletal disorders, and chemicals that increase the threat to satisfactory occupational health. The industry is operating in harsh conditions, and a key focus for companies is to reduce the number of accidents by having top-quality equipment and strict policies.

Aker BioMarine possesses the newest and most modern fleet in the industry, which is outfitted with top-modern equipment that reduces the risk of fatal work-related accidents and long-term damages coming from the usage of older and inferior equipment. Further, its Houston-plant was awarded the "Platinum Safety Partner Award" by Texas Mutual Insurance Company in 2017, which only 0.29% of all Texas-companies possess (Aker BioMarine, 2017). The award is presented to companies that demonstrate their commitment to occupational safety by implementing safety programs and measures and controlling their worker's compensation losses. The management has stated that they go "far and beyond" to provide training and resources necessary to protect their employees from workplace hazards, reflected in safety records (Aker BioMarine, 2017).

Social dumping and local initiatives

The EEA agreement has created the opportunity for easy employment of foreign workers within the economic area, unlocking the possibility of social dumping. In the past years, there have been numerous instances with fisheries breaking the labor law and utilizing workers from low-wage countries (Lysvold et al., 2019). Violations like these are quite frowned upon by both the public and investors, such that it is crucial to create and maintain the image that shows that Aker BioMarine does not exploit low-wage blue-collar workers. In late 2019, it was discovered that one of the MSC-certified fisheries Aker BioMarine employed to process the catch was involved in social dumping (Thorenfeldt et al., 2019). Aker BioMarine took immediate distance from it and suggested that assessment the work environment should be a criterion of the MSC-certification (Thorenfeldt et al., 2019).

We consider local initiatives to be essential to maintain a positive impression by the public and thereby continue to have the license to operate in the common areas. Through the Antarctic Wildlife Research Fund, Aker BioMarine is contributing to Antarctic science. The company is contributing to new technology to improve fishery management in the polar circle. As it is with all businesses, it is crucial to have a diverse base of employees. This is true for the whole

organization, from top management and board of directors to the vessels' staff. Today, the firm also has diverse top management, with 4 out of 9 (44.4%) being women (Aker BioMarine 2020a). It should be compared with the rest of the industry to benchmark the performance. Researching the rest of the seafood industry, Aker BioMarine comes out in the high end compared with the industry. There is only one woman on the board, which consists of 6 directors (16.6%). We were unable to obtain any numbers regarding the diversity on the vessels, but men frequently dominate these positions, so we do not expect the same diversity in these positions (OECD, 2020).

Food safety and quality assurance

Food safety and quality is also a key factor for the industry. The importance and knowledge that the end-product is safe and healthy for the consumers are paramount. Consumers require full transparency when it comes to the origin of their product choices and, in particular, when the product sources from the ocean. Aker BioMarine has since the launch offered the customers the actual harvesting location for every krill oil batch. The harvesting location information is both a differentiator and for the consumers, which makes them stand out as an attractive, trustworthy, and responsible brand delivering high-quality products. Traceability is needed to guarantee food safety, deliver products that responsibility produced, and build trust. As the customers can follow the whole production circle of the products Aker BioMarine offers, the competitors cannot offer the same level of quality assurance and ownership in the product line.

4.5.4 **Governance ("G")**

Our final aspect is the governance characteristic. Governance is a vital part of all operating companies. The seafood industry is especially relevant due to the strong relationship between the businesses, the government, and the public. It is, therefore, of great significance that these companies have an open and transparent reporting policy. Several of the industry companies are also family-controlled, which also holds other businesses in different parts of the supply chain and other sectors, and good corporate governance is therefore key for not damaging the family name. We have chosen to investigate three different aspects of corporate governance, explicitly reporting standards, political accountability, and corporate control.

Reporting standards

The seafood industry is obligated to report on several factors, and we argue the reporting standard will be stricter and stricter going forward. The companies are operating in the common areas, and both the public and governing organs will require companies to disclose more information going forward with regards to the origin of the product. We consider companies like Aker BioMarine, which have numerous studies documenting the positive health effects, will be more willing and forward-leaning in their reporting standards.

As a listed company, we expect high reporting standards of both catch-volumes, by-catch, vessel positions, and production processes. Today, Aker BioMarine reports following both the Global Reporting Initiative ("GRI") core level guidelines and meeting the requirements by the Norwegian Accounting Act. As a part of its strategic reporting project, initiated in November 2019, it developed targets and baseline tracking for selected key performance indicators ("KPIs") relevant to the corporate structure. The company is now evaluating relevant standards currently applied by well-performing listed companies as a part of the strategy but will develop and apply a reporting regime tailored for its scope and context (Aker ASA, 2020).

Political accountability and corporate control

For the seafood industry to operate sustainably, rules and regulations must be in place. Historically, we have seen that when the industry is under-regulated, it has led to overfishing. Therefore, we assert that having stable and reliable regulations is fundamental for the industry to thrive in the future. Aker BioMarine relies on continued strong regulation of the krill biomass to continue the harvest profitably and sustainably in the unforeseeable future. They currently operate in Antarctica, where the quotas are determined by the 26 nations who operate under the Antarctic Treaty.

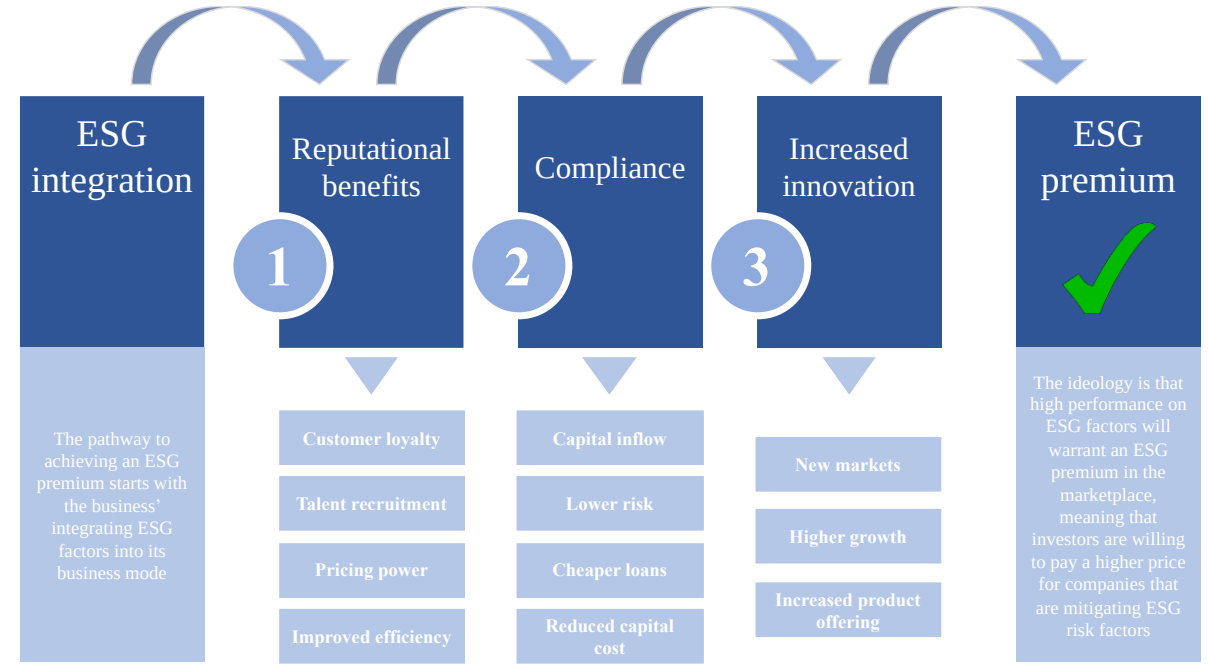
The final part of the governance facet is corporate control. Aker BioMarine is ~78% held by Aker ASA, which is controlled by The Resource Group ("TGR"), owned by Kjell Inge Røkke. Potential transactions between the company and other portfolio companies in the Aker system must be done at an arm-length distance to keep good corporate governance. The group will also need to establish a strong board to ensure the rights of the minority owners. As the situation is today, it is sub-optimal for the minority owners regarding the board of directors and the measures taken by TGR to ensure transactions and corporate decisions at Aker ASA are taken to improve Aker BioMarine's position and no other portfolio companies of TGR.

4.5.5 **Conclusion on ESG assessment**

Aker BioMarine ranks high on the environmental factors as the end-products it produces have a low carbon footprint, and the krill harvesting is performed in a sustainable manner. We also insist that the company has a high ranking on the social criteria as a decisive contribution to local communities, and the end-product has high quality and offers several health benefits. Lastly, when rating the corporate governance, we cannot claim it scores high but rather average. We see needs for improvements with a strong board and the risk of potential transactions and major decisions between the company and its largest owners. These transactions and decisions must be made at an arm's length distance and with the best intentions for Aker BioMarine. Good political accountability and reporting standards impact the rating positively, but we cannot rate it high as the situation is today.

Assessing Aker BioMarine's ESG initiatives and status today with a holistic approach, they score well. As stated in the beginning, very few companies achieve a top score on all the aspects of the ESG, and the individual investors or asset managers must assess themselves what is important for them. We believe Aker BioMarine scores high on essential considerations when investors are assessing the ESG, but they should take measures to improve the corporate control and ensure that every decision taken is in the best interest of all Aker BioMarine shareholders – and not only the majority holder.

Figure 21: *Potential pathway from ESG focus to ESG premium*



Source: Own creation, Schoenmaker & Schramade (2019)

Figure 21 summarizes how the focus on ESG factors may lead to a premium valuation in the marketplace. This pathway is inspired by Schoenmaker & Schramade's (2019) theoretical frameworks, which elaborates on how to focus on ESG factors that may lead to several operational and reputational benefits that in turn warrants an ESG premium in the marketplace. While the in-practice existence and implication of an ESG valuation premium has long been debated, the view on this matter has been changing drastically in the last decade.

As governments and regulators are putting increasing pressure on the sustainability of businesses and ESG issues, investors are now paying increasing attention to these factors and their implications on a company's financial valuation. In fact, in a recent McKinsey Global Survey on ESG programs, as many as 83% of senior executives and investment professionals that responded to the survey stated they anticipate ESG programs to add increased shareholder value in five years than today. Further, these same respondents indicated that they were prepared to pay a median of 10% premium on companies that performed well on ESG issues compared to companies that perform poorly on ESG issues (Delevingne et al., 2020).

4.6 SWOT analysis

A SWOT analysis examines four unique elements: strengths, weaknesses, opportunities, and threats. The first two features assess the internal resources of the company. It builds on the VRIO analysis and ESG assessment. The latter two elements investigate the opportunities and threats in the environment the company operates within. The SWOT analysis combines the internal and external analysis to evaluate whether the company's strategy is relevant and feasible in combination with the changing macro environment (Roos et al., 2014). A combination of the previous analyses is utilized to acquire a holistic view of Aker BioMarine.

We primarily want to answer how the industry's profitability is going to develop going forward and how the profitability of Aker BioMarine will develop compared with the industry. The first question will be answered with assistance from PESTEL and Porter's five forces. The latter question will be answered centered around the VRIO analysis and ESG assessment, but some industry analysis aspects can also be deployed. Some of the factors influencing the industry will probably impact some companies more than others. Hence, we examine the likeliness that Aker BioMarine is more affected than the industry average.

4.6.1 **Strengths**

Perhaps the greatest strengths of Aker BioMarine are its sheer size and the integrated vertical value chain. No one in the industry is even close to its size and value chain today, as the others are mostly pure harvesting companies. This provides more significant economies of scale than their peers, with a 2020e catch of 388 000MT of krill, which is ~129 000MT per vessel compared to competitors ~17 000MT per vessel (Aker BioMarine, 2020b).

Further, it also allows for rapid expansion to new markets and makes them better equipped for entrance into new markets as swift changes can be made without making significant changes in their supply chain. Having control over the entire supply chain allows them to reduce operating costs to intermediaries and mediators and have superior quality control of their products. Another evident strength is the acquisition of Lang that gave Aker BioMarine access to pharmaceutical production and ~85% of retail stores in the US. Access to the vast amount of retail stores in one of the world's largest markets is an immense advantage, as there is a limited need for time and resources to develop the relationship to obtain access to the store shelves with their products.

Finally, sustainability is embedded in the company's strategy, and they have dedicated themselves to four of the UN's development goals. The global markets have experienced an elevated focus on “green” companies, and these are often traded with a premium compared to the low-scoring ESG equities. Our ESG assessment indicates that the company scores well above-average in both the environmental and social aspects but may have to improve its governance. Aker BioMarine controls the most extensive and greenest fleet in the industry, which may also give them an advantage as the consumers are increasingly becoming fixated on the origins and sustainability of their products.

4.6.2 **Weaknesses**

The internal resource analysis, VRIO, illustrated the competitive advantage Aker BioMarine currently possesses. It also indicated that none of its resources are inimitable and can be replicated with enough time and resources. This may prove to be a challenge for the company as China has a stated goal to become the number one within the harvesting of krill and production of krill oil (Urch, 2015). The Chinese giant, CMI, recently ordered the largest krill harvesting vessel ever to be built.

Aker BioMarine has substantial financial backing from the Aker conglomerate, but its financial muscles cannot be matched with the second-largest economy in the world. Aker BioMarine should focus on and dedicate resources to acquire and develop resources that prove to be unique. As presented in the ESG assessment, the company still has issues regarding its corporate governance. The company needs to take measures to guarantee the arm-length between Aker BioMarine and the rest of the Aker portfolio to ensure investors that decisions are taken with the best interest of Aker BioMarine in mind. Lastly, the company also needs to improve the female representation on the board to comply with the regulations of Oslo Børs, which is the listing Aker BioMarine aims for (Bjergaard, 2020). The increased female representation on the board will also improve the company's governance element and may further attract ESG-investors.

4.6.3 **Opportunities**

The rapid technological development will help Aker BioMarine conduct its operations more efficiently. The new agreement with Cognite may help and improve harvesting and fuel consumption. Thus, reduce both the operational costs and emission footprint. This will increase resource efficiency by minimizing the environmental impact and input factors contributing to climate change.

Aker BioMarine is also entering the animal feed market, with a particular focus on dogs and aquaculture. With Kori's experience, the company is developing a new dog food that is planned to hit the market in 2022. The global pet food market is an attractive market worth ~USD 90bn in 2018, with an expected 7% 2018-2023 CAGR, and the US accounts for 39% (Nestle, 2019). Further, there is also an immense potential in the aquaculture feed market to capture market shares and expand operations. According to FAO (2019), the seafood market is expected to grow by an average of 2.6% per year, as the global population keeps on rising, and the need for aquaculture feed increases as the demand for fish is on the rise.

In the past decades, there has been a significant rise in deaths from chronic diseases globally, and the demand for health supplements, such as omega-3, could consequently increase. In 2020, annual global health care costs of high BMI are estimated to reach USD 945bn (Aker BioMarine, 2020b). Aker BioMarine is already in the process of developing more krill-based products through the newly established Epion subsidiary. Today, despite the benefits, less than 1% of the US population buys omega-3 supplements, which creates an untapped opportunity

for growth. Additionally, a greater focus on plant-based diets increases the need for omega-3 supplements. Plant-based alternatives include omega-3 only in the form of ALA or SDA, while the beneficial biological effect has only been documented from the EPA and DHA's fatty acids. This may also generate an untapped opportunity to expand the consumer base.

4.6.4 **Threats**

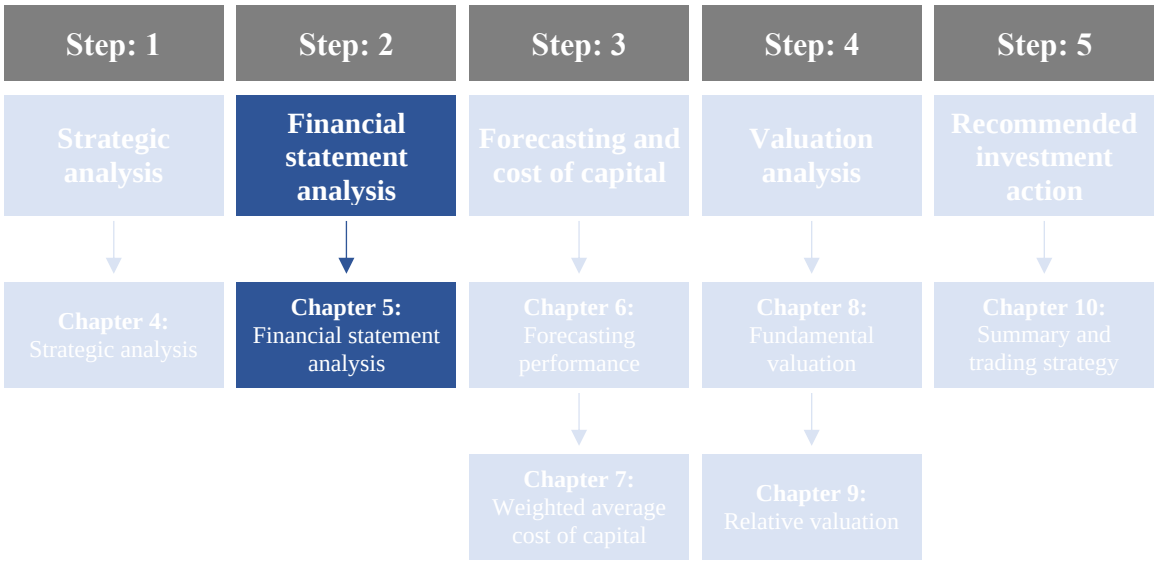
Climate change is a significant threat to the krill industry. Climate change and increasing temperatures of the oceans might move warmer water towards the poles, resulting in more impoverished living conditions and reduced krill stock in the Antarctic ecosystem. More frequent extreme weather, such as cold snaps and intense storms, may become more frequent in the future. This may affect the company's harvesting vessels. As described, the CCAMLR establishes an annual maximum permitted catch of krill. If climate development continues to proceed in the wrong direction, krill harvesting could become subject to tighter regulations.

Further, China's goal to become the global leader in the krill industry may shake up the whole industry. China has all the power and resources needed to become so if wanted. Aker BioMarine does not have the capital or resources to outcompete China if they decide to achieve its goals. Lastly, the internal resource-based analysis, VRIO, discovered that the company had zero sustainable long-term competitive advantages. The risk of competitors developing more efficient and sustainable methods of harvesting and production techniques is present and poses a threat against the superiority of Aker BioMarine.

4.6.5 **Summary of SWOT analysis**

Exhibit 6: *Summary of SWOT analysis*

5. Historical financial statement analysis



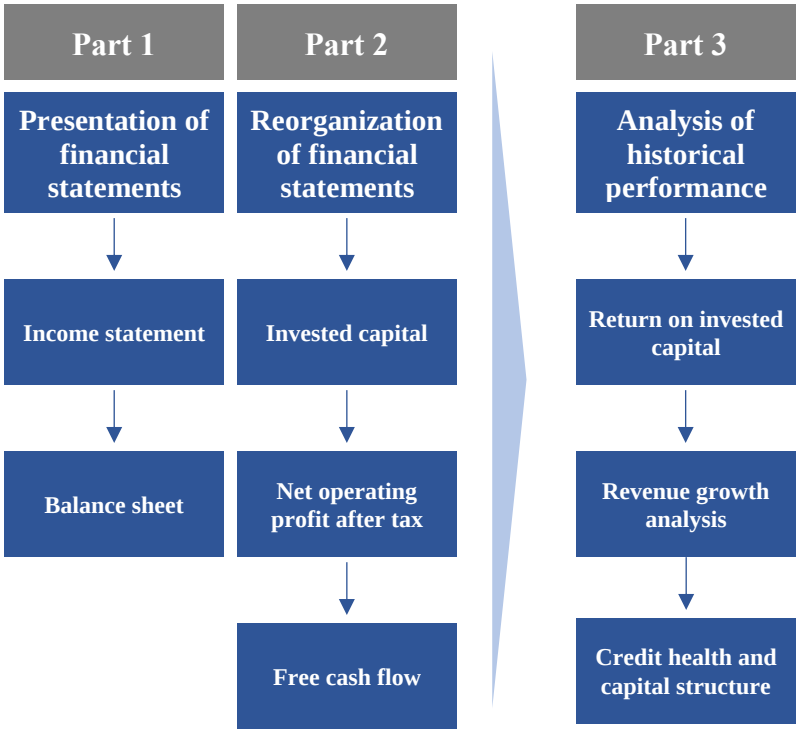
In this chapter, the historical financial information of Aker BioMarine is collected and analyzed to lay much of the quantitative groundwork for the forecasts and forward-looking assumptions that will be drawn later in our valuation analysis. In this paper, we have adopted the reorganization framework of Koller et al. (2020), complemented by insight from Damodaran (2012), Kaldestad & Møller (2016), and Kjell Henry Knivsflå's BUS440 course material. The historical financial statement analysis is conducted in two parts: first, a reorganization of the company's financial statements, and second, an analysis of historical financial performance.

The reorganization of the financial statements is a vital step in any valuation analysis. The regular financial statements presented in a company's annual report typically lack some simplicity and do not provide the necessary understanding of the firm's performance if viewed as presented. Therefore, after first untangling each financial statement, a clearer picture of the company's operational performance can be obtained by reassembling and splitting financial statements into those that are core items to the business' operation and those that are not. Further, after the financial statements are restructured, an analysis of the company's historical performance can be conducted. More specifically, we do this by analyzing historical return on invested capital ("ROIC") and by examining historical revenue growth, as they are fundamental elements of the value creation (Koller et al., 2020).

5.1 Framework

Exhibit 7 gives a visual presentation of the overall framework of our historical financial statement analysis. This follows Koller et al.'s (2020) methodology, where the financial statements as presented in the company's annual reports are presented in part 1, followed up by a reorganization of the financial statements in part 2. Finally, in part 3, Aker BioMarine's performance is analyzed based on the historical developments in ROIC and revenue growth. The final part will be concluded with an analysis of the firm's credit health and capital structure.

Exhibit 7: *Historical financial statement analysis framework*



5.1.1 **Framework for the reorganization of financial statements**

To capture the differences between operating and non-operating elements described in the chapter introduction, Koller et al. (2020) divides each financial statement's reorganization into three fundamental categories: *invested capital*, *net operating profit after taxes*, and *free cash flow*. Below we provide a brief explanation of how we will use this methodology to restructure Aker BioMarine's financial statements.

Reorganizing to calculate invested capital

Invested capital represents all invested capital into a company regardless of investor source, from shareholders or debtholders. While it is a relatively simple concept in theory, the invested capital is much more than just a company's invested equity and debt, and understanding its components is key to understanding how a company's operations are financed. Invested capital encompasses operating working capital, fixed assets, net other long-term operating assets, and sometimes also intangibles such as other intangibles and goodwill if applicable (Koller et al., 2020). Invested capital is seldom expressed directly in traditional financial reports and must be extracted by reorganizing its financial statements. In practice, this involves examining the notes in each annual report of the company to untangle balance sheet items to calculate invested capital.

To paint a picture of how the traditional balance sheet mixes operating liabilities and sources of financing on the right-hand side of the equation, we illustrate an expansion of the traditional balance sheet equation to uncover total funds invested and invested capital (Koller et al., 2020):

$$Assets = Equity + Liabilities \qquad Eq.9$$

Eq.9 can then be expanded into *Eq.10,* as illustrated below:

$$\begin{aligned} &Operating\ assets + Non-operating\ assets \\ \rightarrow\ &= Operating\ liabilities + Debt\ and\ equivalents \\ &+ Equity\ and\ equivalents \end{aligned} \qquad Eq.10$$

Further, *Eq.10* can then be rearranged to *Eq.11* by subtracting operating liabilities from operating assets, which equals invested capital:

$$\begin{aligned} &Invested\ capital + Non-operating\ asset \\ \rightarrow\ &= Total\ funds\ invested \\ &= Debt\ and\ equivalents + Equity\ and\ equivalents \end{aligned} \qquad Eq.11$$

Moreover, *Eq.11* will be the conceptual basis for our calculation of invested capital through the rearrangement of Aker BioMarine's ***balance sheet*** later in this chapter.

Reorganizing to calculate net operating profit after tax

Net operating profit after tax ("NOPAT"), which sometimes is referred to as "unlevered net income," is calculated as follows (Berk & DeMarzo, 2020):

$$NOPAT = EBIT \times (1 - Tax) \\ = (Revenue - Costs - Depreciation) \times (1 - Tax) \qquad \textit{Eq.12}$$

Eq. 12 illustrates how NOPAT is calculated in simplified terms. On a more general basis, NOPAT is referred to as the profit after tax that stems from the business' core operations, while non-operating assets or financing-related costs are ignored. One vital aspect of the NOPAT calculation is that it needs to be held consistent with the calculation of invested capital, and as an effect of this, it should only include those profits created by the invested capital.

Following Koller et al.'s (2020) theoretical framework, we will derive our estimates of NOPAT by reorganizing the ***income statement*** through a three-part methodology. Firstly, NOPAT is defined as the after-tax operating profit available to all investors. It is kept separate from the firm's capital structure by categorizing interest as a financing item. Although *Eq. 12* showcases NOPAT calculated as a product of EBIT, we will instead use earnings before interest, taxes, and amortization ("EBITA") proposed by Tim Koller and his co-authors. This choice will be explained in greater detail later in this sub-chapter. Further, in line with the fundamental principle of keeping NOPAT consistent with invested capital, no income created by assets outside of invested capital is included. Finally, taxes should be calculated only as operating taxes, and the exclusion of non-operating tax items is required.

Reorganizing to calculate free cash flow

The third and final section of our financial statement reorganization calculates the free cash flow ("FCF"). A firm's free cash flow is the accumulative effect of the firm's operations on available cash, independent from any financing decisions. As with NOPAT, this implies that free cash flow is the cash available to all investors, i.e., to both shareholders and debtholders. Free cash flow can be calculated as follows:

$$Free\ cash\ flow = NOPAT + Non - cash\ operating\ expenses - \\ Investment\ in\ invested\ capital \qquad \textit{Eq.13}$$

By reading into *Eq.13*, the free cash flow can be viewed as the cash flow after tax if the firm was funded solely by equity and held no non-core operating assets. In this step, the *statement of shareholders' equity* is needed to assemble a restructured financial statement appropriate to calculate free cash flow.

5.1.2 **Defining the scope of the financial statement analysis**

Before undertaking a financial statement analysis, the critical action is to define the scope of the analysis, particularly in terms of the time frame of historical financial information included in the analysis and whether financials will be analyzed on a consolidated group level or individual business unit level.

Consolidated financial statements vs. individual business unit

A core aspect of the historical financial statement analysis is whether a company's historical financial data is analyzed on a consolidated basis or as the sum of all individual business units. Generally, this decision is formed dependent on whether the company is split into different business units with structural differences in operational characteristics or not. A company with integrated business units should be analyzed on a consolidated basis, and vice versa. In Aker BioMarine, its divisions are near integrated and therefore considered best suited for a consolidated historical financial statement analysis.

Length of the financial statement examination period

Concerning the length of the financial statement examination period, we define one period of analysis as a single financial year. The primary objective of historical financial statement analysis is to produce valuable quantitative information about historical financials to support financial valuation forecasts. Thus, selecting a historical period of analysis that coincides with today's operational characteristics is vital. In essence, if a company has experienced significant changes to its operational performance in recent years, analyzing over a lengthier period may not provide the optimal insight into future financial performance. Conversely, a firm with long-term steady operational performance in a stable business environment will find a more extensive examination period suitable as it may strengthen the reliability of historical financial information.

As for Aker BioMarine, the company experienced relatively modest growth after de-listing from Oslo Børs in 2012 until 2016. From 2017 and onward Aker BioMarine has seen substantial operational growth. It has had a near doubling of revenues from 2017 to 2019. This

is also reflected in the company's prospects changing drastically from 2015 compared to today's outlook.

Moreover, since 2015 Aker BioMarine has seen significant changes in its operational characteristics, and we consider 2015 and 2016 as less relevant for our analysis as we believe it would create more distortion than benefits in our analysis. Therefore, a period of three fiscal years (2017-2019) will be examined in our historical financial statement analysis.

Comparable firms

One key issue in a historical peer analysis is to establish comparability. That is comparability across the company being valued, and the selected peer company in terms of characteristics such as earnings growth prospects, profit margins from operations, access to critical resources, risk, and more. In the case of Aker BioMarine, there are no other publicly listed companies in the krill fishing industry. In this way, the comparable companies used in our analysis will not fulfill the general condition that a peer company should have industry affiliation, and establishing such a direct link between Aker BioMarine and other public companies could prove to be a challenging process. This implies that the krill fishing companies described in section 2.3 are not applicable in the peer analysis.

Establishing comparability

In our selection of peer companies, we believe that the traditional fishing companies listed in the public marketplace today have a low degree of comparability to Aker BioMarine and companies in the krill fishing industry. This is mostly since peers in well-developed traditional fisheries have a far lower potential for growth in comparison to the considerable amount of allowed biomass that is yet to be captured by the krill fisheries. In this sense, krill fishing companies are in a unique growth position compared to that of traditional fisheries. More so, profit margins also differ notably, and Aker BioMarine can extract relatively high margins from its production of high-end krill oil products, whereas traditional fisheries in the marketplace today are operating with much more conservative margins. Examples of such public listings in the traditional fisheries segment include Clearwater Seafoods, Oceana Group, and Sanford Limited.

This comparability issue also applies to salmon farming companies, with prospects of volume growth being somewhat limited in this industry due to high regulation and overproduction challenges. While Norwegian salmon farming companies can achieve high-end pricing of their

salmon, utilization of products and end-markets varies greatly, and we deem publicly listed companies in this category less relevant for a peer analysis of Aker BioMarine.

Finally, we see a high degree of relevance and comparability in several publicly listed companies within the Brands and Ingredients segment. As we presented in the introduction, these two segments are the two segments in which Aker BioMarine splits their operational revenue, with 68% of 2019 revenue within Ingredients and the remaining 32% in Brands (Aker BioMarine, 2020b). Moreover, with Aker BioMarine's ambitions to remain heavily invested in the krill oil segment we except the company to continue to hold operational characteristics in the future that is similar to that of companies in the Ingredients segment. This also applies to the Brand segment, in which the company's efforts through the Epion and Lang brands give reason to a comparison to companies in this category. To add further leverage to our arguments, these are also the two segments that Aker BioMarine uses in various company presentations and investor material when comparing their performance with peer companies. We have confidence that our selected peer companies are reasonably motivated and that they, to the best of our knowledge, deliver some of the highest degrees of comparability to Aker BioMarine in the public market today.

We have selected two peers from both Ingredients and Brand to capture both segments Aker BioMarine operates in for our historical financial analysis. The selected companies from Brands are Midsona and Glanbia, while Ingredients' peers are Probi and Koninklijke DSM. The following sub-chapter will briefly present the selected peers.

Midsona AB (Brands)

Midsona AB is a publicly listed Swedish company that develops, manufactures, and markets products in health, herbal medicines, and hygiene. The company is a leader in the Nordic region in natural and organic products and has the vision to become a European leader in health and well-being. The nutrition company had a market capitalization of SEK 4.45bn on November 22, 2020 (Yahoo Finance, 2020b), with a 2019 revenue of SEK 3.08bn (Midsona, 2020).

Glanbia Plc (Brands)

Glanbia Plc is a global nutrition group with operations in 32 countries, with an Irish heritage. The group has a leading market position in sports nutrition, dairy ingredients, non-dairy ingredients, vitamins, and mineral premixes. The group is a worldwide supplier of dietary

supplements, but have their largest markets in Europe and North America. The company is listed on London Stock Exchange and had a market capitalization of EUR 2.89bn on November 22, 2020 (Yahoo Finance, 2020c), with a 2019 revenue of EUR 3.9bn (Glanbia, 2020).

Probi AB (Ingredients)

Probi AB is an international company focused on developing, producing, and delivering proven probiotics. The company has a long history of exploring and refining solutions that make the health-enhancing benefits of probiotics available for people globally. The global supplier of supplements and probiotics is listed on Nasdaq Stockholm and had a market capitalization of SEK 4.40bn on November 22, 2020 (Yahoo Finance, 2020d), and 2019 revenues were SEK 626.19mn (Probi, 2020).

DSM Koninklijke (Ingredients)

DSM is a Dutch-based multinational company which is specialized in health nutrition and materials. The company's global end markets include food- and dietary supplements, personal care, feed, and pharmaceuticals. The company is publicly traded at the Amsterdam Stock Exchange with a market capitalization of EUR 24.75bn on November 22, 2020 (Yahoo Finance, 2020e), with 2019 revenues of EUR 8.63bn (DSM, 2020).

Other considerations

In this section, we outline various other considerations we have taken in connection with the historical financial analysis of Aker BioMarine. Firstly, we recognize that including the most up-to-date financial information of the company is pivotal in creating a company's financial valuation as of October 30, 2020. Since we are well into 2020, this means that the financial information of the 2019 annual report, in practice, does not reflect the latest information. Knivsflå (2020g) proposes one way to combat this by creating ”trailing” financial statements based on the latest available quarterly financial information. Since Aker BioMarine is a new publicly listed company, several factors limit the publicly available financial information we have on the firm. Most prominently, firms listed on Merkur Market are not obliged to report quarterly financials, and the various interim financial reports released so far this year by the company are heavily condensed and not suited for a historical financial statement analysis. For this reason, we will only include information from the latest annual reports in our historical financial analysis. The latest financial information is included in our financial forecasting.

For clarity, in preparing this thesis, we contacted the company about the possibility of obtaining the latest full and detailed quarterly financials for the company. Our request was not possible to fulfill because these are not made publicly available as of today. We were also offered to come by their office to look at older, physically printed historical financials, but could not do so due to the ongoing COVID-19 pandemic as their office is located outside of Bergen.

5.2 Presentation of Aker BioMarine's financial statements

5.2.1 **Aker BioMarine's balance sheet and income statement**

Exhibit 8: *Aker BioMarine's balance sheet as reported (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
ASSETS			
Property, plant, and equipment	206 804	232 383	318 921
Intangible assets	95 421	114 158	190 297
Non-current interest-bearing receivables	-	-	-
Other non-interest-bearing non-current receivables	2 099	2 026	145
Investments in equity-accounted investee	205	240	260
Total non-current assets	304 529	348 806	509 624
Inventories	36 198	43 704	94 725
Trade receivables and prepaid expenses	33 970	35 223	74 264
Current interest-bearing receivables	-	-	-
Cash and cash equivalents	2 715	2 515	13 610
Total current assets	72 883	81 442	182 599
Total assets	**377 412**	**430 248**	**692 223**
LIABILITIES AND SHAREHOLDERS' EQUITY			
Share capital	63 684	68 003	68 003
Other paid-in equity	156 486	277 227	277 227
Translation differences and other reserves	154	154	154
Retained earnings	(161 028)	(166 570)	(190 838)
Total equity	**59 296**	**178 814**	**154 547**
Interest-bearing debt	258 322	179 424	372 473
Other non-interest-bearing non-current liabilities	11 871	17 657	65 618
Total non-current liabilities	270 193	197 081	438 091
Interest-bearing current liabilities	16 812	25 944	47 591
Derivative liabilities	-	1 472	-
Accounts payable and other payables	31 110	26 937	51 994
Total current liabilities	47 922	54 353	99 585
Total liabilities	**318 115**	**251 435**	**537 676**
Total liabilities and shareholders' equity	**377 412**	**430 248**	**692 223**

Source: Aker BioMarine's annual reports (2017-2019)

Exhibit 9: *Aker BioMarine's income statement as reported (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Net sales	124 154	154 182	246 170
Cost of goods sold	(81 768)	(88 829)	(145 901)
Gross profit	**42 386**	**65 352**	**100 269**
SG&A	(37 001)	(44 686)	(76 464)
Depreciation, amortization, and impairment	(2 528)	(5 539)	(17 822)
Other operating income/(cost), net	(4 538)	(4 869)	(3 221)
Operating profit	**(1 681)**	**10 258**	**2 762**
Net financial items	(15 072)	(11 540)	(26 097)
Tax expense	(1 011)	259	(415)
Net profit (loss)	**(17 764)**	**(1 022)**	**(23 751)**

Source: Aker BioMarine's annual reports (2017-2019)

5.3 Reorganization of financial statements

In this subchapter, we will carry out the restructuring of Aker BioMarine's financial statements. As mentioned in the chapter introduction, the rearrangement of financial information makes conventional financial statements more insightful, investor-oriented and highlights items that are particularly valuable to the upcoming valuation analysis. This reorganization is done by calculating *invested capital*, *NOPAT*, and *free cash flow*.

5.3.1 **Reorganizing to calculate invested capital**

To carry out a calculation of invested capital, the conventional balance sheet needs to be reorganized. Invested capital is not presented directly in traditional financial reports and needs to be derived by restructuring its financial statements. This is done by breaking down operating and non-operating items so that operating assets and operating liabilities can be grouped separately following the theoretical framework described earlier. As the methodology of Koller et al. (2020) requires, the reorganized balance sheet is produced by thoroughly examining the notes in each annual report of Aker BioMarine to provide more detail to balance sheet items to calculate invested capital.

Detailed balance sheet and account descriptions

Before calculating invested capital, we transform the "as-presented" balance sheet into a detailed balance sheet that separates operating and non-operating items. While company management would know what items are related to the company's operations and which are

not, we, as external analysts, have examined the notes in each annual report to gain the insight needed to separate these accounts. This is necessary because companies are not obliged to separate operating and non-operating items in the balance sheet presented in the annual reports. The detailed balance sheet is presented in exhibit 10.

Exhibit 10: *Aker BioMarine's detailed balance sheet (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
ASSETS			
Property, plant, and equipment	206 804	232 383	318 921
Goodwill	65 153	66 401	94 557
Other intangibles	30 268	47 757	95 740
Other non-interest-bearing non-current receivables	2 099	2 026	145
Investments in equity-accounted investee	205	240	260
Total non-current assets	304 529	348 806	509 624
Inventories	36 198	43 704	94 725
Accounts receivable	19 301	20 438	37 393
Prepaid expenses and other receivables	11 516	14 785	36 871
Derivative assets	3 153	-	-
Operating cash	2 715	2 515	7 385
Excess cash	0	0	6 225
Total current assets	72 883	81 442	182 600
Total assets	**377 412**	**430 248**	**692 223**
LIABILITIES AND SHAREHOLDERS' EQUITY			
Share capital	63 684	68 003	68 003
Other paid-in equity	156 486	277 227	277 227
Translation differences and other reserves	154	154	154
Retained earnings	(161 028)	(166 570)	(190 838)
Total equity	**59 297**	**178 814**	**154 547**
Interest-bearing debt	258 322	179 424	372 473
Other non-interest-bearing non-current liabilities	11 871	17 657	65 618
Total non-current liabilities	270 193	197 081	438 091
Interest-bearing current liabilities	16 812	25 944	47 591
Derivative liabilities	-	1 472	-
Accounts payable	11 432	11 469	23 340
Accrued expenses	13 141	11 332	26 311
Other current liabilities	6 537	4 136	2 342
Total current liabilities	47 922	54 353	99 585
Total liabilities	**318 115**	**251 435**	**537 676**
Total liabilities and shareholders' equity	**377 412**	**430 248**	**692 223**

Source: Aker BioMarine's annual reports (2017-2019)

Intangible assets encompass a wide range of assets that are non-physical, such as patents, trademarks, copyright, goodwill, and software. For Aker BioMarine, this account includes goodwill, which is tested for impairment on an annual basis or if events may indicate that impairment loss occurs. Further, this account also includes other intangibles such as license agreements, fishing licenses, development, customer relations, and trademarks. We highlight these operating assets to calculate invested capital both with and without the goodwill and other intangibles. We do this because we factor in the price paid for acquisitions when including goodwill and other intangible assets. More so, these are assets that relate to acquisitions; we also need to calculate invested capital excluding goodwill and other intangibles to examine the company's underlying operating performance, as per the framework of Koller et al. (2020). A more comprehensive description of this account will follow later in this subchapter.

Cash and cash equivalents are described in the annual reports as Aker BioMarine's cash at banks and cash on hand. While most firms need a certain amount of cash available to operate their business, it may not be that all the cash in the cash and cash equivalents account is necessary to operate the business. This precedes to a split between "operating cash" and "excess cash" in a company's cash account. However, Aker BioMarine does not disclose the amount of cash needed to operate on a day-to-day basis in their annual reports. An analyst will usually have to separate the two accounts by assumptions based on either industry averages or "rules of thumb." A detailed look into how we have distinguished excess cash from operating cash is provided in the second part of the invested capital calculation.

Trade receivables is an account composed of current assets such as accounts receivable, prepaid expenses, other receivables, and derivative assets. While items in the trade receivables account is normally considered operating, the derivative assets account is a non-operating item. In Aker BioMarine's case, the derivative assets account is linked to forward currency contracts with the Norwegian bank DNB for currency risk hedging of future payments in constructing its new vessel Antarctic Endurance. Therefore, this account is classified as non-operating as this account does not relate directly to the operational side of Aker BioMarine's business.

Further, Aker BioMarine's ***accounts payable and other payables*** contain accounts payable, accrued expenses, derivative liabilities, and other current liabilities. On the flip side of derivative assets, the derivative liabilities account within current liabilities related to forward

exchange contracts, which is also tied to the currency hedging contract with DNB. This account is characterized as non-operating for the same reasons as the derivate assets account. Aker BioMarine does not describe what the other current liabilities account encompasses, but we classify the remaining items in the accounts payable and other payables account as operating items.

Typically, ***deferred tax assets and liabilities*** are included on a company's balance sheet. This would be tax loss carryforwards that allow the business to carry a tax loss over to another year to offset profits. Aker BioMarine has chosen not to recognize deferred tax assets on its balance sheet based on its historical losses. Further, Aker BioMarine also has an ongoing dispute with the Norwegian Tax Authorities regarding the deductibility of losses. Aker BioMarine has appealed to the authorities' decision that NOK 296mn losses are not deductible and are now awaiting a decision from the authorities on this matter. Aker BioMarine's unrecognized deferred tax assets are described in exhibit 11:

Exhibit 11: *Aker BioMarine's overview of unrecognized deferred tax assets (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Deferred tax assets			
PP&E and intangible assets	(1 728)	(2 204)	5 280
Inventory	(792)	(512)	1 091
Other	836	15	23
Tax losses carried forward	69 845	49 964	52 868
Interest rate deductibility carry-forward	4 475	6 141	7 958
Deferred tax assets	72 636	53 404	67 220
Unrecognized deferred tax assets	(72 636)	(53 404)	(67 220)
Recognized deferred tax assets	**0**	**0**	**0**

Source: Aker BioMarine's annual reports (2017-2019)

Reorganization and calculation of invested capital

Before we showcase our reorganized balance sheet, a description of critical considerations we have had to make regarding Aker BioMarine's balance sheet's reorganization will follow. This relates to issues and assumptions of operating cash, goodwill, and other intangibles capitalized operating leases and finally, the calculation of invested capital and total funds invested. As we established in *Eq.11* in the theoretical introduction to this chapter, the total funds invested can be calculated using two approaches. Hence, a reconciliation of total funds invested is also included to test the reliability of our calculations.

Operating cash

Traditionally, companies do not disclose in their annual reports how much cash they need to hold to fund their core operations, that is, the level of "operating cash" required. For this reason, an external analyst will have to make use of other practices to derive an estimate of operating cash. As discussed in Koller et al. (2020), past empirical analysis has shown that companies have held cash levels, representing ~2% of revenue.

While this is a number based on aggregate cash holdings, required cash holdings may vary significantly across different industries. Notably, several studies, such as Bates, Kahle, & Stulz (2009) has shown that firms with higher growth opportunities hold larger cash balances. Since Aker BioMarine is considered a company with high growth opportunities, we have assumed a cash-to-revenue ratio of 3% to reflect its growth characteristics better.

Exhibit 12: *Aker BioMarine's overview of operating vs. excess cash (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Revenue	124 154	154 182	246 170
Cash and cash equivalents	**2 715**	**2 515**	**13 610**
Operating cash (3% of revenue)	2 715	2 515	7 385
Excess cash	-	-	6 225
Total operating cash and excess cash	**2 715**	**2 515**	**13 610**

Source: Aker BioMarine's annual reports (2017-2019)

Goodwill and other intangible assets

In our historical financial performance analysis, the return on invested capital will be examined by including (excluding) goodwill and other intangible assets. This is done to enable us as financial analysts to measure Aker BioMarine's ability to create value both with and without factoring in acquisitions' price. A detailed overview of the account is presented in exhibit 13.

Koller et al. (2020) suggests adjusting goodwill and other intangibles by deferred tax liabilities related to the amortization of other intangibles to evaluate the effect of this account properly. We have decided not to do so as we have limited access to historical financials and since deferred tax items have not been recognized on Aker BioMarine's balance sheet.

Exhibit 13: *Detailed overview of the goodwill and other intangibles account (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Goodwill and other intangibles			
Goodwill	65 153	66 401	94 557
Development	239	156	73
License agreements	734	2 045	1 818
Fishing licenses	-	-	10 500
Customer relation	25 401	39 881	77 674
Trademark	3 894	5 675	5 675
Total goodwill and other intangibles	**95 421**	**114 158**	**190 297**

Source: Aker BioMarine's annual reports (2017-2019)

Capitalized operating leases

Effective from January 2019, the IFRS 16 Lease standard was implemented by Aker BioMarine. This standard requires companies reporting under International Financial Reporting Standards ("IFRS") to recognize lease payments' present value in their financial statements. Aker BioMarine's past financial statements have not been re-done to comply with this new standard. For this reason, we will re-state the operating leases from 2017 and 2018 so that the new IFRS lease standard is more aptly accounted for in these financial years.

We conduct this estimation of capitalized operating leases by first examining Aker BioMarine's annual report's notes to find commitments to future operating lease payments. Aker BioMarine only reports primarily aggregate numbers, so we decide to use an annuity on the total scheduled operating lease payments to value the future commitments in the financial years of 2017 and 2018. In their 2019 annual report, Aker BioMarine discloses that the incremental borrowing rate is used as their discount rate and that it varies between 5.7% and 7.6%. Hence, we set an incremental borrowing rate of 6.7% (the average of the two) for this analysis. Moreover, from the 2018 annual report, operating lease payments of USD 6.45mn are translated into lease liability of USD 5.43mn. By reverse-engineering, the 6.7% interest rate, an average of 2.7 years of discounting is applied to value the scheduled operating lease payments. The calculation of estimated capitalized operating leases is provided in exhibit 14.

Exhibit 14: *Calculation of capitalized operating leases (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Capitalized operating leases 2019 (IFRS implementation)	-	-	16 557
Operating leases (Minimum lease payments)			
Within one year	1 521	1 354	6 679
In 1-5 years	4 647	4 465	11 929
Five years or more	1 557	626	1 049
Total scheduled operating lease payments	**7 725**	**6 445**	**19 657**
Incremental borrowing rate	6,7%	6,7%	-
Average years (for discounting)	2,7	2,7	-
Capitalized operating leases	**6 510**	**5 431**	**16 557**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

Calculation of invested capital and total funds invested

In the final step of Aker BioMarine's balance sheet's reorganization, we calculate invested capital and total funds invested, as showcased in exhibit 15. To provide some further context to our methodology and calculations, we first calculate operating working capital by subtracting current operating assets from operating current liabilities. To this, we add the non-current operating assets and subtract non-current operating liabilities to the operating working capital. This includes Aker BioMarine's estimated capitalized operating leases that we have re-stated following IFRS 16 Lease standards. In addition, other non-interest-bearing non-current receivables are classified as operating assets as no other information is given in the publicly available financial statements from Aker BioMarine regarding these non-current assets. Further, as per *Eq.11*, we subtract operating liabilities from operating assets to arrive at invested capital, both with and without the goodwill and other intangibles.

Moreover, following *Eq.11,* we also calculate total funds invested by adding back non-operating assets to invested capital. The total funds invested are vital for checking the reliability of our calculations. As *Eq.11* also reveals, another approach to calculating total funds invested is to sum the cumulative sources of financing. As a result, a reconciliation of total funds invested can be done by summing up debt and equity, along with their equivalents, allowing us to check if the two approaches reconcile and provide consistent calculations. The reconciliation to total funds invested is showcased in exhibit 16.

Exhibit 15: *Reorganized balance sheet and total funds invested*

In USD thousands ($)	**2017**	**2018**	**2019**
Operating cash	2 715	2 515	7 385
Inventories	36 198	43 704	94 725
Receivables	19 301	20 438	37 393
Other current assets	11 516	14 785	36 871
Operating current assets	69 730	81 442	176 375
Accounts payable	(11 432)	(11 469)	(23 340)
Accrued expenses	(13 141)	(11 332)	(26 311)
Other current liabilities	(6 537)	(4 136)	(2 342)
Operating current liabilities	(31 110)	(26 937)	(51 994)
Operating working capital	38 620	54 505	124 381
Property, plant, and equipment, excl. leases	206 804	232 383	302 364
Capitalized operating leases	6 510	5 431	16 557
Other non-interest-bearing non-current receivables	2 099	2 026	145
Invested capital, excl. goodwill and other intangibles	**254 033**	**294 345**	**443 448**
Goodwill and other intangibles	95 421	114 158	190 297
Invested capital, incl. goodwill and other intangibles	**349 454**	**408 503**	**633 745**
Investments in equity-accounted investee	205	240	260
Other financial assets	3 153	-	-
Excess cash	-	-	6 225
Total funds invested	**352 812**	**408 742**	**640 230**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

Exhibit 16: *Reconciliation of total funds invested*

In USD thousands ($)	**2017**	**2018**	**2019**
Reconciliation of total funds invested			
Non-current interest-bearing debt	258 322	179 424	372 473
Current interest-bearing debt	16 812	25 944	47 591
Debt equivalents	11 871	17 657	65 618
Derivative liabilities	-	1 472	-
Capitalized operating leases	6 510	5 431	-
Debt and its equivalents	**293 515**	**229 928**	**485 682**
Paid-in equity	220 170	345 230	345 230
Translation differences and other reserves	154	154	154
Retained earnings	(161 028)	(166 570)	(190 838)
Equity and its equivalents	**59 297**	**178 814**	**154 547**
Total funds invested	**352 812**	**408 742**	**640 230**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

5.3.2 **Reorganizing to calculate net operating profit after tax**

In this subchapter, we perform a reorganization of the income statement to calculate net operating profit after taxes. The firm's core operations generate this measure, and as with the reorganization of the balance sheet, this will require us to uncover operating and non-operating items included in Aker BioMarine's income statement.

Calculation of operational lease depreciation and interest

When it comes to the IFRS 16 Lease practices' impact on operating lease interest, Aker BioMarine states in their annual reports that comparative financial figures before 2019 will not be re-stated to account for the changes. Though, we deem it relevant to classify Aker BioMarine's operating lease interest as it will affect our EBITA-figures. This effect occurs because lease costs are now charged through finance costs. Below is Aker BioMarine's operating lease interest calculation by applying the firm's incremental borrowing rate to the corresponding beginning of year operating lease liability.

Exhibit 17: *Calculation of operating lease depreciation and interest (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Capitalized operating leases	6 510	5 431	16 557
Operating lease interest	(544)	(433)	(729)
Lease depreciation (Reported)	-	-	(2 833)
Lease expenses	(2 900)	(4 100)	(3 562)
Lease depreciation	**(2 356)**	**(3 667)**	**(2 833)**
Operating lease interest	**(544)**	**(433)**	**(729)**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

Non-recurring special operating items

According to Koller et al. (2020), one-time costs related to non-recurring events are better off assessed independently as non-operating items. On that account, we will need to adjust the company's EBITA. In 2019 and 2018, Aker BioMarine embedded non-recurring special operating items in its operating income and expenses. According to the notes in the company's annual reports, these are special items, including losses or gains on asset sales, expenses incurred due to restructuring, and various other material transactions that are considered either special or that are perceived as non-recurring (Aker BioMarine, 2020a). This includes acquisition costs related to the Lang Pharma and Enzymotec acquisitions, legal costs related

to the legal dispute with Rimfrost, and various other material and non-recurring costs. The company had no special items in 2017. A detailed overview of special non-occurring operating items extracted from Aker BioMarine's annual report is summarized in exhibit 18.

Exhibit 18: *Overview of special items included in the income statement (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Juvel operating cost - other operating income(cost), net	-	(4 204)	(1 784)
Legal costs	-	(291)	(836)
Transaction related costs	-	(1 406)	(1 298)
Kori launch	-	-	(3 428)
Total special non-recurring operating items	**-**	**(5 901)**	**(7 346)**

Source: Aker BioMarine's annual reports (2017-2019)

Calculation of operating taxes

One of the main objectives in reorganizing the historical income statements is determining the firm's operating taxes. This is essential because not all income statement taxes are related strictly to the firm's operations. Companies seldom disclose detailed information on operating versus non-operating taxes, so instead, Koller et al. (2020) propose a three-step methodology in order to derive an estimate of operating taxes: First, **(i)** find and convert the tax reconciliation table; then **(ii)** use the tax reconciliation table in order to determine the marginal tax rate and apply this tax rate to the adjusted EBITA to find all-equity taxes, and finally **(iii)** adjust the all-equity taxes for operating tax credits. We adopt this methodology in order to derive our estimate of operating taxes. The tax reconciliation table based on Aker BioMarine's reported components of income tax expense is given as follows:

Exhibit 19: *Tax reconciliation table (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Profit (loss) before taxes	(16 754)	(1 281)	(23 335)
Calculated income tax at a statutory rate of 23% (2017: 24%)	4 021	295	5 134
Tax difference: Norway and abroad	(442)	(34)	(441)
Unrecognized change in deferred tax assets	(1 284)	2 158	(3 934)
Permanent differences	168	51	(1 175)
Currency translation and other	(3 474)	(2 211)	1
Total tax expense	**(1 011)**	**259**	**(415)**
Effective tax rate	**- 6%**	**20%**	**- 2%**

Source: Aker BioMarine's annual reports (2017-2019)

Adjustment to Aker BioMarine's statutory tax rate is given in the tax reconciliation table. The statutory tax rate is the tax rate that is imposed by the Norwegian Tax Administration. The tax reconciliation table is then used as the basis to carry out the remaining two steps of calculating the firm's operating taxes. Using the statutory tax rate given in the reports, we multiply it with the EBITA in its corresponding year as presented in exhibit 20. In essence, this gives us the company's all-equity taxes without regard to its interest tax shield.

The final step is to adjust the statutory taxes on EBITA by searching the tax reconciliation table for other taxes relating to its core operations. While Aker BioMarine has reported limited information on the nature of its taxes historically, we classify "tax differential Norway and abroad*"* as ongoing and consider this an operating tax item. The remaining tax items given in the tax reconciliation table are remarked as non-operating. In sum, this adjustment then gives us our computation of Aker BioMarine's historical operating taxes as given in exhibit 20.

We should note that for companies that disclose sufficient information on deferred taxes, operating cash taxes can be computed to give a more proper representation of actual cash taxes paid by the company, according to Koller et al. (2020). For companies that do not provide sufficient information on operating from non-operating deferred taxes, the authors recommend using operating taxes excluding any cash adjustment. The latter is the case for Aker BioMarine, and we decide to use operating taxes as such.

Exhibit 20: *Calculation of operating taxes (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
EBITA	2 800	23 014	24 962
Statutory tax rate (*Reported by the company)	*24%*	*23%*	*23%*
Statutory taxes on EBITA	(672)	(5 293)	(5 741)
Tax differential Norway and abroad	(442)	(34)	(441)
Operating taxes	**(1 114)**	**(5 327)**	**(6 182)**

Source: Aker BioMarine's annual reports (2017-2019) and own calculation

Calculation of NOPAT and reconciliation to net income

Finally, our reorganized income statement is presented through a calculation of NOPAT. Building on the theoretical framework presented in chapter 3, we compute the adjusted operating profit and add back amortization of intangibles to determine EBITA. Although EBITDA or EBIT may be viewed as more common measures in practice, there are several

reasons we choose EBITA over the two. Firstly, since an asset is capitalized on the balance sheet and is consequently depreciated over its useful life, this is a reduction in value that must be accounted for when assessing Aker BioMarine's profits and returns. Hence, we use EBITA instead of EBITDA to account for this in our calculation of NOPAT.

Consequently, when we use EBITA, this implies that amortization is still left untouched. While amortization in practice makes a similar effort to capture a reduction in value just as depreciation does, intangibles' accounting treatment does not equal those of physical assets. More so, when intangible assets originate within the firm, such items are expensed rather than capitalized. For this reason, EBITA is chosen over EBIT, in line with prevailing accounting principles (Koller et al., 2020).

Exhibit 21: *Calculation of NOPAT (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
Total revenue	125 540	155 334	247 070
Other income adjustments	(1 387)	(1 152)	(900)
Net sales	124 154	154 182	246 170
Cost of goods sold, adjusted	(65 400)	(71 508)	(120 792)
Gross profit, adjusted	**58 754**	**82 674**	**125 378**
SG&A	(37 001)	(44 686)	(76 464)
Depreciation	(14 959)	(16 439)	(28 077)
Other operating income/(cost), net	(4 538)	(4 869)	(3 221)
EBITA, unadjusted	2 256	16 680	17 616
Juvel operating cost - other operating income(cost), net	-	4 204	1 784
Legal costs	-	291	836
Transaction related costs	-	1 406	1 298
Kori launch	-	-	3 428
Operating lease interest	544	433	-
EBITA, adjusted	**2 800**	**23 014**	**24 962**
Operating taxes	(1 114)	(5 327)	(6 182)
NOPAT	**1 686**	**17 687**	**18 780**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

Exhibit 22: *Reconciliation to net income through NOPAT (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
NOPAT	**1 686**	**17 687**	**18 780**
Amortization	(3 937)	(6 421)	(14 854)
Operating lease interest	(544)	(433)	-
Financial income	1 179	7 829	6 669
Financial expenses	(16 251)	(19 369)	(32 766)
Financial items, net	(15 616)	(11 973)	(26 097)
Juvel operating cost - other operating income(cost), net	-	(4 204)	(1 784)
Legal costs	-	(291)	(836)
Transaction related costs	-	(1 406)	(1 298)
Kori launch	-	-	(3 428)
Special operating items	-	(5 901)	(7 346)
Non-operating taxes	103	5 586	5 767
Net income	**(17 764)**	**(1 022)**	**(23 751)**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

5.3.3 **Reorganizing to calculate free cash flow**

As the final remaining part of Aker BioMarine's financial statements' reorganization, we compute the free cash flow. As outlined in *Eq. 13*, free cash flow is computed by adding back any non-cash operating expenses to NOPAT and subtracting potential investments in invested capital.

In the first step of calculating the FCF, we add back depreciation of capitalized assets. We do not add back other non-cash expenses such as the amortization of other intangibles, as they were not subtracted from revenue in our NOPAT calculation. Further, increases in the operating working capital as calculated in our reorganized balance sheet in exhibit 15 are deducted. The capital expenditures line refers to investments in property, plant, and equipment and is treated as cash outflows. Consistent with previous definitions and the Koller et al. (2020) framework, we also subtract increases in capitalized operating leases. Finally, after adjusting for changes in net other assets and investments in goodwill and other intangibles, we arrive at the free cash flow for Aker BioMarine in the financial years of 2017-2019.

Exhibit 23: *Aker BioMarine's free cash flow (2017-2019)*

In USD thousands ($)	**2017**	**2018**	**2019**
NOPAT	1 686	17 687	18 780
Depreciation	14 959	16 439	28 077
Gross cash flow	16 645	34 126	46 857
Decrease (increase) in operating working capital	3 855	(15 885)	(69 876)
Less: Capital expenditures	(111 296)	(42 018)	(98 058)
Decrease (increase) in capitalized operating leases	1 671	1 079	(11 126)
Decrease (increase) in other assets, net of liabilities	(14)	73	1 880
Investment in goodwill and other intangibles	(27 726)	(18 737)	(76 139)
Free cash flow (FCF)	**(116 865)**	**(41 362)**	**(206 462)**

Source: Aker BioMarine's annual reports (2017-2019) and own calculations

5.4 Historical financial analysis

Once the invested capital, NOPAT, and free cash flow are derived, we can start assessing Aker BioMarine's historical financial performance through our historical financial analysis. As presented in the overview of our historical financial statement analysis framework in exhibit 7, the third and final part of this analysis evolves around examining historical financial performance through two principal components of value creation: *return on invested capital* and *revenue growth*. This includes extracting the financial information that we gathered in our reorganization of the financial statements and analyzing this information both in a historical context for the firm itself and connection to the performance of the comparable firms outlined in subchapter 5.1.

We acknowledge that for a growth case such as Aker BioMarine, an analysis of historical financials may not paint the most precise picture of how the firm's future financial performance will be. However, we conduct this analysis to extract valuable information that can help prepare the firm's financial prospects. More so, by looking at comparable companies with a similar operational nature, we hope to see trends or patterns that may tell us why Aker BioMarine's financial attributes look as they do today or how they may look in the coming years.

In previous chapters, we have briefly described ROIC as a restorative measure of profitability. ROIC is the ratio of a firm's after-tax profit, excluding any interest expense (or income) divided by the company's amount of invested capital. While the average starting and ending

invested capital is preferred by some analysts, we decide to use ending invested capital in our ROIC analysis. Besides being regarded as an accurate measure of the firm's profitability, the ROIC can also be used as a benchmark for comparison to the weighted average cost of capital to measure the quality of a firm's investment (Damodaran, 2012).

As such, the return on invested capital can be computed by the metrics that we computed in the reorganization of financial statements and is given as follows:

$$Return\ on\ invested\ capital\ = \frac{NOPAT}{Invested\ capital} \qquad Eq.14$$

Furthermore, by analyzing historical revenue growth, we can gain insight into how Aker BioMarine's top line will develop in the future. For a relatively young and fast-growing firm like Aker BioMarine, there is more emphasis on how revenue growth will come about in the future rather than in the past, but assessing historical information is valuable, nonetheless. We want to uncover where Aker BioMarine has previously come from, whether this has come through organic growth, from effects of developments in foreign exchange ("FX") rates, or if growth has come as an effect of M&A activity.

5.4.1 Analysis of return on invested capital

Analyzing ROIC means analyzing how the firm is profiting from the capital invested in its core operations. This section will look at ROIC from a holistic perspective. To do this, we will have to break down ROIC into its smaller components to see which factors are driving changes in this metric. More specifically, this will allow a more detailed view of how Aker BioMarine's performance differs from its peers and which underlying components in ROIC are responsible for these differences. To do this, we begin by separating *Eq.14* into smaller parts, as stated in Koller et al. (2020), through the following equation:

$$ROIC\ =\ (1 - Operating\ tax\ rate)\ \times \frac{EBITA}{Revenue}\ \times \frac{Revenue}{Invested\ capital} \qquad Eq.15$$

Eq.15 allows us to see ROIC as a product of three firm profitability elements: *capital turnover, profitability margin,* and *operating taxes*. The EBITA-to-Revenue ratio resembles the firm's profit margin and tells us the portion of revenue that is translated into earnings after subtracting expenses related to operations. Capital turnover, expressed as the revenue-to-invested capital ratio, indicates the percentage of revenue that the firms generate on its invested capital. These

two products are then multiplied by the operating tax rate, which finally leads to ROIC. All else equal, either an increase in operating profitability, a rise in capital turnover, or a reduction in taxes will push the ROIC upwards.

De-composition of operating ratios

Exhibit 24: *Operating ratios relating to Aker BioMarine's profitability (2017-2019)*

Percentages (%)	**2017**	**2018**	**2019**
Profitability margin - operating ratios *(% of revenue)*			
Profit margin (EBITA-to-Revenue)	2.3%	14.9%	10.1%
Cost of goods sold, adjusted	52.7%	46.4%	49.1%
Selling, general, and administration	29.8%	29.0%	31.1%
Other operating costs	3.7%	3.2%	1.3%
Depreciation	12.0%	10.7%	11.4%
Special operating items, adjustment	-0.4%	-4.1%	-3.0%

To fully understand the underlying's of ROIC, we start by examining the operating ratios from our reorganized income statement. Although our examination period is relatively short, Aker BioMarine's operating profit margin (EBITA-to-Revenue) has been rather volatile within the period, reflected in an increase from a 2.3% margin in 2017 to 10.1% in 2019. This is predominantly due to a decrease in the relative cost of goods sold, mainly attributable to higher krill oil production volumes. Reading into Aker BioMarine's marketing material, they also point out that margins on Qrill Aqua, responsible for 27% of the firm's revenue, have been improving noticeably in this same period due to the company's decoupling strategy. The decoupling strategy involves fixed pricing on a majority of longer-term customer contracts in which Aker BioMarine's commodity prices are decoupled from that of the spot-market (Aker BioMarine, 2020c).

Selling, general, and administration also had a slight upturn relative to revenue during the period, from 29.8% to 31.1% in 2017 and 2019, respectively. This is driven by increased marketing spend by the company, such as new brand launches. Further, other operating costs have fallen from 3.7% to 1.3% in the examination period. While we see no noticeable trends in these overall costs, this decrease relates to the IFRS 16 standard's impact and would otherwise have stayed at the general historical level without this impact. Depreciation as a percentage of revenue stayed relatively stable throughout the period.

De-composition of capital turnover

Exhibit 25: *Capital turnover (2017-2019)*

Percentages (%)	**2017**	**2018**	**2019**
Return on invested capital *(% of revenue)*			
Operating working capital	31,1%	35,4%	50,5%
PP&E	166,6%	150,7%	122,8%
Capitalized operating leases	5,2%	3,5%	6,7%
Other non-interest-bearing receivables	1,7%	1,3%	0,1%
Invested capital/Revenue	204,6%	190,9%	180,1%
Capital turnover	**0,49**	**0,52**	**0,56**

The capital turnover is computed by dividing revenue with invested capital. In exhibit 25, we present a breakdown of the components affecting capital turnover. Over the past three years, the operating working capital has increased significantly but steadily relative to revenues, from 31.1% in 2017 to 50.5% in 2019. This push comes from increases in inventory balances due to the build-up of inventory. The latest year's development is also attributable to an expanded operational fleet from 2 to 3 operative vessels in 2019, which ties up a substantial amount of working capital in fuel and various production assets. In terms of property, plant, and equipment, this account has increased in absolute terms throughout our examination period but decreased relative to revenues. This is reflected in Aker BioMarine's significant investments in fixed assets in recent years, generating an increased amount of revenue as more of its potential is utilized.

Calculation of return on invested capital

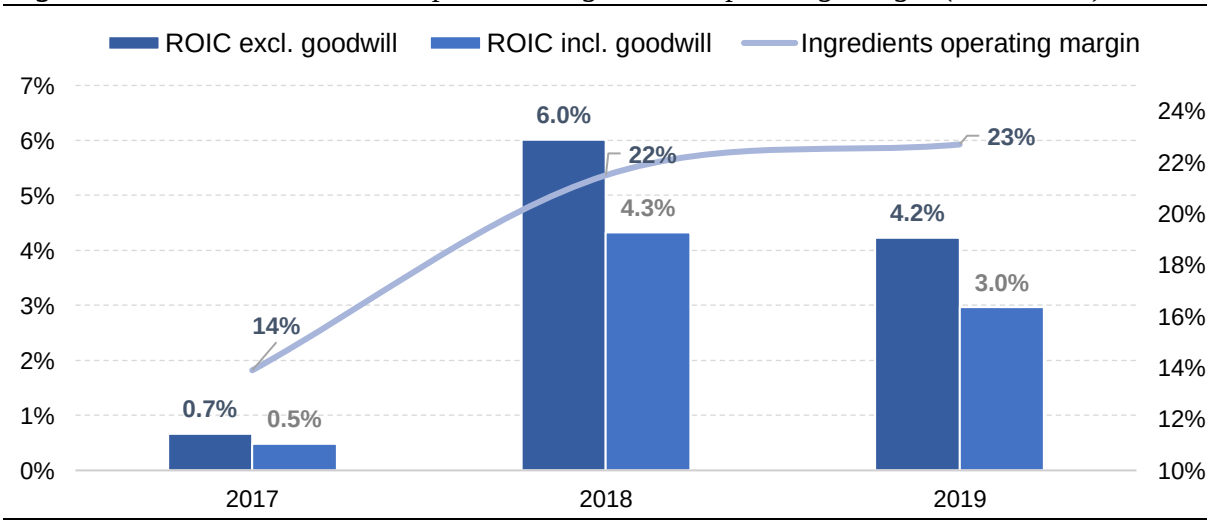
Exhibit 26: *Calculation of return on invested capital (2017-2019)*

Percentages (%)	**2017**	**2018**	**2019**
Return on invested capital			
Profitability margin (EBITA-to-Revenue)	2.3%	14.9%	10.1%
Capital turnover, excl. goodwill	0.49	0.52	0.56
Capital turnover, incl. goodwill	0.36	0.38	0.39
Pre-tax ROIC (excl. goodwill)	1.1%	7.8%	5.6%
Operating taxes on EBITA	39.8%	23.1%	24.8%
Goodwill as a % of invested capital	27.3%	27.9%	30.0%
ROIC excl. goodwill	**0.7%**	**6.0%**	**4.2%**
ROIC incl. goodwill	**0.5%**	**4.3%**	**3.0%**

Following our analysis of Aker BioMarine's line items, we calculate the company's historical return on invested capital as a product of these components. The pre-tax ROIC is first calculated for each year due to the operating profit margin and the corresponding capital turnover. From this, we subtract the operating taxes as in *Eq.15* and arrive at ROIC, both excluding and including goodwill. The rationale behind this is presented in the reorganization of the balance sheet in sub-chapter 5.3. We see that goodwill was a relatively modest part of invested capital in the period, but the two numbers do leave some room for interpretation, nonetheless.

In 2017, Aker BioMarine's ROIC was 0.7% net of goodwill and 0.5% when goodwill is included. ROIC grew notably in our historical examination period and reached a historical high in 2018, when Aker BioMarine experienced a considerable uptick and ended at an ROIC of 6.0% excluding goodwill and 4.3% when goodwill is included. This is mainly due to the significant increase in Aker BioMarine's operating margin, primarily driven by strong krill oil sales characterized by high margins. Nevertheless, Aker BioMarine sustained overall revenue growth in 2019 but fell slightly in margins and delivered a slightly lower ROIC in the latest financial year. Aker BioMarine's return on invested capital with and without goodwill presented in figure 22, along with the corresponding Ingredients segment is operating margin across the same period for visualization purposes.

Figure 22: *Return on invested capital and Ingredients operating margin (2017-2019)*



5.4.2 **Peer historical analysis of return on invested capital**

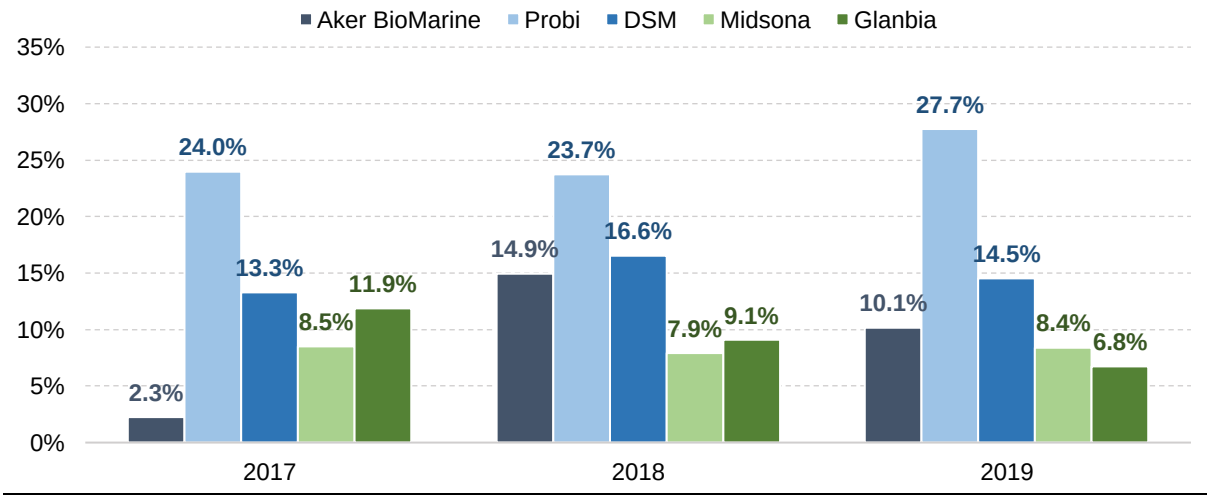
In order to fully understand Aker BioMarine's return on invested capital, we turn the spotlight to its comparable companies. As we have provided arguments for in past sub-chapters, no

firms listed in the public marketplace today are fully comparable to Aker BioMarine and its industry-specific operational characteristics. We have selected four peers viewed as competitors in the firm's two segments, Ingredients, and Brands, we believe that analyzing their historical ROIC will allow us to get a greater understanding of what drives value creation in its competing segments. Following Koller et al. (2020), we will analyze ROIC excluding goodwill to avoid including the effect of price premiums paid in acquisitions and allow for more consistent analysis across the comparable group. We structure this analysis in the same way as our firm analysis, starting with an analysis of operating margin, before proceeding to look at capital turnover, and finally examining the ROIC. Details of the financials of the firms included in our analysis are attached in the appendix. For visual purposes, we note that the comparable company's in the Ingredients segment is visualized in *blue* colors and Brands in *green* in our analysis.

Operating margin

Our comparable firms' operating margin, or EBITA-to-Revenue ratio, is given in figure 23:

Figure 23: *Operating margin: Aker BioMarine vs. comparable firms*



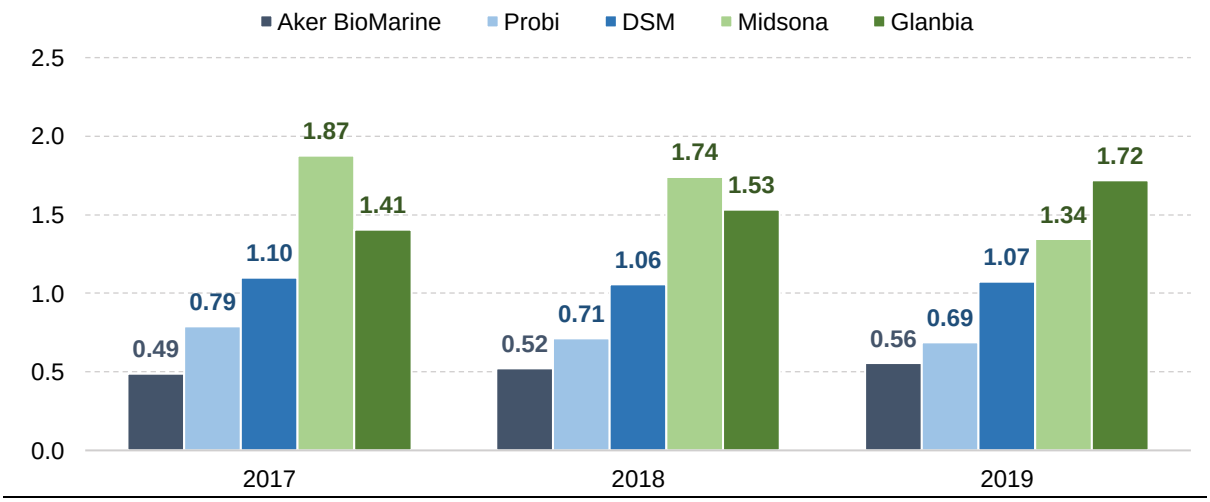
From figure 23, we see that Aker BioMarine's operating margin in 2017 was well below that of its peers in the same year. Consequently, following a significant boost in margin predominantly driven by increased krill oil sales in 2018 and 2019, Aker BioMarine delivered operating margins above its Brands peers in the last two years of our analysis. Our analysis is notable because peers in the ingredient segment are consistently delivering higher operating margins, ranging from an average of 18.6% to 21.1% within our period of analysis. In comparison, Brands' peers' operating margin fell steadily from 10.2% in 2017 to 7.6% in the same period.

The best performer of the peers, Probi, has a premium position in the Ingredients market which allows them to extract significant margins on their goods sold. This is a trend for companies in this segment, and Ingredients company DSM also posted higher margins than Brands peers in all of the years included in our analysis. While Aker BioMarine's margins have been somewhat more modest due to a significant focus on growth over margins in recent years, it targets these premium markets through their increased offering in the high-margin Ingredients segment. The Brands segment is characterized by more intense price competition, putting great pressure on operating margins for peers in this segment.

Capital turnover

Our comparable firms' Revenue-to-Invested capital ratio, expressed capital turnover, is given in figure 24:

Figure 24: *Capital turnover: Aker BioMarine vs. comparable firms*

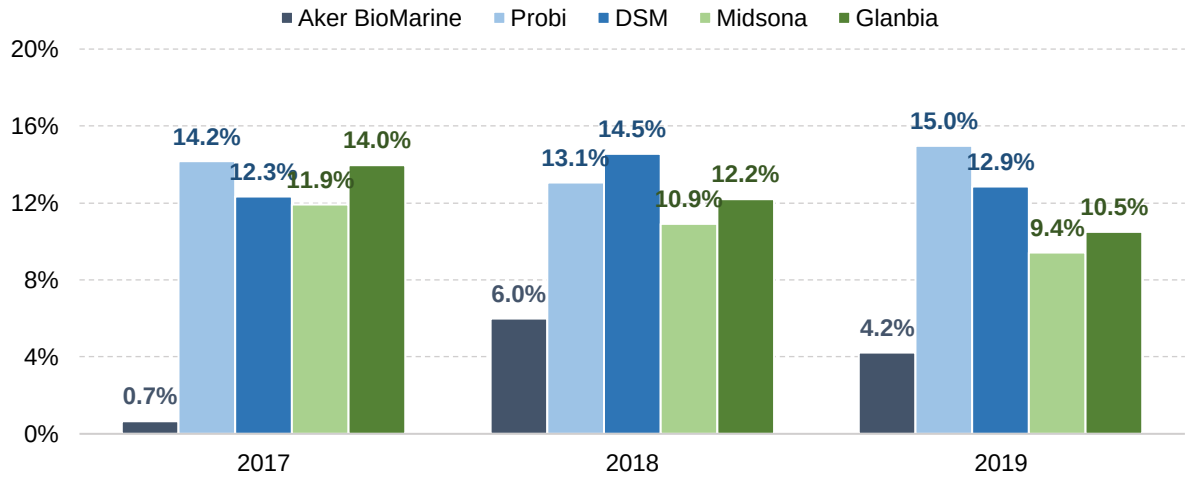


Since we compare the ROIC of the peer group, excluding goodwill, the graph above shows revenue divided by invested capital net of goodwill. In the capital turnover analysis, we see a very dominant trend in which Brands companies post capital turnover numbers vastly above Aker BioMarine and other peers. There are several components to this difference, but the Brand companies are more mature and more effective in generating a return on their invested capital. On the other hand, Ingredients companies are less mature and have more capital tied up to fuel higher growth expectations. This is also very much the case for Aker BioMarine, who posted the lowest capital turnover in all years included in our analysis. As argued previously in our thesis, and which we will further stress in our forecasting, Aker BioMarine has made substantial investments in recent years to facilitate its extensive growth ambitions, which may artificially inflate its capital turnover comparison to its peers.

Return on invested capital

Following our argument that an analysis of ROIC excluding goodwill is favored when comparing across different firms, the results of our analysis of ROIC net of goodwill is visualized in figure 25 below:

Figure 25: *ROIC, excl. goodwill: Aker BioMarine vs. comparable firms*



Overall, our entire peer group outperforms Aker BioMarine on ROIC between 2017 and 2019. Although the Brands' peers have delivered lower operating margins than Aker BioMarine in the last two financial years, their efficient operational characteristics reflected in healthy capital turnover push their ROIC well above all three years. On the flip side, the Ingredients peers had notably lower capital turnover than their more mature peers, but due to their healthy operating margins, they posted the highest average ROIC of the two peer groups ranging from 13.2% to 13.9% during the period.

As we have argued, relevant peers in the Ingredients segments are entitled to premium pricing in their end-markets, which pushes their ROIC significantly upwards despite growth anticipation leading to a more capital-intensive operation. Aker BioMarine performs lower in both components of ROIC, which ultimately results in a lower ROIC than its peers. This also highlights the shortcomings of this historical financial analysis, in which an Aker BioMarine set-up for future growth is performing artificially low on these metrics. Thus, we claim that the historical numbers' importance as indicators for future performance is somewhat limited. However, as we have seen a clear improvement trend during this period, we believe our forecasts later in this thesis will reflect a different reality than what historical metrics can explain.

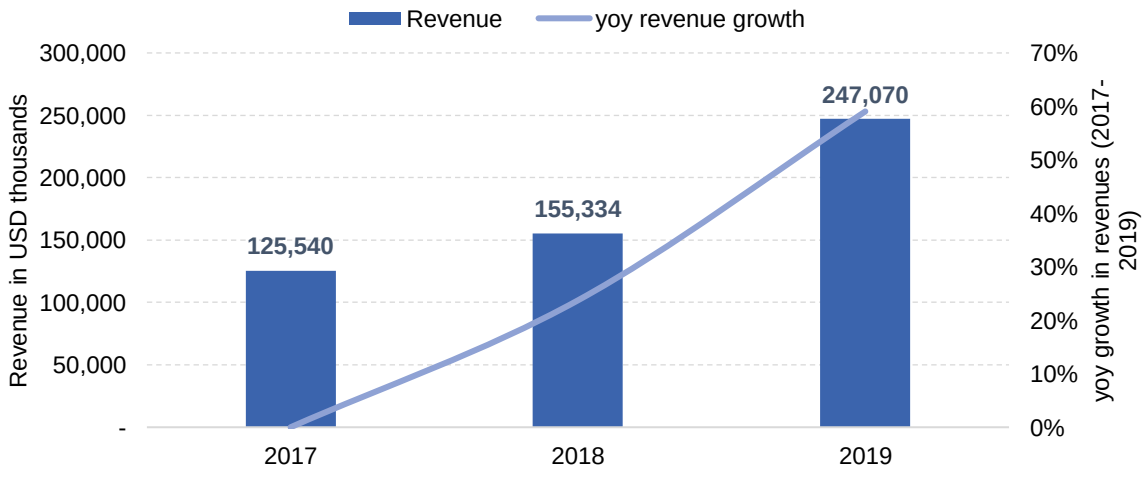
5.4.3 **Analysis of historical revenue growth**

In this subchapter, we conduct a strategic earnings analysis of Aker BioMarine's previously reported results. The scope of the analysis will be limited to the past three years, which are the years that have been disclosed to the public. With only three years of detailed financial information, we can only assess the growth of two years. Hence, the scope of this past performance analysis will be of limited interest in the valuation, but we deem it critical to understand the company's operations. The second part of the chapter will assess their performance with relevant peers. We chose two peers from the Brand segment and two in the Ingredients segment. This is to illustrate the broad scope of the operations of Aker BioMarine. Finally, it should also be noted that the historical analysis only has a minimal impact on the forecasting, as we consider Aker BioMarine to be a high-growth case. The weight put on the historical performance analyses depends on the life cycle of the firm. Historical analyses of mature firms in the steady state will be helpful in forecasting. This is not the case with growth-companies as these enjoy a sizable growth. Consequently, the past performance of Aker BioMarine will not reflect future results.

Revenue growth of Aker BioMarine

The revenue growth for Aker BioMarine has been substantial in the past two years, from 2017 to 2019. The growth between 2017 to 2018 was at ~24%, which partly can attribute to the increased demand for omega-3 supplements (Euromonitor, 2020c).

Figure 26: *Aker BioMarine: historical revenues vs. YoY growth rate*



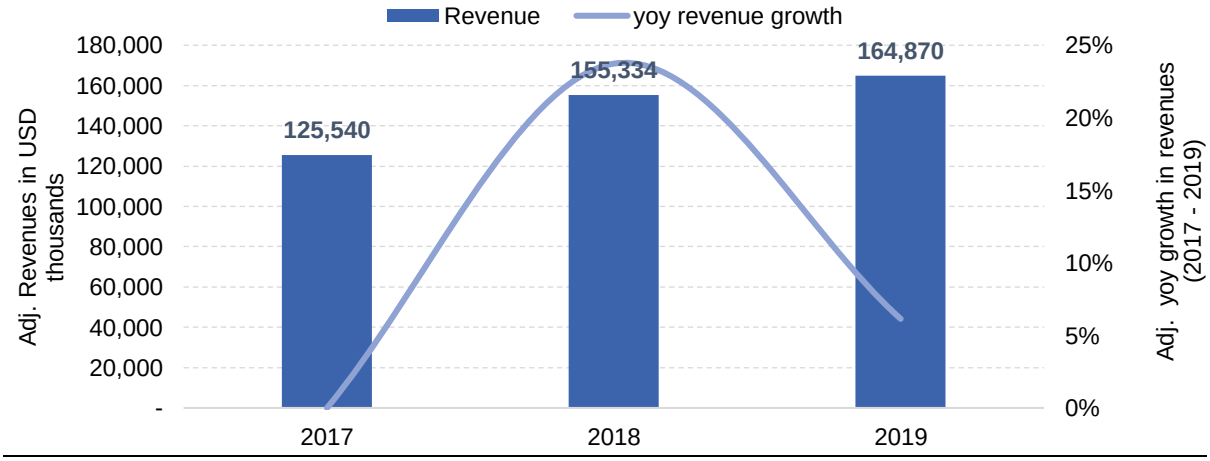
Source: Aker BioMarine annual reports 2018 – 2020

There were no acquisitions or inorganic growth in this period, so the real growth is allocated to the operations and FX effects' growth. The YoY growth between 2018 and 2019 is at ~60%.

However, the acquisition of Lang contributed heavily to the increased revenues in 2019 and must be separated from growth to analyze its development further.

On March 1, 2019, Aker BioMarine acquired the full-service market dietary supplement company Lang Pharma. The acquisition was performed for strategic reasons to ensure that Lang remained deeply invested in the krill oil segment and further explore and utilize the pharma company's synergies and competencies. Lang will continue to operate as a separate unit, but as a subsidiary of Aker BioMarine. Lang's annual results have been included in its consolidated income statement and balance sheet as of March 1, 2019. It is essential to correct this to gain a better understanding of the underlying operation growth. In 2019, the Lang business unit contributed revenues of USD 82.2mn and a net profit of USD 5.7mn to the consolidated statement (Aker BioMarine, 2020a). If the acquisition had occurred on January 1, 2019, the additional contribution to Aker BioMarine would have been USD 11.1mn and USD 0.4mn in revenues and net profit, respectively. These amounts were calculated using Lang's results and adjusting them for discrepancies in the accounting policies between Aker BioMarine and Lang Pharma (Aker BioMarine, 2020a).

Figure 27: *Aker BioMarine: Adjusted revenue growth vs. YoY adjusted growth*



Source: Aker BioMarine annual reports 2018 – 2020

Illustrated by figure 27, the adjusted growth plummeted to ~6% between 2018 and 2019. These numbers are adjusted for the revenues which were directly acquired from Lang Pharma; it may be hidden synergy revenues from the increased scope of operations, new partners, or complementary sales, which is problematic to estimate. When analyzing companies' past performances, it is important to strip out the effects of acquisitions (divestitures) to avoid overestimating (underestimating) the real growth rates of the operations. As illustrated above, the difference in absolute growth rate and the adjusted growth rate is ~54 percentage points,

which will introduce a significant overestimation if not accounted for in the historical analysis, if implemented for future estimates.

The fiscal year of 2019 is also the first year of operations with the new krill vessel Antarctic Endurance. It should be noted that the vessel did operate at low capacity as guided by the company, catching ~44 000MT. Exhibit 27 showcases estimated vessel economics, which may further help to understand the development of the revenues in Aker BioMarine in the past years.

Exhibit 27: *Summary of vessel economics*

	2017	2018	2019	17' - 19' average
Metric tons (MT)				
Operative vessels	2	2	3*	
Total catch	171 554	207 259	232 368	
Total offshore production	29 123	36 561	40 872	
Production output offshore	16.98 %	17.64 %	17.59 %	17.40 %
Growth in offshore production	**-**	**25.54 %**	**11.79 %**	**18.67 %**
USD thousands				
Total salaries	14 923	18 249	21 866	34.41 %
Fuel costs	11 470	18 980	19 042	30.95 %
Direct production costs	3 311	5 243	3 321	7.43 %
Other opex	11 227	13 656	18 637	27.21 %
Total offshore opex	**40 931**	**56 128**	**62 866**	**100.00 %**
Per vessel opex				
Salaries	7 462	9 125	7 289	34.36 %
Fuel	5 735	9 490	6 347	31.04 %
Direct production costs	1 656	2 622	1 107	7.75 %
Other opex	5 614	6 828	6 212	26.85 %
Total	**20 467**	**28 065**	**20 955**	**100.00 %**

Source: Aker BioMarine annual reports and investor presentation

**Antarctic Endurance did not operate on full capacity*

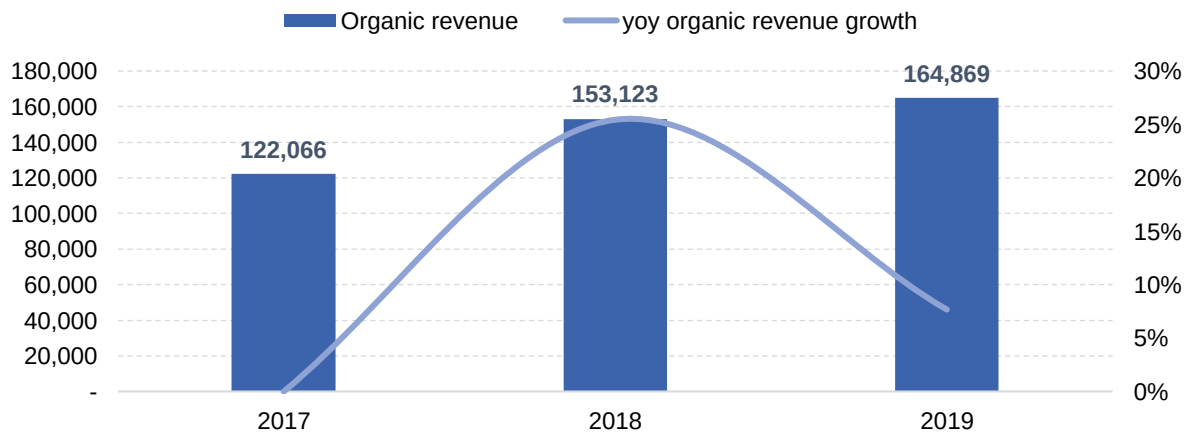
The adjusted growth between 2017 and 2018 was ~26%, which is equal to the offshore production growth, which makes it remarkable that the adjusted growth the following year was only half of the offshore production growth. Due to the few years of data, it is problematic to derive which of the offshore production growth to revenue growth is "abnormal." Koller et al. (2020) also reason that the currency effects should be stripped out, in addition to acquisitions and divestitures, to gain a robust understanding of the growth. Aker BioMarine operates globally and is exposed to currency fluctuations, primarily through the USD, EUR,

and NOK exchange rates. Further, Aker BioMarine has operations in countries with local currencies in Uruguay, India, Australia, Thailand, New Zealand, Canada, and China, but these fluctuations are minimal (Aker BioMarine, 2020b). The predominant currency effect is USD, which Aker BioMarine has as its presentation and functional currency. Aker BioMarine has NOK denominated financial instruments. Therefore, the balance sheet is exposed to changes in the NOK/USD exchange rate, which should be adjusted.

Aker BioMarine seeks to ensure that both revenues and expenses are in the same currency, such that the future cash flows are estimated and offset. The management periodically assesses the need for currency hedging derivatives to hedge the overall risk. Such a derivative was in place in investment in the new vessel. In May 2017, Aker BioMarine entered a currency contract with DNB for the hedging of currency risk from future installments related to the vessel under construction, Antarctic Endurance (Aker BioMarine, 2020b). The currency effect for the different years is insignificant for 2019, with a net USD 1 000 gain (Aker BioMarine, 2020a), while 2018 and 2017 introduced a loss of USD 2.21mn and USD 3.47mn (Aker BioMarine, 2019), which should be adjusted before presenting the final organic growth estimates.

Adjusting the revenues for acquisitions, divestitures, and currency effects the past three years provides us with the final organic growth estimates at ~25% from 2017-2018 and ~8% between 2018-2019. To better understand the drivers of Aker BioMarine, we presented the vessel economics in exhibit 27, which illustrates that the revenues are closely correlated to offshore production. It should be noted again that the data points are few, and the correlation between revenues and offshore production is not statistically significant.

Figure 28: *Aker BioMarine: Organic revenue growth*



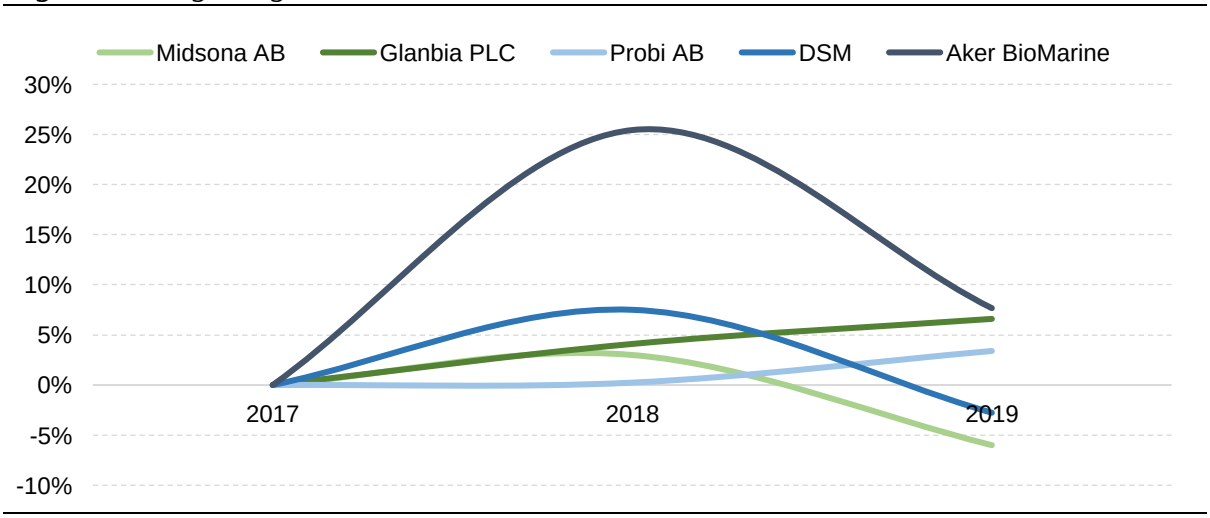
Source: Aker BioMarine annual reports 2018 – 2020

Aker BioMarine revenue growth compared with peers

As outlined above, the FX- and mergers, divestitures, and acquisitions ("MD&A") effects should be stripped from the revenues to find the organic growth of the core operations of the company analyzed. Aker BioMarine only had one acquisition in the final year of the historical analysis where they reported the revenue which it contributed, making it easy to correct for the acquisition. This is not the case with the peers we have selected. The effect of acquisitions affects the current year of the acquisition and the following year of the deal. This is due to accounting standards that lead to an artificial increase the following year if not accounted for, as only parts of the revenue are consolidated in the year of the deal, but the following year, the target's whole annual revenues are incorporated. This should be corrected for if not, the growth will not reflect the company's "true" growth rate. This is also true for divestitures. It does have the opposite effect on the statements than the acquisitions. If one fails to correct all the elements, the comparison with the peers and Aker BioMarine will be incorrect.

The peers selected for Aker BioMarine consist of two peers from the Ingredients segment and two from the Brands segment. As discussed earlier, Aker BioMarine has few true peers and zero public peers. This makes the selection of peers somewhat different than Aker BioMarine, but the peers as based on what Aker BioMarine believes to be their closest peers. It should be noted that none of these companies are the same size or industry as Aker BioMarine, but they are the closest peers we can find, which is publicly traded. The majority of companies operating in the krill industry are private companies, making it problematic to quantitatively analyze the industry and find critical operating and financial metrics.

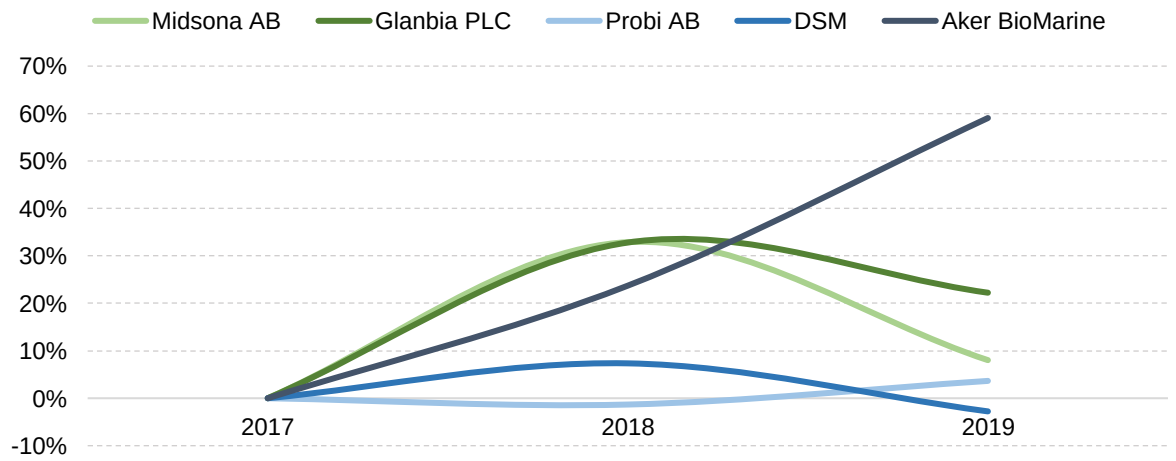
Figure 29: *Organic growth revenues*



Source: Annual reports of the companies

As figure 29 illustrates, Aker BioMarine has outperformed its organic revenue growth peers in the past two years. These growth rates have been stripped of currency- and MD&A effects to find the growth in the core operations revenue. The illustrates that Aker BioMarine has performed well even if the industry has not been peaking. As the krill industry is expected to experience significant growth going forward, the growth rates seen in figure 29 may be the beginning of a high-growth period for Aker BioMarine. It is challenging to compare 1-to-1 with these companies as they are different in size, location, and products they offer, such that we cannot credit or discredit any of the peers based on common factors that have affected them all. The organic revenue growth development versus non-adjusted revenue growth (figure 30**)** reveals the same pattern; Aker BioMarine grows its operations superior. It is essential to be aware of the companies' different sizes, as it is easier for smaller companies to have higher growth in their revenues than billion-dollar companies.

Figure 30: *Non-adjusted revenue growth*



Source: Annual report of the companies

5.4.4 **Historical analysis of credit health and risk**

To conclude our historical financial statements analysis, we turn the spotlight to Aker BioMarine's credit health and capital structure to examine how Aker BioMarine's operations are financed. Building on Damodaran's (2012) frameworks and Koller et al. (2020), our analysis will include measuring and assessing liquidity, credit health, and leverage computation of coverage ratios and debt multiples. Since an analysis of financing also encompasses how the firm returns its cash to shareholders, examining its historical payout ratio would make sense. As discussed before, Aker BioMarine has not been paying out dividends due to being in a self-proclaimed "growth and development phase"

(Aker BioMarine, 2020a, p. 91). Therefore, this is not included in our historical analysis and is discussed in greater detail in our chapter on forecasting.

Analysis of Aker BioMarine's liquidity

To analyze Aker BioMarine's liquidity, and therein the company's ability to meet its obligations in the near-term future, we will examine its interest coverage ratio. The interest coverage ratio, computed by dividing EBITA or EBITDA by interest expenses, is a metric showcasing its capacity to cover interest payments. This number can function as a tool to assess how well equipped the company is to pay down its short-term debt obligations. However, as with any simple financial ratio, it has its limitations, and interpretation of this number should be made with caution. In our assessment of Aker BioMarine's liquidity, we will compute the interest coverage ratio using both EBITA and EBITDA as proposed by Koller et al. (2020). Aker BioMarine's interest coverage ratios are summarized in exhibit 28:

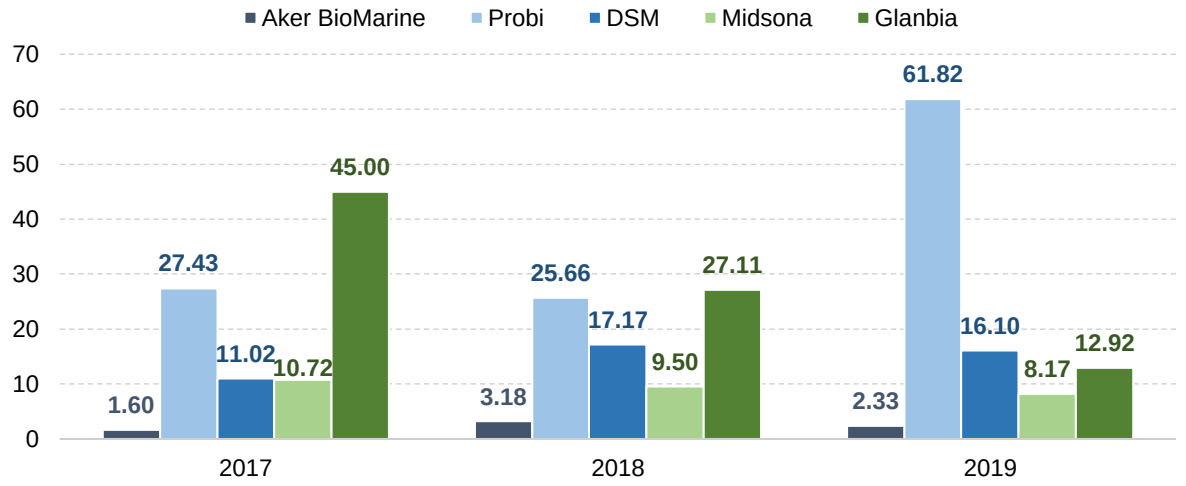
Exhibit 28: *Breakdown of Aker BioMarine's interest coverage ratios*

In USD thousands ($)	**2017**	**2018**	**2019**
EBITA	2 800	23 014	24 962
EBITDA	17 215	39 019	53 039
Interest expense	10 745	12 263	22 785
EBITA-to-Interest	**0.26**	**1.88**	**1.10**
EBITDA-to-Interest	**1.60**	**3.18**	**2.33**

From our calculations, we can see that Aker BioMarine does have sufficient EBITA and EBITDA to meet its interest expenses, expect in 2017. Notwithstanding, a lower ratio may indicate that its ability to meet interest obligations is problematic. Relative to 2017, its interest coverage ratio has been far better in the last two years. More so, in 2019, Aker ASA converted NOK 1 bn of debt 2019, reducing interest expense, which may have been a contributing factor. Since the company has advocated the last years that they have been in a growth and development phase to build up a fully functioning and market-leading krill company, we argue that this analysis is less meaningful given its higher volatility in earnings in this period. To better understand the firm's credit health, this measure should be accompanied by other financial metrics and an analysis of comparable firms' credit situation.

Comparable firm liquidity analysis

Figure 31: *EBITDA-to-Interest expense: Aker BioMarine vs. comparable firms*



In our analysis of interest coverage ratio for comparable firms, we select EBITDA as the numerator. The numbers highlight one of the critical issues with our peer group, which is rooted in having more mature business models than krill companies, although they serve the same end markets. Hence, our peers operate under relatively stable business environments, leading to a far higher output on liquidity multiples than Aker BioMarine. This effect is most prominent in our peer group for Glanbia and Probi, delivering an interest coverage ratio of >12.5 in all years of our examination period. This is mainly due to Probi's low debt levels in recent years, while Glanbia had deficient debt levels in 2017 and 2018. On average, the EBITDA-to-Interest ratio in the peer group ranged from 16.5 to 20.3 in the period. As discussed previously, we expect Aker BioMarine to drastically better its interest coverage ratios as it transitions from growth and expansion to enhance its profitability.

Historical synthetic credit rating

External credit rating agencies, such as Standard & Poor's, Moody's, and Fitch, conduct third-party credit ratings for businesses. These rating agencies place a firm in a range of different rating categories from "best to worst" based on the firm's probability of defaulting on its debt. Since the public information on Aker BioMarine's credit rating is minimal, we can instead approximate a synthetic rating for the company based on Damodaran's framework (2012). This is an alternative rating of a firm's default risk based on the EBIT interest coverage ratio. By collecting credit rating data on all small-cap US firms, a link is established between its coverage ratio and its credit rating.

A historical synthetic credit rating can be attached to any company based on their interest coverage ratio from this data. To perform this assessment, we extract data on credit ratings and interest coverage ratios for all firms with >USD 5 bn market capitalization from Damodaran's online databases (Damodaran, 2020):

Exhibit 29: *Interest coverage ratio and credit ratings of >USD 5 bn firms*

Interest coverage ratio	Rating	Spread
Above 12.5	Aaa/AAA	0,63%
9.5 - 12.5	Aa2/AA	0,78%
7.5 - 9.5	A1/A+	0,98%
6.0 - 7.5	A2/A	1,08%
4.5 - 6.0	A3/A-	1,22%
4.0 - 4.5	Baa2/BBB	1,56%
3.5 - 4.0	Ba1/BB+	2,00%
3.0 - 3.5	Ba2/BB	2,40%
2.5 - 3.0	B1/B+	3,51%
2.0 - 2.5	B2/B	4,21%
1.5 - 2.0	B3/B-	5,15%
1.25 - 1.5	Caa/CCC	8,20%
0.8 - 1.25	Ca2/CC	8,64%
0.5 - 0.8	C2/C	11,34%
Below 0.5	D2/D	15,12%

Source: Damodaran (2020)

From this table, we see that based on Aker BioMarine's EBIT interest coverage ratio, the company would be assigned a synthetic rating at the bottom of this bracket, ranging from *D2/D* to *B3/B-* between 2017 and 2019. Despite its simplicity, we would still argue that such a rating is flawed and believe that it does not fully capture the complexity of a firm's financial situation in a growth and development phase such as Aker BioMarine. We will discuss the implications of credit ratings in greater detail in our chapter on capital cost.

Analysis of Aker BioMarine's leverage

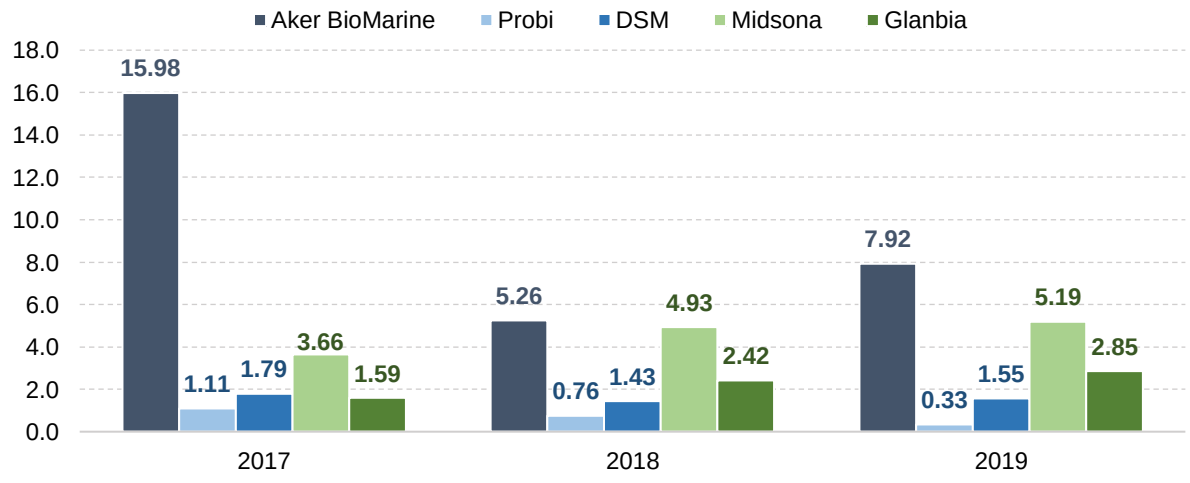
While interest coverage ratios are utilized to analyze a firm's capacity to meet its interest obligations, it does not assess its ability to pay back the principal on its outstanding debt. Debt ratios attempt to do so (Damodaran, 2012). Accordingly, we will evaluate Aker BioMarine's leverage employing the debt multiples Debt-to-EBITA and Debt-to-EBITDA. These multiples will tell us the degree of debt loaded on its earnings before deduction of interest, tax, depreciation, and amortization in a given year. A visualization of Aker BioMarine's debt multiples is presented in exhibit 30:

Exhibit 30: *Breakdown of Aker BioMarine's debt multiples*

In USD thousands	**2017**	**2018**	**2019**
Debt multiples			
Debt	275 134	205 368	420 064
EBITA	2 800	23 014	24 962
EBITDA	17 215	39 019	53 039
Debt-to-EBITA	**98,26**	**8,92**	**16,83**
Debt-to-EBITDA	**15,98**	**5,26**	**7,92**

Aker BioMarine's Debt-to-EBITDA is less volatile than the liquidity multiple based on EBITA and is seemingly more suitable for comparison across the period. Although both multiples generally show the same trend, Debt-to-Earnings levels have gone down significantly from 2017 due to a more significant percent-wise increase in EBITA and EBITDA compared to the corresponding increase in debt. Notably, debt increased sharply in 2019 due to investments in vessels and the acquisition of Lang. Aker BioMarine's growth characteristics have resulted in inflated debt multiples, which are likely to not follow the same trend in the future.

Figure 32: *Debt-to-EBITDA: Aker BioMarine vs. comparable firms*



Comparing Aker BioMarine's Debt-to-EBITDA to that of the peer group, it is evident that the company has operated on significantly higher debt multiples during the last three years. Due to low debt holdings, the comparable companies in the Ingredients segment are on average hovering around 1 in all three years. Brands company, and in particular Midsona, hold larger amounts of debt and posts higher debt multiples.

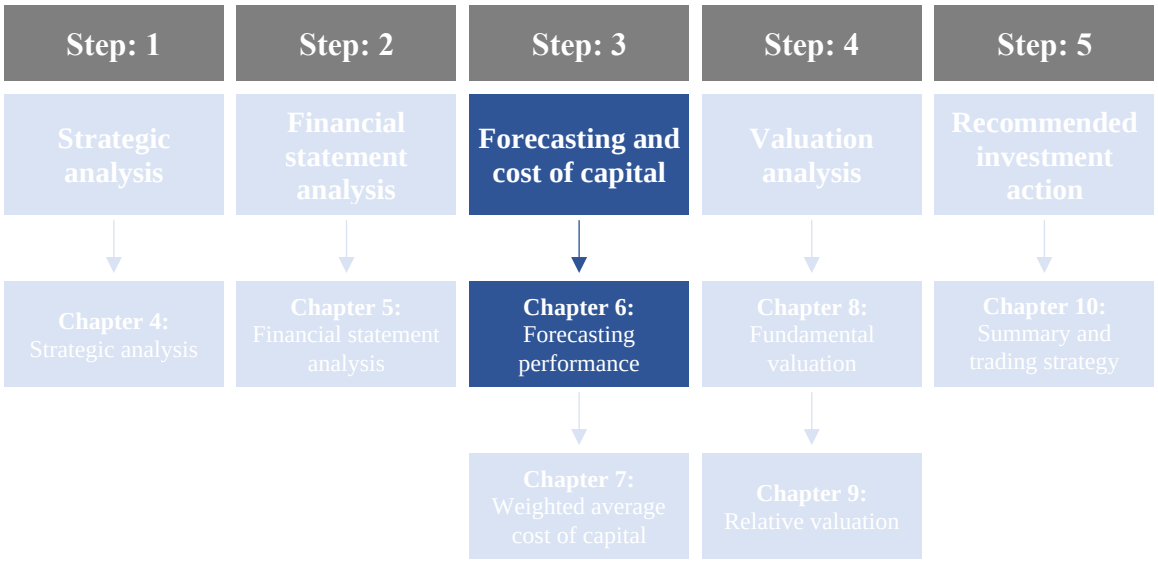
It should be noted that there are significant differences in capital structure between various industries. Hence, and as expected, due to the nature of our selected peer group, our historical analysis does not give us detailed results when comparing debt multiples.

5.5 Summary of historical financial analysis

Exhibit 31: *Breakdown of Aker BioMarine's debt multiples*

In percentages (%)	**2017**	**2018**	**2019**
Profit margin (EBITA-to-Revenue)			
Probi	24.0%	23.7%	27.7%
DSM	13.3%	16.6%	14.5%
Midsona	8.5%	7.9%	8.4%
Glanbia	11.9%	9.1%	6.8%
Aker BioMarine	2.3%	14.9%	10.1%
Capital turnover			
Probi	0.79	0.71	0.69
DSM	1.10	1.06	1.07
Midsona	1.87	1.74	1.34
Glanbia	1.41	1.53	1.72
Aker BioMarine	0.49	0.52	0.56
ROIC, excl. goodwill			
Probi	14.2%	13.1%	15.0%
DSM	12.3%	14.5%	12.9%
Midsona	11.9%	10.9%	9.4%
Glanbia	14.0%	12.2%	10.5%
Aker BioMarine	0.7%	6.0%	4.2%
Organic revenue growth rate			
Probi	-	0.2%	3.4%
DSM	-	7.5%	-2.8%
Midsona	-	3.0%	-6.0%
Glanbia	-	4.1%	6.6%
Aker BioMarine	-	25.4%	7.8%
Interest coverage ratio (EBITDA)			
Probi	27.43	25.66	61.82
DSM	11.02	17.17	16.10
Midsona	10.72	9.50	8.17
Glanbia	45.00	27.11	12.92
Aker BioMarine	1.60	3.18	2.33
Debt-to-EBITDA			
Probi	1.11	0.76	0.33
DSM	1.79	1.43	1.55
Midsona	3.66	4.93	5.19
Glanbia	1.59	2.42	2.85
Aker BioMarine	15.98	5.26	7.92

6. Forecasting



Based on the qualitative strategic analysis and the quantitative financial statement assessment, the chapter will attempt to quantify Aker BioMarine's future earnings. The purpose of these forecasts is to develop and present projections for the company's income statement, balance sheet, and cash flow statement. This, together with the costs of capital presented in chapter 7, makes the foundation of the fundamental valuation of Aker BioMarine.

6.1 Framework for performance forecasting

Before preparing the performance forecasting, it must be clarified how long the forecasting period will be, in what detail it will be presented, and what techniques and methods will be utilized in the forecasts.

Choice of timeframe

The timeframe in this paper will be from 2020 until a predetermined time t. Time t, called the continuing value ("CV"), represents when the forecast will change from a detailed forecast to a simple forecast with constant growth (Knivsflå, 2020a). As a result, the forecasting period will cover the time until Aker BioMarine will enter the "steady state". Which is when a company does not acquire abnormal returns on their future investments in the expansion (Kaldestad et al., 2016).

Before a company reaches a steady state, the timeframe is individual and dependent on several factors such as the industry and internal aspects (Kaldestad et al., 2016). If a company operates in a mature industry and (or) expansion for the company is complicated, the forecasting period can be short as the company will reach constant growth faster. However, if the company operates in a high-growth environment and (or) the possibilities for expansion are vast, the forecasting period should be extended.

Kaldestad et al. (2016) assert that companies in cyclical industries, industries that may expect significant growth, or industries with sizeable super profits should have a forecasting period longer than five years. The krill industry should be categorized as an industry that may experience significant growth going forward. This entails that the industry is not mature, and the companies within can experience sizable fluctuations in their statements such that it is not appropriate with a constant growth rate in the immediate future. As a more extended forecasting period will incorporate both bust and booms, it will be a well-founded choice to adopt for Aker BioMarine, as they are affected by the economic cycle with the sales of omega-3 supplements.

Since the industry players are investing a lot right now in new vessels and facilities, it is difficult to determine how the future industry dynamics will play out. The uncertainty in our forecasts will be reduced with an extended forecasting period, compared with a diminished period. The growth of both the sales of omega-3 supplements, krill harvesting, and new products also pulls toward a more extended forecasting period. It is expected that some of the growth will lessen when approaching 2025. Even though a more extended timeframe is required for Aker BioMarine, the timeframe must not exceed a length such that the projected cash flows will be so uncertain it reduces the full informational value of the paper itself.

Knivsflå (2020a) also argues that the choice of timeframe should be affected by the quality of the company's accounting standard. A shorter period may be appropriate if the company prioritizes a value-based accounting standard. This is because value-based accounting captures the changes in value quickly, which increases the informational value of the financial statements of the company. Aker BioMarine reports, according to IFRS 16, which implies that the reporting is value-based. This is an argument that pulls in the direction of a short timeframe.

Even though Aker BioMarine has a high reporting standard, it is optimal to choose a more extended timeframe for the company than most others. Therefore, we have determined a forecasting period of ten years, going from 2020 – 2029, where 2030 represents the continuing period.

Choice of detail levels

After the decision of timeframe, an adequate level of detail should be decided for the forecasted statements. The two most common distinctions in forecasting are between a focused level and a detailed level, where the focused level only includes a few value drivers, and the detailed level includes several. The choice between these two methods is highly dependent on the length of the forecasting period.

A short timeframe advocates for a detailed level as the precision in the forecasts will be better. The longer timeframe, the more problematic it is to forecast the exact numbers in each line item; it is not appropriate to deploy a detailed level when using a longer timeframe. The uncertainty in the forecasts will perhaps be reduced if one chooses to use a focused method instead of a detailed one (Knivsflå, 2020a). Since this paper's time horizon is long, we have decided it will be most beneficial to focus on the critical value drivers.

As touched upon in previous chapters leading up to the performance forecasting, our forecasts for the financial year of 2020 will incorporate the latest financial information that is publicly available up until October 30, 2020. The requirements on interim financial reporting on Merkur Market are relatively liberal compared to that of Oslo Børs' main list. Consequently, the financial information released so far this year, apart from the 2019 annual report, is heavily condensed. We focus on reflecting the critical features of the Q3 2020 financials in our estimates, along with our assumptions to forecast 2020 on a detailed level.

Choice of forecasting technique

When the timeframe and level of detail has been determined, the remaining element is the forecasting technique. In this paper, the forecasted statements will have dynamic value drivers at predetermined years, which changes during the periods. The first years are more straightforward to forecast with better precision than the years far ahead. Since it takes time to reap the sown investments for the other industry players, it will be simpler to predict how large the market share Aker BioMarine will maintain in the coming years.

Once the competitors receive the ordered vessels and equipment, it is more problematic to project the industry dynamics. Looking at the long run, it will be natural to assume that the growth will converge to the long-term economic growth.

Knivsflå (2020a) claims that the likelihood that a company may go bankrupt is often underestimated in the forecasts of the expected value. Thus, it is recommended to forecast the expected value under the assumption of normal operations, and at the same time, calculate the bankruptcy risk separately. We will present the future synthetic credit ratings of Aker BioMarine in chapter 7, which analyzes the bankruptcy risk. In light of this, we deem it optimal to only forecast one scenario for Aker BioMarine with sensitivity analyses. The forecast reflects the company's expected development and is built on the qualitative strategic analysis from chapter 4. The uncertainty in the value drivers will be accounted for in the fundamental valuation in chapter 8 with sensitivity analyses.

Since the assumption in fundamental valuations is that all cash flows are realized at the end of the year, the company may be unfairly penalized as cash flow normally is generated steadily throughout the year. To avoid this, we mid-year adjust the cash flows such that it assumed to realize mid-year. Lastly, the value drivers will be computed from the statements at the beginning of the period. This is to minimize the uncertainty related to the forecasted statements' calculations, which will increase the informational value needed for the valuation.

6.1.2 Framework for revenue forecasting

Different approaches exist to estimate companies' future revenues, but the two most common are a top-down and bottom-up approach (Koller et al., 2020). The top-down approach begins with the macroenvironment and looks at the entire market in which the company operates. Going forward, the company's market share will be estimated, and the revenues will be a result of the industry sales and the company's market share. This approach is best implemented when the company and industry are mature and reaching a steady state. The second approach often used is bottom-up, where one begins with the microenvironment. The first step is to project the customers' demand for the products and then add up all the product revenues to accumulate future revenue. Besides, the company must try to forecast demand from new customers and lost demand from existing companies.

This method is better applicable to companies with strong growth. Regardless of the method chosen, over more extended periods, there will be discrepancies between actual and projected

income due to disruptive technologies, change in customer demands and new corporate strategies. Consequently, an ongoing assessment of whether the current forecasts are consistent with the macro-and microenvironment should be periodically carried out (Koller et al., 2020).

We have decided to adopt a combination of the bottom-up and top-down approach as this is better suited for the growth case of Aker BioMarine. As Koller et al. (2020) proclaim in their chapter on financial performance forecasting, using a combination of market information and forecasts and the firm's financial forecasts is ideal for creating explicit bounds for our revenue growth forecasts. Neither the industry nor the company itself is mature, and it is expected to undergo radical changes and considerable growth in the coming years. We assume this approach to be the most suitable for our case.

6.1.3 Framework for financial statement forecasting

As explained above, the company's financial statements will be projected in-depth in the short-term portion of the defined forecasted period. This activity aims to help provide accurate insights into how the company's financial statements may look in the foreseeable future, which then, in turn, will be used as a basis for better forecasting its performance in the long-term and the forecasting period. Typically, the company's income- and cash flow statements are the most relevant statements that should be projected. We install a three-step procedure to project each object in the company's income statement.

The first step includes defining the economic relationship that drives the forecasted object in a metric. While most objects are economically related to sales and revenues, particular objects have economic relationships with some assets or liabilities. I.e., while account receivables are closely related to revenues and the income, it is more fitting to relate depreciation and amortization (“D&A”) to PPE and intangible assets. If we manage to establish a ratio in this economic relationship, the next step includes the forecasting of this ratio in the coming years. Eventually, in the final step, the forecasted ratio is introduced in the projections in the object's driver to determine the object's final projection. E.g., the projection of the company's D&A for a given year can be obtained by multiplying the projected D&A ratio of the company's forecasted capex for that year.

We analyze and present specific common economic relationship ratios. The ratios will be utilized for various objects in both income- and cash flow statements in our forecasts.

Framework for forecasting the income statement

Objects in the financial statements such as the cost of goods sold ("COGS"), impairment, transport, sales, general and administration ("SG&A"), marketing, R&D, and payroll expenses are variable costs and tend to follow the same trend as the company revenue. As a result, it is appropriate to deploy revenue as their forecast driver (Koller et al., 2020). However, costs such as D&A are based on the prior PPE. When estimating the D&A costs, the gross PPE should be employed as D&A are just the practice of allocating the purchase cost of PPE (Koller et al., 2020). Nevertheless, employing the gross PPE may lead to an overestimation of the depreciation as fully depreciated assets still may show up in the PPE due to complex accounting rules.

Further, non-operating objects must also be forecasted. They serve the purpose as it helps to grasp several angles of the company's performance and may help develop future strategies. Moreover, with the cash flow projections they work as a checkbook for flaws and mistakes that may have been made during the modeling. The most frequent non-operating objects are non-operating revenue and interest income (expense). Non-operating revenue may spawn from non-operating assets such as subsidiaries, customer financing, or equity investments (Koller et al., 2020). Hence, the appropriate drivers for these are their respective non-operating assets. Income and expenses related to interest can be more easily assigned as these are more clearly linked to the assets (liabilities).

Exhibit 32: *Forecasting drivers for income statement items*

Type	Line Object	Typical Driver	Typical Ratio
Operating	COGS	Revenue	COGS/Revenue
	SG&A	Revenue	SG&A/Revenue
	Depreciation	Prior-year PPE	Depreciation/Gross (net) PPE(t-1)
Non-Operating	Non-Operating income	Appropriate non-operating asset	Non-operating income/Non-operating asset or growth in non-operating income
	Interest income	Prior-year excess cash	Interest income(t)/Excess cash(t-1)
	Interest Expense	Prior-year total debt	Interest expense(t)/Total debt(t-1)

Source: Koller et al. (2020)

Framework for forecasting the balance sheet

Similar to elements in the financial statements, various balance sheet items also trend with the revenue. This is especially true in the working capital objects account receivable and accrued expenses. The two exceptions in the working capital are accounts payable and inventories connected to the company's procurement, and their driver should therefore be assigned to COGS. The one exemption from this "rule of thumb" is when the input prices do not deviate significantly from the company's marginal cost, it may be viable to adopt the revenues as the driver, like the other working capital objects (Koller et al., 2020).

When a company aims for a consistent expansion, capital and resource investments in the PPE are required to develop the operations. Therefore, similarly to the account receivable and accrued expenses, the driver for net PPE should be revenues (Koller et al., 2020). It is further reasoned that, over time, the ratio of net PPE for a given year to revenue in that year is relatively stable. When we use the revenue as the driver, net capex should also be computed based on the forecast to control the forecasts' flaws.

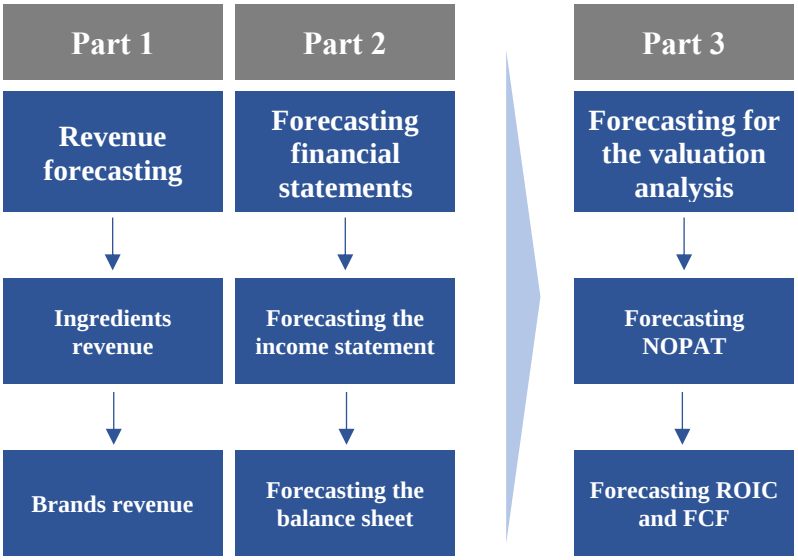
Exhibit 33: *Forecasting drivers for balance sheet items*

Type	Line Object	Typical Driver	Typical ration
Operating	Accounts receivables	Revenue	Accounts receivables/Revenue
	Inventories	COGS	Inventories/COGS
	Accounts payable	COGS	Accounts payable/COGS
	Accrued expenses	Revenue	Accrued expenses/Revenue
	Net PPE	Revenue	Net PPE/Revenue
Non-Operating	Non-Operating assets	None	Growth in non-operating assets
	Pension assets or liabilities	None	Trend toward zero
	Deferred taxes	Operating taxes or corresponding balance sheet item	Change in operating deferred taxes/Operating taxes, or deferred taxes/corresponding balance sheet item

Source: Koller et al. (2020)

As with the forecasting of the income statements, non-operating assets- and liabilities should also be included in the projected balance sheets. It should be noted that the non-operational assets- and liabilities do not affect the free cash flows and will not impact the intrinsic value of the company derived from the cash flows. The values of these assets and liabilities are computed separately and added to the operations' intrinsic value to obtain the company's reasonable value. These objects are also necessary to project as it: **(i)** help managers to better understand and plan the company's strategic operations and **(ii)** assists analysts and management in the financial forecasting to control for flaws and mistakes that may have occurred. Many non-operating assets- and liabilities do not have a driver, and their growth rates are estimated based on historical growth rates and adjusted if needed. Large adjustments in these growth rates may be appropriate in high-growth firms such as Aker BioMarine.

Exhibit 34: *Summary of framework for performance forecasting*



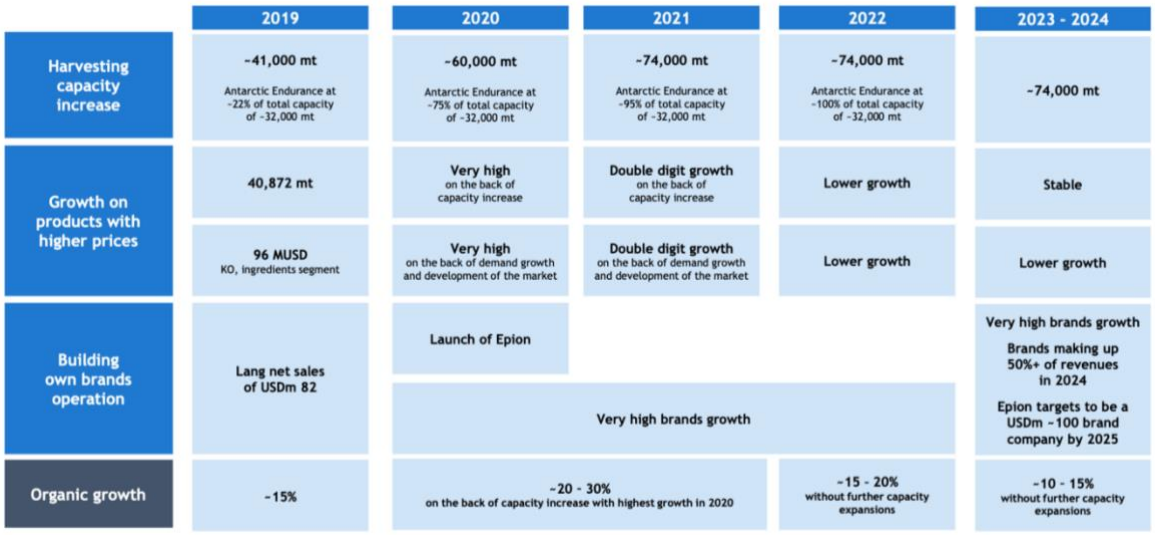
6.2 Revenue forecasting

As the first step towards building a complete financial forecast for our valuation of Aker BioMarine, we start at the top line by forecasting revenue. As mentioned in the introduction to this chapter, we deploy a mixed approach to develop our revenue forecast, in which both the company's forecasts and revenue guidance and macroeconomic data are used as the building blocks leading to our final estimates. In this approach, we also will combine revenue from pre-existing customers with that of new customers. Concerning Aker BioMarine's listing on Merkur Market earlier this year, the company released a vast catalog of guidance items and

analyst material. This, along with Q3 2020 year-to-date reported revenues, will function as the basis for our 2020-2030 forecasts.

Moreover, our projections will be split between Aker BioMarine's two operating segments, *Ingredients* and *Brands*, to provide as much detail to our calculation as possible. While we deem the company's plans and forecasts as the most critical components to our forecasts of expected revenue growth, we will also take a closer look at the systems in place for Aker BioMarine to reach its projected growth. More so, we will examine the market mechanisms and provide our assessment to verify and correct projections where it is needed. Consequently, we adopt a combination of the bottom-up and top-down approach to derive our revenue growth forecast. Aker BioMarine's own summary of forecasted organic growth is presented in figure 33.

Figure 33: *Vocal organic growth ambitions*



Source: Aker BioMarine (2020b)

6.2.1 Structural drivers of revenue growth

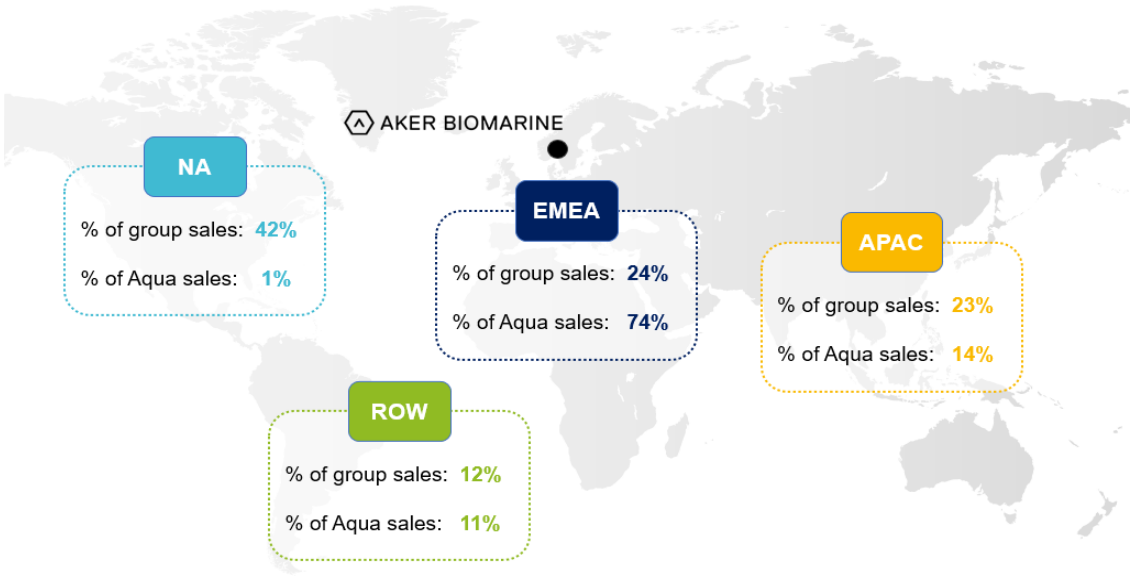
Before presenting our final forecasts of each division's revenue growth, we start by presenting information and forecasts on structural drivers of revenue growth in both the Ingredients and Brands segment. By doing so, we hope to construct an insightful view on the market that Aker BioMarine competes in and the potential growth and revenues to be captured in the end-markets that it sells its products in. For a relatively young and fast-growing firm like Aker BioMarine, Damodaran (2012) advocates three aspects that need to be addressed before estimating future revenue growth: **(i)** The historical revenue growth rate for the firm in question, and **(ii)** the potential and historical growth rate in the overall market that the firm

operates in, and finally **(iii)** competitive advantages and barriers to entry possessed by the company itself.

Global reach

We deem Aker BioMarine's global sales reach and distribution channels vital in driving revenue growth in the Brands segment. In figure 34, we have identified and visualized the regions in which the company sells its products. Overall, North America ("NA") is the largest market in revenue by a sizeable margin, with around 42% of revenues in 2019. The Europe, Middle East and Africa ("EMEA") region is responsible for more than 2/3 of Aqua sales, mostly due to its position as the world leading region in aquaculture and salmon farming. For the group, the APAC has also been an essential contributor to overall sales historically, with 23% of sales in 2019. Although, we believe that the sales split for 2019 does not fully capture the effect of Aker BioMarine's emerging Brands' efforts. The division is headquartered in the US, with connections to the largest retailers in North America, and we believe that the majority of its revenue growth will be realized in the US region. Therefore, a critical aspect of estimating future revenue growth is to analyze how revenue will develop in all global markets.

Figure 34: *Group current regional sales split, and Aqua sales split 2019*



Source: Aker BioMarine (2020b) and own creation

Forecasted growth for dietary supplements and omega-3

To grow within the dietary supplement category, Aker BioMarine is dependent on growth from capturing current consumers in the market and growth in the overall market. Therefore, accompanied by Euromonitor's forecasts for future dietary supplement growth, we have

attempted to forecast overall growth in the global retail value of dietary supplements until 2030. The global dietary supplement market's global retail value grew by a compound average growth rate ("CAGR") of 4% from 2017 to 2019. According to Euromonitor, this growth is expected to escalate between today and 2024, mainly due to structural trends such as an increasingly aging population and increased health focus partly fueled by the COVID-19 pandemic (Euromonitor, 2020c). Our forecast for the development in the dietary supplement market is showcased in exhibit 35.

Exhibit 35: *Forecast of growth in the global dietary supplement market*

	Historical			Forecast										
In USD thousands	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Market value	60.3	62.7	65.0	68.0	71.0	75.0	78.0	82.0	86.1	90.4	94.9	98.7	102.7	106.8
Annual growth	**-**	**4.1%**	**3.7%**	**4.6%**	**4.4%**	**5.6%**	**4.0%**	**5.1%**	**5.0%**	**5.0%**	**5.0%**	**4.0%**	**4.0%**	**4.0%**
CAGR		**3.9%**							**4.6%**					

Source: Aker BioMarine (2020b), Euromonitor (2020c) and own forecasts

Aker BioMarine's historical performance in the dietary supplement market

Historically, Aker BioMarine has outperformed the market growth with Superba Krill posting a CAGR of 12% between 2017 and 2019, compared to the dietary supplement market with ~3.9%. For this reason, in line with Aker BioMarine's growth ambitions, we believe that growth in the company's krill-based dietary supplement sales will be comfortably above the growth of the general market. Further, in line with the company's forecasts, we see no adverse effect on demand from the COVID-19 outbreak. On the contrary, since omega-3 and krill-based dietary supplements are considered immune-boosting and health-promoting, we predict growth to strengthen in the coming decade. On the back of this, the Omega-3 market is estimated to see a CAGR of as much as 13% from the year 2019 until 2025, according to Research and Markets (Research and Markets, 2019). Since krill is considered a small omega-3 ingredient in market share compared to omega-3 coming from other sources, we believe the room for revenue growth in the case of Aker BioMarine and krill-based products is higher than that of the traditional market, which will be reflected when we later forecast the final revenue growth for the segment.

Forecasted growth in aquaculture

Another driver for revenue growth in Aker BioMarine's product sales is the increase in aquaculture production, contributing to near 27% of Aker BioMarine's revenue in 2019. The

company sells krill-based products for use as a component in aquaculture feed, a substantial market in Europe and APAC. Today, the salmon market is one of Aker BioMarine's largest customers within the aquaculture industry, reflected in 74% of Aqua sales stemming from the EMEA region, as showcased in figure 34. In this near EUR 15bn market, feed cost is responsible for more than 50% of production costs, according to Mowi (2020).

Aker BioMarine produces sustainable and premium marine feed components, answering to a demand for sustainable quality feed from the aquaculture industry. Accordingly, growth in this segment is attributable to growth in the overall aquaculture industry and the potential for increased demand for high-quality, sustainable feed ingredients. In exhibit 36, we present OECD-FAO (2020) forecasts of growth in aquaculture production until 2029 along with an estimate for 2030 in order to provide further backing to Aker BioMarine's forecasts of revenue projections and our potential tweaks and adjustments.

Exhibit 36: *Forecast of growth in the global aquaculture industry*

	Historical			Forecast										
Million MT	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Production	79.5	82.1	84.1	86.0	87.7	90.0	92.3	94.7	96.9	99.0	101.0	103.1	105.2	107.4
Annual growth	**-**	**3.2%**	**2.4%**	**2.2%**	**2.0%**	**2.6%**	**2.7%**	**2.5%**	**2.3%**	**2.2%**	**2.0%**	**2.1%**	**2.1%**	**2.1%**
CAGR	**2.8%**			**2.3%**										

Source: OECD-FAO (2020)

Historically, the CAGR of the global aquaculture industry production has hovered around 3%. Coming out of some decades characterized by significant growth, the aquaculture industry's development is expected to weaken in the coming decade. OECD/FAO (2020) rationalizes this with expected decreases in productivity gains, scarcity of suitable locations for production, and strict environmental regulation. One highly relevant factor that may boost growth in aquaculture is the emergence of land-based aquaculture. If planned volumes in this sector are realized, we might see a substantial upside to production estimates. Further, as environmental standards in the sector toughen, we believe Aker BioMarine may see additional demand for their aquaculture products as they are produced in a sustainable manner relative to its peers in the seafood and aquaculture industry.

Competitive position and barriers to entry

To conclude our presentation of essential drivers of future revenue growth, we want to highlight the competitive position of Aker BioMarine and what this may imply for future growth in revenues. Damodaran (2012) highlights competitive advantages and barriers to entry are two of the most vital factors to be in place for a firm to achieve and maintain growth.

As we discussed thoroughly in the strategical analysis in chapter 4, Aker BioMarine holds a strong competitive position in the industry with close to 62% of all annual harvest volumes, more than 80% of annual krill oil production volumes as well as operating on of the most technically advanced and modern fishing fleets among its peers (Aker BioMarine, 2020b). More so, it is the only krill fishery that controls the full value chain from harvest to sales and branding. To add to that, the krill fishing industry today embodies several features that create barriers to entry. Krill harvest vessels are expensive and require custom fitting and advanced technology, and additional support vessels are needed to harvest at the same levels of productivity as Aker BioMarine.

Although competition is expected to increase slightly as new Chinese players enter the market, we believe that the company holds several strategical advantages to capture revenue growth in the near term and sustain this growth even in the longer term.

6.2.2 **Projection of Ingredients growth**

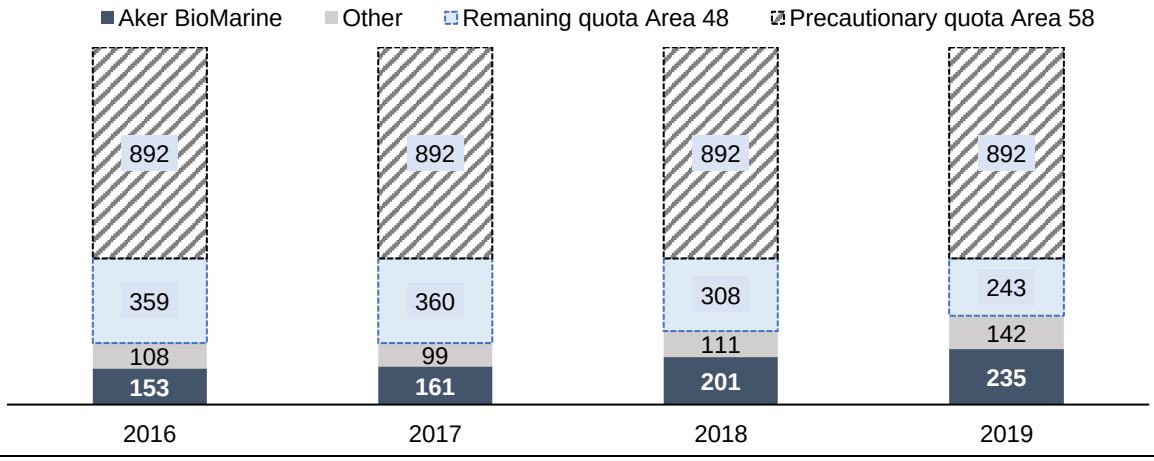
The Ingredients segment was Aker BioMarine's only segment until the Brands segment was introduced in 2019 after the acquisition of Lang. This segment remains at the core of the business today, with 68% of revenue coming from Ingredients in 2019. It is expected to maintain an important role in the firm's business model in the foreseeable future, as this division encompasses krill harvesting and the production of krill meal and krill oil. With the introduction of state-of-the-art krill harvesting vessel Antarctic Endurance to its operations during 2019, the segment has already seen an increase in its revenue contribution in 2020, with the full effect expected to be seen in 2021. With this addressable market in place for Aker BioMarine to manifest its presence, we expect future revenue growth in the Ingredients segment to be driven by three factors: *vessel harvesting capacity*, *offshore production of products*, and *product price development*.

Vessel harvesting capacity

In 2019, Aker BioMarine received their new krill fishing vessel Antarctic Endurance, which ramped up their harvesting vessel fleet from two to three operative vessels. More than 1/3 of the annual total available harvesting quota for all krill fisheries in "Area 48" in the arctic was not harvested in the same year.

Therefore, in an "Olympic Quota" fishing environment, introducing new vessels to the fleet will increase the maximum harvest for an individual operator. Although the players operating in the krill fishing industry today cannot fully exploit the currently allowed quota, Aker BioMarine is superior to its peers in krill harvesting. More precisely, and as showcased in figure 35, Aker BioMarine today captures ~62% of the total harvest in the Antarctic krill fishing region Area 48. On top of this, Aker BioMarine has also seen higher growth than its peers in the last four years, with a CAGR of ~15.4% relative to an overall market CAGR of 9.6%. With recent investments in both technology for re-fits and advanced newbuilds, we believe this trend is likely to continue for Aker BioMarine in the coming years.

Figure 35: *Krill harvest development in Antarctic krill fishing regions*



Source: Aker BioMarine (2020b)

All three of the company's vessels are custom-built to enable good krill harvest and onboard production and packaging. Central to the firm's highly effective harvesting approach is the use of support vessels that transport krill from the fishing grounds to the shore, so that harvesting vessels can remain on location to continuously fish and produce. The company has one support vessel in operation with another newbuild to be brought into operations in 2021. We anticipate a bounce in the harvest in 2021 once this vessel is introduced to the rotation and as Antarctic Endurance closes in on its full production run-rate.

Moreover, there are also entry barriers for competing firms to take a share of the remaining quota. In particular, it requires considerable investments in harvesting vessels, support vessels, and production factories to increase harvest capacity. Aker BioMarine has already carried out these investments, and it is likely to take years for competitors to make the necessary investments to follow suit.

Based on the firm's projections of vessel harvesting capacity from mid-2020, we have developed a forecast for Aker BioMarine's production per vessel, presented in exhibit 37. Our forecasts are predominantly based on the company's projections from mid-2020 until 2024. Since the release of these forecasts, Aker BioMarine has announced that 2020 harvest numbers are likely to end up below their initial targets due to challenging ice conditions and various technical issues, reducing the utilized capacity of Antarctic Endurance to as low as 62% this year. This was also reflected in Q3 financials reported below initial guidance, which we will discuss later. For this reason, we have adjusted volumes in 2020 to reflect the issues mentioned earlier. According to the firm's projections, production rates are expected to reach their full capacity of ~74 000MT in 2022 before staying at maximum capacity until 2024. From 2024 and onwards, we project that production will continue to increase moderately by ~2% annually due to technical advances and vessel upgrades.

Exhibit 37: *Historical and forecasted production on vessel level*

	Historical			Forecast										
In MT thousands	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Antarctic Sea	19.1	23.2	18.0	15.0	20.0	23.2	23.2	23.2	23.7	24.1	24.6	25.1	25.6	26.1
Saga Sea	10.1	13.4	15.8	15.0	17.0	18.8	18.8	18.8	19.2	19.6	20.0	20.3	20.8	21.2
Antarctic Endurance	-	-	7.1	19.2	30.4	32.0	32.0	32.0	32.6	33.3	34.0	34.6	35.3	36.0
Vessel capacity	**29.2**	**36.6**	**40.9**	**49.2**	**67.4**	**74.0**	**74.0**	**74.0**	**75.5**	**77.0**	**78.5**	**80.1**	**81.7**	**83.3**

Source: Aker BioMarine (2020b) and own forecasts

Product production and shifts in pricing

The offshore production aboard the company's three purpose-built vessels turns into three products: Pet meal, Aqua meal, and Nutra meal. Historically, the Aqua meal has been the most produced product aboard the vessels by a significant margin. Aker BioMarine has stated that this trend will continue as the capacity increase stemming from Antarctic Endurance will be mostly realized as Aqua meal. Hence, with this vessel at full capacity in 2021 along with the new support vessel, we expect to see a steep increase in production next year in line with Aker

BioMarine's forecasts of producing around 74 000MT between 2021 and 2024. The historical production split and related production forecasts are showcased in exhibit 38.

Exhibit 38: *Historical and forecasted production by product group*

	Historical			Forecast										
In MT thousands	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Aqua meal	23.8	31.6	33.2	40.8	55.8	60.5	60.5	60.5	61.7	62.9	64.2	65.5	66.8	68.1
Nutra	4.6	4.3	6.4	7.0	10.1	11.9	11.9	11.9	12.1	12.4	12.6	12.9	13.1	13.4
Pet meal	0.8	0.7	1.3	1.4	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
Total production	**29.2**	**36.6**	**40.9**	**49.2**	**67.4**	**74.0**	**74.0**	**74.0**	**75.5**	**77.0**	**78.5**	**80.1**	**81.7**	**83.3**

Source: Aker BioMarine (2020b) and own forecasts

These products are predominantly sold through fixed contracts, with only 9% of Ingredients revenue coming from the spot market. Of the remaining revenue, 57% stems from long-term contracts, with the last 33% attributable to 1-year contracts and (or) predictable pricing (Aker BioMarine, 2020b).

In 2019, 54% of the segment's revenue came from sales of the Superba Krill products. Since Superba Krill production is responsible for the highest margins among products in the Ingredients segment, Aker BioMarine is targeting to increase the portion of raw material sourced into the production of Superba Krill to lift margins and reach its 2024 EBITDA target of USD 200mn. The company has reported that a large part of costs is fixed, and scaling its business model is likely to cause higher revenue and higher percent-wise margins. The latter will be addressed later in this chapter.

Since we have only access to limited information on each krill product's pricing, we have decided to analyze product pricing on an aggregate level. Aker BioMarine has reported historical prices per product since 2017 to be stable as they have maintained a steady portion of revenues from higher-margin and lower-margin product categories. In line with the firm's guidance, we believe that prices per product will increase in the coming years as more raw material is shifted towards high-margin krill oil production. From 2024 and onwards, we forecast price growth to flatten out.

Total ingredients revenue

As we have argued, 2020 has proved more challenging than expected for the company due to difficult weather conditions and technical issues preventing the new harvesting vessel from

reaching production levels in the upper range of its capacity. Although management has stated that COVID-19 has had limited to no impact on Aker BioMarine's activity in 2020, the pandemic has had a troubling effect on its outbound logistics and crew changes. Company officials expect these issues faced in 2020 to be short-lived. Nonetheless, growth is expected to be driven significantly in 2021 as the updated operative fleet will produce at near full run-rate levels, which we consider is the primary driver of growth in this segment.

Historically, Aker BioMarine's revenue growth has been nearly 1:1 with the growth in production output from its harvesting vessels. From 2022 and onwards, we expect revenue growth levels to stabilize as the expanded operational fleet settles into full run-rate production. The Ingredients segment is the firm's most mature segment, and our growth rate of ~2% starting in 2025 reflects our perception that the firm is likely to focus on finding growth in other segments once the krill harvest has reached its intended scale from the recent additions to the operative fleet.

We find it hard to predict any future development in the total available quota for krill fisheries, and we determine that a steady 2% increase in revenue is suitable to account for potential future increases in the total allowable quota for krill harvesting. Finally, to derive our ultimate forecast of revenue stemming from the Ingredients segment, we combine Aker BioMarine's forecasts for increased production and per unit pricing along with our tweaks to estimates and various corrections to reflect our interpretation of projected growth. Our forecasts follow in exhibit 39.

Exhibit 39: *Forecast of Revenue from the Ingredients segment*

	Historical			Forecast										
In USD	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Production	29.2	36.6	40.9	49.2	67.4	74.0	74.0	74.0	75.5	77.0	78.5	80.1	81.7	83.3
Annual growth	*-*	*25.3%*	*11.7%*	*20.3%*	*37.0%*	*9.8%*	*0.0%*	*0.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*
Pricing	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4
Revenue per unit	4.25	4.21	4.33	3.92	4.01	4.14	4.27	4.36	4.40	4.44	4.44	4.44	4.44	4.44
Revenue (USDm)	**124.2**	**154.2**	**177.2**	**192.7**	**270.3**	**306.4**	**316.0**	**322.3**	**332.0**	**342.1**	**348.9**	**355.9**	**363.0**	**370.3**
Nominal growth	***-***	***24.2%***	***14.9%***	***8.8%***	***40.2%***	***13.4%***	***3.1%***	***2.0%***	***3.0%***	***3.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***

Source: Aker BioMarine (2020b) and own forecasts

6.2.3 **Projection of Brands growth**

Brands are the newest of Aker BioMarine's segments and were incorporated in 2019 after acquiring mass-market private label and manufacturing company Lang Pharma. Since then, the firm has also launched its own brand development business, Epion, to operate under the Brands segment. In 2019, the Brands segment was only responsible for 32% of Aker BioMarine's revenue. The division is a central part of the company's strategic ambition to bring krill products to the masses by gaining direct access to large US retailers. By 2024, the firm expects to have 50% of its total group revenue from its Brands segment. Hence, this implies that aggregate growth in the Brands segment is anticipated to be higher than in the Ingredients segment in the coming five years.

Furthermore, this segment completes Aker BioMarine as a krill harvesting company with a fully integrated value chain from krill harvesting to distribution and sales. This also includes sales channels in more than 65 countries, entering a global market to capitalize on. Through the self-developed brand Epion, Aker BioMarine aims to educate consumers and source marketing efforts to open new revenue opportunities for krill-based brands. Aker BioMarine is trying to break into a large and established dietary supplements market dominated by supplements coming from more conventional sources such as plants, meats, fish, fruits, and herbs. Hence, one of the company's most critical challenges in achieving revenue growth is to shift current end-consumers of dietary supplements towards krill-based products and capitalize on the overall growth in the Brands segment going forward.

Lang revenue growth forecasting

The acquisition of the US-based manufacturer and private label Lang Pharma has positioned the US brand segment through access to some of the largest North American retailers such as Target, CVS, Walmart, and Costco. This acquisition is the first step towards opening opportunities for revenue growth for krill-based products in these markets, and through Lang, the company will have access to the distribution channels of retailers in the US, accounting for ~85% of retail sales in this market. Historically, Lang Pharma's revenues grew 14% in 2018 and only 1% in 2019. Given that Aker BioMarine targets a 50/50 ratio between Ingredients and Brands revenue in 2024, along with USD 100m to come from the Epion division, we estimate that the Lang division is set to deliver close to USD 200mn in revenues in 2024.

Based on the company's projections of growth in the coming years, along with our adjustments and critical considerations, we have developed a forecast of the Lang subdivisions revenue growth from 2020 to 2030. As of YTD Q3, Aker BioMarine has reported USD 77mn in revenues for the Lang division before eliminations. This is in line with Aker BioMarine's projected growth in 2020. We set our forecast for full-year 2020 to USD 107mn and a 19% nominal revenue growth to reflect this. Moreover, backed by our assessment of projected revenue growth in aquaculture and the dietary supplements market, we forecast two-digit growth until 2025 to reflect the firm's ambitions to generate 50% of total group revenue in the Brands segment. After this, we foresee growth to slow but stay at relatively high levels as Aker BioMarine becomes an established market participant in a fast-growing market.

Exhibit 40: *Forecast of revenues from Lang*

	Historical		Forecast									
In USD millions	**2019**	**Q1-Q3 '20**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Revenue	90.1	75.0	107.0	125.0	142.0	165.0	193.1	212.4	223.0	231.9	241.2	250.8	260.8
Growth rate	-	-	*18.8%*	*16.8%*	*13.6%*	*16.2%*	*17.0%*	*10.0%*	*5.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Split													
Organic	*1.2%*	-	*19%*	*17%*	*14%*	*16%*	*17%*	*10%*	*5%*	*4%*	*4%*	*4%*	*4%*
Currency	-	-	-	-	-	-	-	-	-	-	-	-	-
M&A	-	-	-	-	-	-	-	-	-	-	-	-	-
Nominal growth	***1.2%***	**-**	***19%***	***17%***	***14%***	***16%***	***17%***	***10%***	***5%***	***4%***	***4%***	***4%***	***4%***

Reading into Aker BioMarine's takes on their future revenue growth, they anticipate that all of the Brands segment's revenue development will be exclusively organic. As we have discussed previously, the company has undertaken several investments to position itself for accelerated growth in the years to come. To add to this, Aker BioMarine has not communicated any intention to make further acquisitions in the foreseeable future. Consequently, we forecast that all of the future growth is attributable to organic revenue growth.

Epion revenue growth forecasting

The second component to revenue growth in the Brands segment is Aker BioMarine's self-made consumer-based krill brand company Epion. Now, this sub-division has one brand in its portfolio, Kori, which is a krill oil supplement made for human consumption introduced to the market in 2020. Through Lang's retail infrastructure, the brand is currently in sale in several of the largest US retailers, including Target, CVS, and Walmart. Aker BioMarine has stated that one of the primary purposes of Epion is to educate consumers on the benefits of krill-

based supplements and facilitate rapid growth in the US retail landscape. As a manifest to this, the company has pledged that all the EBITDA generated from this company is to be invested right back into the firm to grow and reach USD 100mn in sales by 2025.

Exhibit 41: *Forecast of revenues from Epion*

	Historical		Forecast										
In USD millions	**2019**	**Q1-Q3 '20**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Revenue	-	9.3	14.0	36.0	56.5	74.0	88.1	99.1	105.0	110.3	115.8	120.4	125.2
Growth rate	-	-	-	*157.1%*	*56.9%*	*31.0%*	*19.0%*	*12.5%*	*6.0%*	*5.0%*	*5.0%*	*4.0%*	*4.0%*
Split													
Organic	-	-	-	*157%*	*57%*	*31%*	*19%*	*13%*	*6%*	*5%*	*5%*	*4%*	*4%*
Currency	-	-	-	-	-	-	-	-	-	-	-	-	-
M&A	-	-	-	-	-	-	-	-	-	-	-	-	-
Nominal growth	**-**	**-**	**-**	***157%***	***57%***	***31%***	***19%***	***13%***	***6%***	***5%***	***5%***	***4%***	***4%***

According to Aker BioMarine's preliminary reports on revenue for 2020, Epion has contributed around USD 9mn of the total USD 75mn generated from the Brands segment year-to-date Q3 2020. This leaves our projections for the full financial year of 2020 at USD 14mn. Since the segment has no financial history, we rely on Aker BioMarine's growth estimates and the overall market's fundamental growth characteristics. As we have discussed, the company forecasts Epion to deliver revenues of around USD 100mn within the next five years. To achieve this, an estimated CAGR of 48% is required from projected 2020 revenues.

We believe this effect will be most prominent in the near-term future, with ~157% sales growth forecasted in 2021. However, this growth is not substantial in absolute terms, and we foresee double-digit growth in revenue until 2025, which coincides with the firm's ambition of USD 100mn in 2025. From this, we anticipate growth to flatten out at around 6-5%.

Brands total revenue growth forecasting

To obtain our ultimate forecast of Brands revenue growth, we sum up the projected revenue growth in the Lang and Epion sub-divisions. As outlined earlier, our final estimate reflects our assessment and adjustments of Aker BioMarine's rough revenue growth projections supported by several forecasts of growth in relevant markets and an analysis of the firm's future strategic development.

The company's growth ambitions for the Brands segments are intensive, and at the core of these aspirations is the underlying aim of reaching a 50/50 Brands and Ingredients revenue

split by 2024. Ingredients revenue makes up ~63% of current YTD Q3 2020 revenues, and hence, Brands will have to deliver a higher revenue CAGR until 2024.

Exhibit 42: *Forecast of total Revenue from the Brands segment*

	Historical		Forecast									
In USD millions	**2019**	**Q1-Q3 '20**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Lang revenues													
Revenue	90.1	75.0	107.0	125.0	142.0	165.0	193.1	212.4	223.0	231.9	241.2	250.8	260.8
Growth rate	*1%*	*-*	*18.8%*	*16.8%*	*13.6%*	*16.2%*	*17.0%*	*10.0%*	*5.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
Epion revenues													
Revenue	-	9.3	14.0	36.0	56.5	74.0	88.1	99.1	105.0	110.3	115.8	120.4	125.2
Growth rate	*-*	*-*	*-*	*157.1%*	*56.9%*	*31.0%*	*19.0%*	*12.5%*	*6.0%*	*5.0%*	*5.0%*	*4.0%*	*4.0%*
Split													
Organic	*1.2%*	*-*	*34.3%*	*33.1%*	*23.3%*	*20.4%*	*17.6%*	*10.8%*	*5.3%*	*4.3%*	*4.3%*	*4.0%*	*4.0%*
Currency	-	-	-	-	-	-	-	-	-	-	-	-	-
M&A	-	-	-	-	-	-	-	-	-	-	-	-	-
Nominal growth	***1.2%***	***-***	***34.3%***	***33.1%***	***23.3%***	***20.4%***	***17.6%***	***10.8%***	***5.3%***	***4.3%***	***4.3%***	***4.0%***	***4.0%***

When consolidating the Brands sub-divisions' revenue growth, we see that our forecasts imply a 21% CAGR from current revenues to the revenue target in 2025. Thus, our estimates put us close to Aker BioMarine's ambition to generate USD 100mn in sales from Epion within five years and to produce around 50% of group revenue in the segment. As with any forecast of revenue far into the future, we have made some assumptions to the forecast based on our assessments of how the market will develop and what slice of the future market growth that Aker BioMarine itself will capture. For revenue growth beyond near-term targets, we expect the Brands segment to remain stable and settle at a revenue growth rate in line with the overall dietary supplements market.

6.2.4 **Forecasting of total revenue growth**

Finally, the forecast for total revenue growth is determined as a revenue growth product in Aker BioMarine's two business segments, Ingredients and Brands. As per our presented forecasting guidelines, we determined a time frame for our forecast from 2020 to 2030, where 2030 is our continuing value year.

Ultimately, our final forecast of total revenue growth has been derived through a combination of the bottom-up and the top-down approach in which we have paired growth estimates coming directly from the company with several external sources of relevant market

information and projections. We recognize that forecasting for more extended periods for a firm with limited historical information and operating in a young industry is related to several issues regarding uncertainty in the projections. Consequently, by combining the bottom-up and the top-down approach, we have attempted to establish bounds in our forecast as advocated by Koller et al. (2020).

We are confident that the estimates represent our best assessment and interpretation of how the future development in the firm's revenue growth will look like, despite the noisiness that such estimates may carry. More so, all of the information presented in the introduction, our strategical analysis, and the historical financial analysis has been thoroughly examined and filtered into our equation before forecasting the revenue growth of Aker BioMarine. Finalizing this sub-chapter, we present our forecasts for revenue growth exhibit 43 as follows:

Exhibit 43: *Forecast of total revenue growth*

	Historical		Forecast									
In USD millions	**2019**	**Q1-Q3 '20**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Ingredients revenue													
Revenue	177.2	142.7	192.7	270.3	306.4	316.0	322.3	332.0	342.1	348.9	355.9	363.0	370.3
Growth rate	***15.0%***	***-***	***8.8%***	***40.2%***	***13.4%***	***3.1%***	***2.0%***	***3.0%***	***3.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***
Brands revenue													
Revenue	90.1	84.3	121.0	161.0	198.5	239.0	281.1	311.4	328.0	342.2	357.0	371.2	386.1
Growth rate	***1.0%***	***-***	***34.3%***	***33.1%***	***23.3%***	***20.4%***	***17.6%***	***10.8%***	***5.3%***	***4.3%***	***4.3%***	***4.0%***	***4.0%***
Eliminations													
Eliminations	(13.4)	(13.9)	(15.4)	(17.3)	(20.2)	(21.6)	(23.5)	(24.5)	(24.8)	(25.6)	(27.1)	(26.4)	(26.5)
Total revenue	**246.2**	**213.1**	**298.4**	**414.0**	**484.7**	**533.4**	**579.9**	**619.0**	**645.3**	**665.5**	**685.8**	**707.8**	**729.9**
Split													
Organic	*14.9%*	*-*	*21.2%*	*38.8%*	*17.1%*	*10.0%*	*8.7%*	*6.7%*	*4.2%*	*3.1%*	*3.0%*	*3.2%*	*3.1%*
Currency	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
M&A	*53.4%*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
Nominal growth	***68.3%***	***-***	***21.2%***	***38.8%***	***17.1%***	***10.0%***	***8.7%***	***6.7%***	***4.2%***	***3.1%***	***3.0%***	***3.2%***	***3.1%***

Eliminations

For clarity, according to Aker BioMarine's financial reports, the two operating segments, Brands and Ingredients, are managed separately, and financial results are measured on a stand-alone basis. Therefore, the “eliminations” column is used to eliminate transactions between them. We have forecasted eliminations to make up 3-5% of total revenue annually, in line with historical eliminations.

6.3 Forecasting the financial statement

This subchapter will focus on the financial statements forecasting, and more specifically, the income statements and the balance sheets over the next ten years. We forecast until Aker BioMarine to enter steady state in 2029. The short-term projections are presented in detail with changes each year before we generalize the medium- and long-term growth. The generalization is due to the large uncertainties in the coming years, making it more rational to assume an average ratio in those years, as justified previously in the chapter. The following subchapter aims to clarify and justify the selected ratios and forecasted metrics in our projections. The subchapter will commence with the ratio assumptions in our statements, followed by a justification of our assumptions. Lastly, the chapter will present the projections based on our assumptions.

6.3.1 **Income statement forecasting**

Exhibit 44: *Summary of income statement ratios and assumptions*

	Historical	Forecast									CV
In percentages (%)	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Revenue growth	**68.3%**	**21.2%**	**38.8%**	**17.1%**	**10.0%**	**8.7%**	**6.7%**	**4.2%**	**3.1%**	**3.0%**	**3.2%**	**3.1%**
Operating expenses												
Cost of goods sold *(% of revenue)*	49.1%	47.6%	46.6%	45.7%	44.8%	43.5%	42.6%	41.8%	40.9%	40.1%	39.3%	39.3%
SG&A *(% of revenue)*	31.1%	30.0%	30.5%	30.3%	30.3%	30.1%	29.4%	29.0%	28.7%	28.6%	28.3%	28.3%
Other costs, net *(% of revenue)*	1.3%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Depreciation *(% of t-1 Net PP&E)*	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%
Non-operating items												
Amortization *(% of t-1 intangible assets)*	13.0%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Interest expenses *(% of t-1 total debt)*	11.1%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%
Interest income *(% of t-1 marketable sec.)*	120%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Other financial expenses *(% of t-1 net debt equivalents)*	20.4%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Taxes												
Statutory tax rate	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*	*23.0%*
Operating tax rate	*24.8%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*

** For visual purposes, we only include one historical year.*

Gross margin (COGS/Revenue ratio)

The historical ratio has been averaging 58.44% the past two years, which we consider high-end. The rationale behind this is that Aker BioMarine depreciates their producing assets (vessels and Houston facility) in the reported COGS (~20% of the reported COGS is historical depreciation), and the reported COGS is derived from historical weighted average production costs. In accordance with IFRS, actual production expenses are capitalized in the inventory each quarter and new weighted average cost is calculated at quarter-end. Thus, weighted average costs at quarter-end are used as COGS in the following quarter. The lead times are typically six to nine months, depending on the product. The implication of this is that the reported COGS is different than the true COGS. For this reason, we have decided to split COGS and depreciation to paint a clearer picture of how Aker BioMarine's COGS will develop in our forecasts.

Going forward, we expect the unit economic gross margin of the Ingredients segment to increase from ~59% to ~65% in 2022 due to a more favorable product mix with higher margins. I.e., shifting from Qrill Aqua (~30% margin) to krill oil products (between ~50-70% margin) will boost the overall margins. In the Brands segment, we expect a margin increase from ~47% in 2019 to ~52% in 2022, driven by the contribution from Epion and its high-margin brand Kori, while the gross margin of Lang is assumed to be constant. The growth beyond 2020 will steadily increase as the high-margin products drive much of the projected growth. Based on the elements mentioned above, we expect the gross margin to be ~54% in 2022, and following the company guidance, we presume this to be the medium-term margins. The long-term margins are expected to increase further as we judge the high margin products to be the primary driver of growth, projecting a long-term gross margin of ~61%.

SG&A/Revenue

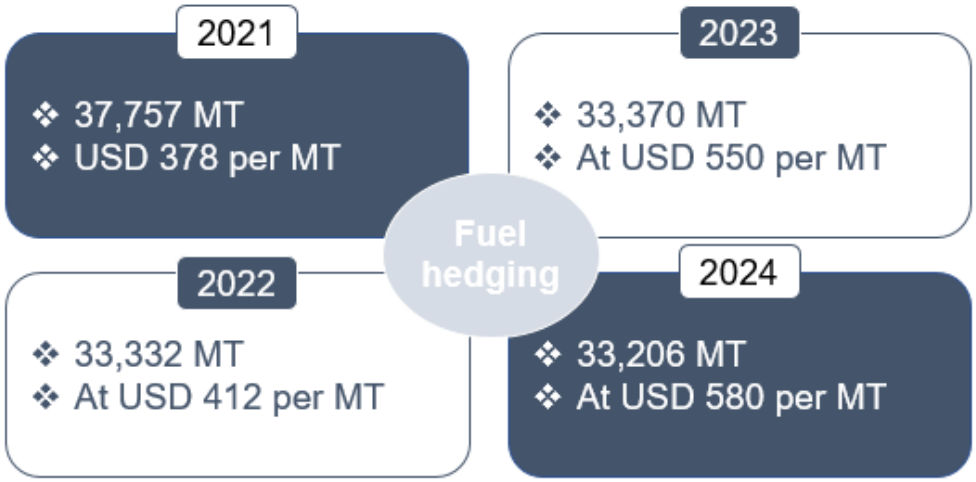
In the past two years, the SG&A/Revenue ratio has been stable, averaging 30.02%, and we regard this to be the average ratio going forward. A ratio of 30% is consistent with the past performance of Aker BioMarine, and in line with the near-term company guidance (Aker BioMarine, 2020b). In the long-term estimates, the revenues to grow exponentially such that the SG&A/Revenue ratio will shrink as we move closer to steady state, to ~28%. However, the exception will be 2020 with the US launch of Kori, in which we have incorporated USD 15mn of marketing cost to boost the launch.

Other operating/revenue

Fuel consumption

Aker BioMarine expects to use ~35 000MT of fuel annually with the delivery of the new vessel. The company has purchased call options for 100% of its expected fuel consumption for 2021 – 2024, making the line item fully fixed in this period. The fuel consumption is baked in the "other operating expenses" item and will not be forecasted separately. The hedging of the fuel is as follows (Aker BioMarine, 2020b):

Figure 36: *Aker BioMarine fuel hedging*



Source: Aker BioMarine (2020b)

Aker BioMarine's 2019 cost of fuel was on average ~USD 750 per MT (Aker BioMarine, 2020). The company is still exposed to the spread between the Rotterdam index and the local price in Montevideo, Uruguay, which historically has been USD 200-300 per MT. The total cost of the call options purchased are USD 9mn and will be settled in 2021. The company has not hedged the 2020 consumption, but the majority of volumes have already been purchased.

Looking beyond the period of fuel hedging, it will be challenging to forecast both the fuel consumption due to potential acquisitions (divestitures) of vessels and companies, in addition to the fluctuation of the fuel prices. The fuel cost follows the brent oil price closely, and the forecasting of commodities is highly unreliable. Averaging a full cycle is a better proxy for future prices than forecasts (Petersen, Plenborg, & Kinserdal, 2017). Hence, we will not utilize commodity forecasts but rather look at historical averages to estimate long-term fuel prices.

General operating costs

A significant part of the "other operating costs" item consists of fuel expenses, while the rest consists of general operating costs such as IT, insurance, licensing fees, travel expenses, and

utilities. We expect these costs to continue to be a small percentage of the revenues going forward. These costs are expected to increase slightly with the integration and expansion of Lang before normalizing in 2022.

Taxes, depreciation, and amortization

In certain jurisdictions, Aker BioMarine pays taxes, and in the US, it pays state tax based on nexus (employee and inventory), whereas the tax-loss carryforwards offset federal tax. Further, the firm has significant historical net operating losses in Norway and expects to limit the annual tax expenses in 2020 and medium-term. The statutory taxes are not expected to change in the coming years. We assume the operating tax will be equal to the average between 2018 and 2019 long-term. The discrepancies and uncertainties regarding the tax elements discussed and the ongoing lawsuit against Norway make it problematic to forecast the carryforwards' outcome. Thus, we do not adjust the projections for the potential upside in the court case or carryforwards.

Further, over the past ten years, Aker BioMarine has invested ~USD 600mn in fixed assets, of which the majority is vessels with ~USD 314mn since 2015. We expect the maintenance of around ~USD 10mn quarterly from 2020 in depreciation in the vessels and the plant, with some increases in the future with the expected investment in a new protein plant, following Aker BioMarine (2020b). Further, the total depreciation is expected to be increased after accounting for the new Antarctic Provider, which is already included in the depreciation in COGS, which is adjusted. Lastly, the company has guided the quarterly amortization of ~USD 4mn related to customer portfolios and the Flexitech production technologies.

Other non-operating items and financial expenses

The projections of non-operating items do not affect the fundamental valuation of Aker BioMarine's core operations as they do not run through the free cash flows. Still, they contribute to the forecasting as a checking account for whether there are any mistakes in forecasting the operating items. This being outlined, we do not expect any radical changes in the non-operating items going forward.

The net financial items include interest payments to external lenders and Aker ASA, in addition to the FX effects. We decided to strip out the FX effects in our projections in the financial items as it is unfeasible to forecast long-term. Consequently, our forecast of "other financial expenses" is set to a rate of 2% of other non-current liabilities, including expenses

concerning a guarantee fee payable to the firm's parent company Aker ASA and does not take into account any future potential FX effects. In 2019, Aker ASA also converted NOK 1bn of debt to equity, which reduces the interest rate expenses going forward. The 2019 interest expense ratio is artificially high as the interest expense is based on last year's borrowing, not considering the debt conversion made by Aker ASA.

Exhibit 45: *Income statement forecast and net income reconciliation*

	Historical	Forecast										CV
In USD thousands	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Revenue	246 170	298 367	414 023	484 666	533 350	579 894	619 024	645 274	665 508	685 758	707 809	729 879
Cost of goods sold	(120 792)	(142 012)	(193 119)	(221 549)	(238 927)	(252 254)	(263 890)	(269 579)	(272 471)	(275 147)	(278 315)	(286 993)
Gross margin	**125 378**	**156 355**	**220 904**	**263 117**	**294 423**	**327 640**	**355 134**	**375 695**	**393 037**	**410 611**	**429 495**	**442 887**
SG&A	(76 464)	(89 576)	(126 450)	(146 766)	(161 509)	(174 548)	(182 219)	(187 129)	(191 001)	(195 867)	(200 144)	(206 385)
Depreciation	(28 077)	(32 000)	(29 938)	(40 255)	(45 662)	(48 691)	(51 299)	(53 063)	(55 313)	(57 048)	(58 784)	(60 674)
Other costs	(3 221)	(3 198)	(4 394)	(5 092)	(5 547)	(5 971)	(6 310)	(6 512)	(6 649)	(6 783)	(6 931)	(7 147)
Special op. items	7 346	-	-	-	-	-	-	-	-	-	-	-
EBITA	**24 962**	**31 581**	**60 123**	**71 005**	**81 705**	**98 430**	**115 306**	**128 990**	**140 073**	**150 913**	**163 636**	**168 681**
Operating taxes	(6 182)	(7 566)	(14 404)	(17 011)	(19 574)	(23 581)	(27 624)	(30 903)	(33 558)	(36 155)	(39 203)	(40 411)
NOPAT	**18 780**	**24 015**	**45 719**	**53 994**	**62 131**	**74 849**	**87 682**	**98 088**	**106 516**	**114 758**	**124 433**	**128 270**
Reconciliation												
NOPAT	**18 780**	**24 015**	**45 719**	**53 994**	**62 131**	**74 849**	**87 682**	**98 088**	**106 516**	**114 758**	**124 433**	**128 270**
Amortization	(14 854)	(16 000)	(13 326)	(11 099)	(9 244)	(7 699)	(6 413)	(5 341)	(4 448)	(3 705)	(3 086)	(2 570)
Interest expense	(22 785)	(28 144)	(16 419)	(20 979)	(21 351)	(20 620)	(19 717)	(18 576)	(17 625)	(16 589)	(15 615)	(14 732)
Interest income	288	130	185	594	633	822	1 185	1 220	1 245	1 342	1 422	1 490
Other fin. expenses	(3 599)	(1 312)	(1 036)	(2 567)	(3 422)	(3 885)	(4 118)	(3 695)	(3 049)	(2 479)	(1 652)	(747)
Net finance items	**(26 097)**	**(29 327)**	**(17 271)**	**(22 952)**	**(24 140)**	**(23 683)**	**(22 650)**	**(21 052)**	**(19 429)**	**(17 726)**	**(15 845)**	**(13 989)**
Special op. items	(7 346)	-	-	-	-	-	-	-	-	-	-	-
Non-op. taxes	5 767	6 745	3 972	5 279	5 552	5 447	5 210	4 842	4 469	4 077	3 644	3 218
Net income	**(23 751)**	**(14 567)**	**19 095**	**25 222**	**34 299**	**48 913**	**63 828**	**76 537**	**87 107**	**97 404**	**109 147**	**114 928**

6.3.2 **Balance sheet forecasting**

The following subchapter will present and justify the assumptions in our projections of the balance sheet. The balance sheet will be presented at the end of the subchapter after the rationale and explanations. The following balance sheet ratios and assumptions will function as the quantitative basis of our balance sheet forecasts and is summarized in exhibit 46 as follows:

Exhibit 46: *Summary of balance sheet ratios and assumptions*

	Historical	Forecast										CV	
In percentages (%)	2019	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	Driver
Operating working capital													
Operating cash	3.0%	6.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	*% of revenues*
Inventories	286.2	310.5	300.0	286.2	280.0	280.0	280.0	280.0	280.0	280.0	280.0	280.0	*COGS days*
Receivables	55.4	55.4	55.4	55.4	54.3	53.2	52.2	52.2	52.2	52.2	52.2	52.2	*Revenue days*
Other current assets	54.7	54.7	54.7	54.7	53.6	52.5	51.5	51.5	51.5	51.5	51.5	51.5	*Revenue days*
Accounts payable	70.5	58.5	58.5	58.5	58.5	58.5	58.5	55.6	50.0	50.0	50.0	50.0	*COGS days*
Accrued expenses	39.0	26.8	26.8	26.8	26.8	26.8	26.8	26.8	25.0	25.0	25.0	25.0	*Revenue days*
Other current liabilities	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	*Revenue days*
Fixed assets													
PP&E incl. leases	130%	100%	96.9%	93.9%	91.0%	88.2%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%	*% of revenues*
Other non-current receivables	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	*% of revenues*
Non-operating assets													
Investments in equity	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	*% of revenues*
Other financial assets	-	3.0%	2.2%	1.9%	1.7%	1.6%	-	-	-	-	-	-	*% of revenues*
Excess cash	2.5%	-	4.9%	4.6%	6.0%	8.6%	9.8%	9.6%	10.0%	10.3%	10.5%	10.5%	*% of revenues*
Goodwill and other intangibles													
Goodwill	38.4%	31.7%	22.8%	19.5%	17.7%	16.3%	15.3%	14.7%	14.2%	13.8%	13.4%	13.0%	*% of revenues*
Other intangibles	38.9%	26.7%	16.0%	11.4%	8.6%	6.6%	5.2%	4.1%	3.3%	2.7%	2.2%	1.8%	*% of revenues*

Net working capital ("NWC")

The operating NWC has steadily increased the past three years, driven by higher balances in accounts receivable and accounts payable that follows the development in revenues and costs. The inventory balance has increased due to inventory build-up. Aker BioMarine has also increased the number of operational vessels from Q1 2019 with Antarctic Endurance, which resulted in further inventory build-up. The inventory build-up concerns production consumables and fuel, contributing to an increasing amount of working capital being tied up. In Q2 2020, the company stated that the total krill inventory was close to 35 200MT, up from 27 500MT in the same period last year, implying a YoY inventory growth of ~28%, supporting its growth strategy going forward (Aker BioMarine, 2020b).

A substantial part of the inventory's increase comes from the feed segment, as Aker BioMarine has strategically increased the inventory to hold and maintain a safety stock. Accordingly, our forecast for 2020 attempts to reflect the inventory build-up as signaled by the company this year to include the most up-to-date information available of the company's financials.

Projecting the NWC as a percentage of revenues medium-term, we expect it to rise to ~50% as Antarctic Endurance operating on maximum capacity and continuing growth will affect all

the working capital aspects. Having the large-scale vessel, Antarctic Endurance, operating on maximum capacity will increase the inventories. Further, the acquisition of Lang is also expected to increase the inventories. On average, pharmaceutical companies underperform on working capital management, as the average pharma company holds 180 days of finished goods in inventory compared to consumer goods that only hold 60 days (Keeling et al., 2010). One implication of the acquisition is that we expect the inventory to increase in the coming years, tying up capital. We do not expect any substantial changes in the ratio between account payables and COGS in the years going forward, but we see some improvement in account payable COGS days as the firm nears its steady state.

Projecting NWC long-term, we consider the ratios to normalize in a steady state. We believe the growth investments require much capital tied in operations predominantly in the near term. When Aker BioMarine reaches a steady state, the company does not need the same amount of capital tied in the operations as a growth company does. Consequently, from 2026, the ratio will converge towards normalization at 48-49%.

Fixed operating assets

The fixed operating assets consist of PPE and other intangible assets such as advances to customers and software. Over the past ten years, Aker BioMarine has undergone substantial investments in their fixed assets, mostly in vessels. In the past two years, the Net PPE to revenues has been ~150%, reflecting the new vessel's investment. Medium-term, we expect this ratio to decrease as Antarctic Endurance nears the finalization of payments is due in 2021. The last large expansion that is planned is the investment in the protein plant of ~USD 13.5mn. We do not expect any large investments for expansion beyond this, but instead, purchase to replace parts and maintain existing assets suffering from wear and tear. Hence, we deem the asset categories to follow the revenues as a fixed percentage. The item “other intangible assets” surged ~65% from 2018 to 2019 due to the acquisition of Lang (Aker BioMarine, 2020a).

We do not believe this line item will experience any substantial changes in the coming years. Consistent with our pre-assumption that Aker BioMarine is not expected to engage in any acquisition activity in the foreseeable future, other intangibles will remain unchanged net any reduction in value from amortization.

Non-operating assets and liabilities

The projections of these objects do not affect the valuation of the company's core business operations as they do not affect the free cash flows. They still need to be accounted for when we are determining the value of the whole company. We will try to estimate these assets' fair values (liabilities) and add them back to the total valuation. The projections of these objects also serve to mitigate potential flaws and mistakes in the forecasting. We do not assume any significant changes in these objects, except for the non-current derivatives, where derivatives from fuel hedging will be capitalized.

Exhibit 47: *Forecasted balance sheet statement and reconciliation to total funds invested*

	Historical	Forecast										CV
In USD thousands	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Operating working capital												
Operating cash	7 385	17 902	16 561	19 387	21 334	17 397	18 571	19 358	19 965	20 573	21 234	21 896
Inventories	94 725	120 808	158 728	173 738	183 287	193 510	202 436	206 800	209 019	211 071	213 502	220 159
Receivables	37 393	45 322	62 890	73 621	79 396	84 598	88 500	92 253	95 146	98 041	101 194	104 349
Other current assets	36 871	44 689	62 012	72 593	78 288	83 417	87 265	90 965	93 818	96 673	99 781	102 893
Accounts payable	23 340	22 777	30 974	35 534	38 321	40 458	42 325	41 075	37 325	37 691	38 125	39 314
Accrued expenses	26 311	21 929	30 430	35 622	39 200	42 621	45 497	47 426	45 583	46 970	48 480	49 992
Other current liabilities	2 342	2 839	3 940	4 612	5 075	5 518	5 890	6 140	6 333	6 525	6 735	6 945
Operating working capital	**124 381**	**181 176**	**234 849**	**263 572**	**279 708**	**290 325**	**303 060**	**314 736**	**328 708**	**335 172**	**342 371**	**353 046**
Fixed assets												
PP&E, incl. leases	318 921	298 367	401 188	455 082	485 270	511 262	528 842	551 268	568 555	585 854	604 693	623 548
Other non-current receivables	145	176	245	286	315	343	366	381	393	405	418	431
Invested capital, ex. goodwill	**443 448**	**479 719**	**636 282**	**718 940**	**765 294**	**801 929**	**832 268**	**866 385**	**897 656**	**921 431**	**947 482**	**977 025**
Goodwill and other intangibles	190 297	174 297	160 971	149 872	140 628	132 928	126 516	121 175	116 726	113 022	109 936	107 366
Invested capital, incl. goodwill	**633 745**	**654 016**	**797 252**	**868 812**	**905 921**	**934 858**	**958 784**	**987 560**	**1 014 382**	**1 034 452**	**1 057 418**	**1 084 391**
Non-operating assets												
Investments in equity	260	260	260	260	260	260	260	260	260	260	260	260
Other financial assets	-	9 000	9 000	9 000	9 000	9 000	-	-	-	-	-	-
Excess cash	6 225	-	20 436	22 396	31 824	49 984	60 728	61 979	66 821	70 859	74 227	159 465
Total funds invested	**640 230**	**663 276**	**826 948**	**900 469**	**947 006**	**994 102**	**1 019 773**	**1 049 799**	**1 081 464**	**1 105 571**	**1 131 905**	**1 244 116**
Reconciliation												
Non-current interest-bearing debt	372 473	197 473	265 530	271 085	260 167	246 696	229 666	215 465	199 999	185 476	172 296	159 902
Current interest-bearing debt	47 591	47 591	47 591	47 591	47 591	47 591	47 591	47 591	47 591	47 591	47 591	47 591
Debt equivalents	65 618	51 823	128 343	171 087	194 244	205 897	184 770	152 460	123 964	82 611	37 329	79 751
Derivative liabilities	-	-	-	-	-	-	-	-	-	-	-	-
Capitalized operating leases	-	-	-	-	-	-	-	-	-	-	-	-
Total debt and its equivalents	**485 682**	**296 887**	**441 464**	**489 763**	**502 002**	**500 184**	**462 027**	**415 516**	**371 554**	**315 678**	**257 217**	**287 244**
Paid-in equity	345 230	569 401	569 401	569 401	569 401	569 401	569 401	569 401	569 401	569 401	569 401	569 401
Translation differences	154	154	154	154	154	154	154	154	154	154	154	154
Retained earnings	(190 838)	(203 166)	(184 071)	(158 850)	(124 551)	(75 638)	(11 809)	53 247	122 933	195 986	272 389	347 092
Dividend payable	-	-	-	-	-	-	-	11 481	17 421	24 351	32 744	40 225
Equity and its equivalents	**154 547**	**366 389**	**385 484**	**410 706**	**445 004**	**493 918**	**557 746**	**634 283**	**709 910**	**789 893**	**874 688**	**956 872**
Total funds invested	**640 230**	**663 276**	**826 948**	**900 469**	**947 006**	**994 102**	**1 019 773**	**1 049 799**	**1 081 464**	**1 105 571**	**1 131 905**	**1 244 116**

Following Koller et al. (2020), we utilize the "excess cash" and "debt equivalents" line items in our reconciliation to total funds invested in making the balance sheet balance. The tweaks made are consistent with our assumptions concerning Aker BioMarine's future capital structure. As the firm transitions towards a steady state and increased profits instead of intensive growth, we project that the increased funds will be put to use to increase the equity portion. More so, we anticipate that the firm will deploy a capital structure matching its mature peers in the pharmaceutical and biotech industry. This will also include paying a dividend from the year 2026.

6.4 Forecasts of FCF and ROIC

In the final step of our Aker BioMarine performance forecasting, we use our completed financial statement forecasts to calculate future free cash flow and return on invested capital. These measures will serve as the basis for the up-coming fundamental valuation analysis in chapter 8. As we discussed in the introduction to our thesis, we will also need a forecast of economic profit to produce a valuation estimate from this methodology. However, as this requires estimating the firm's weighted average cost of capital, this forecast will be presented once our WACC is derived in the subsequent chapter on WACC estimation.

6.4.1 **Forecast of free cash flow**

Exhibit 48: *Aker BioMarine's forecasted free cashflow*

	Historical	Forecast										CV
In USD thousands	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**CV**
NOPAT	18 780	24 015	45 719	53 994	62 131	74 849	87 682	98 088	106 516	114 758	124 433	128 270
Depreciation	28 077	32 000	29 938	40 255	45 662	48 691	51 299	53 063	55 313	57 048	58 784	60 674
Gross cash flow	**46 857**	**56 015**	**75 657**	**94 248**	**107 793**	**123 540**	**138 981**	**151 151**	**161 829**	**171 806**	**183 217**	**188 944**
Decrease (increase) in WC	(69 876)	(56 795)	(53 673)	(28 723)	(16 136)	(10 616)	(12 736)	(11 675)	(13 973)	(6 463)	(7 199)	(10 675)
Less: Changes in net PP&E	(109 184)	(11 446)	(132 759)	(94 148)	(75 850)	(74 683)	(68 879)	(75 489)	(72 600)	(74 347)	(77 623)	(79 529)
Decrease (increase) in other assets, net of liabilities	1 880	(31)	(68)	(42)	(29)	(27)	(23)	(16)	(12)	(12)	(13)	(13)
Investment in goodwill and other intangibles	(76 139)	-	-	-	-	-	-	-	-	-	-	-
Free cash flow (FCF)	**(206 462)**	**(12 257)**	**(110 844)**	**(28 665)**	**15 778**	**38 213**	**57 343**	**63 971**	**75 245**	**90 983**	**98 382**	**98 726**

Consistent with the new support vessel's anticipated introduction in 2021 and a consequent spike in revenues, we anticipate that 2020, 2021 and 2022 will result in negative free cash flows. From 2023 we expect a robust and gradual increase in FCF due to improved margins

and capitalization on scale benefits. Our forecasts lead to an FCF of USD 98.4mn as the company reaches its steady state in 2029.

6.4.2 **Forecast of return on invested capital**

Exhibit 49: *Aker BioMarine's forecasted return on invested capital*

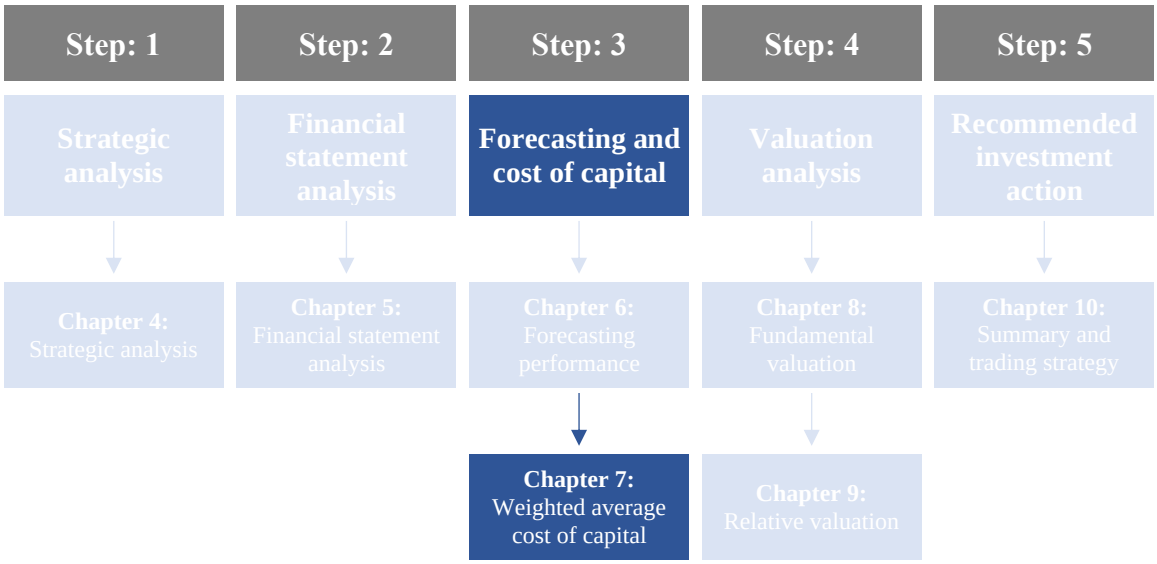
	Historical	Forecasts									CV
Percentages (%)	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Operating ratios ***(% of revenue)***												
EBITA-to-Revenue	10.1%	10.6%	14.5%	14.7%	15.3%	17.0%	18.6%	20.0%	21.0%	22.0%	23.1%	23.1%
COGS, adjusted	49.1%	47.6%	46.6%	45.7%	44.8%	43.5%	42.6%	41.8%	40.9%	40.1%	39.3%	39.3%
SG&A	31.1%	30.0%	30.5%	30.3%	30.3%	30.1%	29.4%	29.0%	28.7%	28.6%	28.3%	28.3%
Other operating costs	1.3%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Depreciation	11.4%	10.7%	7.2%	8.3%	8.6%	8.4%	8.3%	8.2%	8.3%	8.3%	8.3%	8.3%
Special operating items	-3.0%	-	-	-	-	-	-	-	-	-	-	-
ROIC ***(% of revenue)***												
Operating working capital	50.5%	60.7%	56.7%	54.4%	52.4%	50.1%	49.0%	48.8%	49.4%	48.9%	48.4%	48.4%
PP&E, incl. Leases	129.6%	100.0%	96.9%	93.9%	91.0%	88.2%	85.4%	85.4%	85.4%	85.4%	85.4%	85.4%
Other receivables	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Invested capital/Revenue	180.1%	160.8%	153.7%	148.3%	143.5%	138.3%	134.4%	134.3%	134.9%	134.4%	133.9%	133.9%
Capital turnover (ex. goodwill)	0.56	0.62	0.65	0.67	0.70	0.72	0.74	0.74	0.74	0.74	0.75	0.75
Pre-tax ROIC (ex. goodwill)	5.6%	6.6%	9.4%	9.9%	10.7%	12.3%	13.9%	14.9%	15.6%	16.4%	17.3%	17.3%
Operating taxes on EBITA	24.8%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%
After-tax ROIC, ex. goodwill	**4.2%**	**5.0%**	**7.2%**	**7.5%**	**8.1%**	**9.3%**	**10.5%**	**11.3%**	**11.9%**	**12.5%**	**13.1%**	**13.1%**
After-tax ROIC, incl. goodwill	**3.0%**	**3.7%**	**5.7%**	**6.2%**	**6.9%**	**8.0%**	**9.1%**	**9.9%**	**10.5%**	**11.1%**	**11.8%**	**11.8%**

Since Aker BioMarine has not created value historically, our forecasted ROIC differs significantly from that of the historical ROIC that we presented in chapter 5. Consequently, the future ROIC will proliferate in line with our projections of the effect on future financial coming from the shift from intensive growth to the production of higher-margin products and overall increased profit margins. In the longer term, we believe that the firm, in its steady state, will trend toward the industry ROIC. This is consistent with the argumentation that we provided in the strategic analysis and our assessment of its future financial growth potential. The improvement of ROIC in 2020 is limited to reflect the latest information and guidance that Aker BioMarine has released so far for 2020 financials.

To be clear, while one may claim that high growth projections such as the ones forecasted are not correlated with growth in profit margins, we argue that this is not entirely the case for Aker BioMarine. This is predominantly linked to one structural part of Aker BioMarine's business model, that is, that a vast portion of costs is fixed. According to the company itself, fixed costs make up ~65% of costs. Therefore, once scale is achieved on investments, the firm is expected

to deliver significantly improved returns. Furthermore, the company has stated that it is near fully invested and that the firm is now in an ideal strategic position to extract the full financial benefits of these investments in the coming years.

7. Aker BioMarine's Cost of Capital



This chapter will present the frameworks used in the analysis of Aker BioMarine's cost of capital. The chapter introduces fundamental theories for capital cost before discussing key elements that affect Aker BioMarine's cost of capital, such as the risk-free rate, market risk premium, equity beta, and liquidity premium. Finally, we will calculate the different beta values and capital costs to compute the weighted cost of capital for Aker BioMarine. The costs of capital estimated in this chapter will serve as the discount rate for the valuation analysis in the subsequent chapters.

The capital cost should reflect the returns an investor should expect to achieve with a similar investment with equal risk (Dahl et al., 1997). The return should compensate for inflation, the time value of money, and the risk associated with the investment itself (Kaldestad et al., 2016). The cost of capital may be utilized in two different ways, either as a measure of profitability or as the discount rate in a valuation. If employed as a measure of profitability, a company's profitability will be measured based on the return of equity being more significant than the cost of capital (Knivsflå, 2020c).

7.1 Framework for cost of capital

7.1.1 **Theories for costs of equity**

There are several models one can utilize to estimate a company's cost of equity. The most common forms are factor models and the single-index model. We will briefly present the different factor models, but the focus will be on the single-factor model.

7.1.2 **Factor models**

The factor models are characterized such that investors only are compensated for systematic risk. Therefore, investors should only expect to be compensated for carrying the non-diversifiable risk, not firm-specific risk. The factor models incorporate macroeconomic, fundamental, and statistical factors to determine the market equilibrium and calculate the required return rate. There are primarily two types of factor models: single factor and multiple-factor models.

Single-factor model

In perfect capital markets, a particular factor model is called the capital asset pricing model ("CAPM"). Perfect capital markets meaning the investors have diversified all firm-specific risk, and only being compensated for the systematic risk (Knivsflå, 2020c). CAPM is one of the most implemented models for estimating equity return, and it assumes that all investors are well-diversified and utility-maximizing.

$$r_E = r_f + \beta\left[E(r_m) - r_f\right] \qquad \textit{Eq.16}$$

Where, r_f = *Risk-free rate at time t*

r_m = *Return on the market portfolio at time t*

β = *Beta (systematic risk)*

The estimated return of equity is the return rate an investor would acquire with a risk-free investment plus a premium for the systematic risk. The company's beta, which is the market sensitivity, represents what systematic risk premium the investor should require in addition to the risk-free rate. Thus, the beta value may be interpreted as a relative measure of the systematic risk by investing in the company's equity.

The beta is expressed as the covariation between the company's return and the market portfolio multiplied by its relative volatility compared with the market portfolio. The beta of the market portfolio is 1, while the beta value of a risk-free investment is 0 (Knivsflå, 2020c).

$$Equity\ Beta = \frac{Var(r_m)}{Cov(r_i, r_m)} \qquad Eq.17$$

Where, $Var(r_m)$ = *Variance of the market portfolio*

$Cov(r_i, r_m)$ = *Covariance between the market portfolio and the selected company*

Multiple factor models

The multiple-factor models come in many forms and variants, but we will present the two most renowned and employed models in asset pricing.

Fama and French's three-factor model

One of the most adopted multiple factor models is Fama and French's three-factor model. The asset pricing model from 1992 expands the CAPM by adding both size risk and value risk factors to the systematic market risk. The model incorporates the fact that both value- and small-cap stocks often outperform the market. When these two factors are integrated, the model adjusts for these outperforming tendencies, which is better to evaluate asset managers' performance further.

$$r_i - r_f = \alpha it + \beta 1\left(r_m - r_f\right) + \beta 2SMB + \beta 3HML + \epsilon it \qquad Eq.18$$

Where, r_i = *Total return of stock i at time t*

r_f = *Risk-free rate at time t*

r_m = *Return on the market portfolio at time t*

$r_i - r_f$ = *Excess return*

$r_m - r_f$ = *Excess return on the market portfolio*

SMB = Size premium (small minus big)

HML = Value premium (high minus low)

β1,2,3 = Factor coefficients

The model suggests that companies with returns correlated with small stocks or high book-to-market value stocks will be given a risk premium. Even though the model may have better explanatory power than the CAPM, it has its shortcomings.

The three-factor model is based on US empirical evidence but does not have a better theoretical grounding than the CAPM. Secondly, as the model uses factor coefficients to calculate the different risk premiums in the model, finding this beta for three different factors is quite complicated as one runs into circular calculation problems (Koller et al., 2020). When different calculations are conditional on each other, it makes the estimates challenging to compute accurately.

Arbitrage pricing theory ("APT")

The APT model the second multi-factor model we are presenting. The idea behind it is based on the concept that an asset's returns can be predicted using the linear relationship between the asset's expected return and several macroeconomic variables that adequately capture the market's systematic risk (Bodie, Kane, & Marcus, 2018):

$$E(r_i) = E(r_f) + \big(E(i) - E(r_f\big) \times \beta_n \qquad \textit{Eq.19}$$

Where, $E(r)_i$ = *Expected return on the stock*

r_f = *Risk-free rate at time t*

β_n = *Sensitivity of the stock price to macroeconomic factor n*

E(i) = Risk premium associated with factor i

As the model opens for multiple factors, it is difficult to determine the appropriate number of factors and the model's factors. The model itself appears quite sophisticated and reliable, but the above-mentioned "flaws" make the implementation of the model challenging.

7.1.3 **Choice of the model when estimating the cost of equity**

To approximate a reasonable estimation of the cost of equity for Aker BioMarine, we will employ an extended version of the CAPM that includes a liquidity premium. The liquidity premium is added to the cost of equity, and the size of the premium depends on three conditions: the degree of market failure, degree of illiquidity, and firm-specific risk. The premium intends to compensate the investors for illiquidity risk, which is not compensated in the traditional CAPM. As there is no simple theory or framework to compute the correct liquidity premium, the premium will be estimated with a discretionary approach (Knivsflå, 2020c). Aker BioMarine is now publicly traded on Merkur Market, which makes the stocks easily tradeable.

On the other hand, it is less liquid than the stocks on Oslo Børs main list. Merkur Market only requires 30 different shareholders, while Oslo Børs requires 100, and the free float is also lower than what is required on Oslo Børs.

Lastly, the firm-specific risk with Aker BioMarine is slightly higher than what we expect from the public companies at Oslo Børs. All these elements are pulling in the direction of a liquidity premium. The ownership structure is concentrated as Aker Capital AS owns 77.8% and is the only owner with above 1.5% ownership, with the remaining 22.2% free float (Aker BioMarine, 2020a). The remaining shareowners hold an insignificant stake in the company and will have little influence regarding dividend policy, investments, and critical strategic decisions. We, therefore, deem the stock to be slightly less liquid than other companies with dispersed ownership. The significant degree of ownership concentration will increase the risk that the minority will be locked with illiquid stocks (Rubin, 2007).

We also consider the firm-specific risk related to Aker BioMarine to be above-average, and investors should be compensated for that. Aker BioMarine just became public recently and has disclosed limited previous financial information. Consequently, we believe a liquidity premium are required.

$$r_E = r_f + \beta\left[E(r_m) - r_f\right] + \boldsymbol{\lambda} \qquad \textit{Eq.20}$$

Where, λ = *Liquidity premium*

Risk-free rate ("Rf")

The risk-free interest rate is the hypothetical return an investor can expect without taking on risk. If an investment does not give a higher expected return than the risk-free interest rate, it will make more sense to allocate capital to a risk-free return. Government bonds or NIBOR rates are often used as measurements of risk-free interest rates in the Norwegian market, and international companies often utilize US government bonds as the risk-free rate. In theory, risk-free interest rates should be free of both bankruptcy and default risk, but this is rarely met in practice. Further, the risk-free rate should be in the same currency as the company's cash flows are estimated**.**

Not all government bonds can be labeled as risk-free, and some even have high default risk. Koller et al. (2020) claim that 10-year government bonds are more liquid than 30-year government bonds and contain a lower reinvestment risk.

Reinvestment risk will arise if the investor's actual return deviates from the expected return. The factors mentioned above indicate that neither Norwegian government bonds nor the Norwegian interbank overnight rate ("NIBOR") alone may be suitable as proxies for the risk-free rate.

When using the Norwegian government bonds, we must deduct the risk premium corresponding to an AAA rating, the Norwegian bonds rating (World Government Bonds, 2020). If one uses the NIBOR rate, a deduction must be made by the risk premium based on the average credit rating of the banks operating in Norway, which is AA. (Knivsflå, 2020d). Both advantages and disadvantages with the deployment of both governments' yields and NIBOR rates should be discussed before deciding what interest rate we use in the analysis.

Knivsflå (2020d) argues that the three-month ("3M") NIBOR rate may be utilized to measure the risk-free rate. The 3M NIBOR is short-term fixed-income security that is virtually risk-free instead of investing in long-term government securities, where an investor or company risks impairment. The 3M NIBOR is profoundly affected by current monetary policy and will be exposed to more fluctuations than the long-term interest rate. As a result, the required rate of return will be more volatile. This implies that the government bonds may be more suitable as the long interest rates vary less than short-term rates and provide a more stable return rate. However, the downside is that it can be embedded both a liquidity premium and a premium for inflation risk, which indicates that the long interest rate is not risk-free (Kaldestad et al., 2016). We decided to utilize the US government bond in combination with the Norwegian to proxy the normalized long-term risk-free rate. The method is further discussed later in the chapter.

Market risk premium ("MRP")

Berk & DeMarzo (2020) define MRP as the excess return of the risk-free rate an investor can get by investing in the market portfolio. Mathematically, MRP can be derived as the difference between the expected returns in the market portfolio minus the risk-free rate. There are two standard alternatives for calculating the MRP, where Berk & DeMarzo (2020) advocate using the average MRP's historical data. Different methods for calculating the MRP have given rise to different answers to the historical MRP, but the common denominator is that the US stock market has been used as a basis for the surveys.

Koller et al. (2020) contend that the US stock market may be characterized by survivorship bias as it historically has given large excess returns compared to similar countries. For the same reason, many recommend deducting this premium when determining a forward-looking MRP, assuming the US stock market will not replicate its excess return relative to other countries.

The second method for determining the MRP is based on questionnaires about the future MRP. This method's strength is that it provides an impression of what professional industry players envisage in the time ahead and that the premium reflects the expected future returns rather than the historical ones. It should be mentioned that the estimates that emerge in these surveys are very likely to be characterized by historical data. This implies that the estimations that emerge will, to a greater extent, indicate what practitioners use, rather than what the "true" MRP will be. PwC (2019) conducts an annual survey called "Risikopremien i det norske markedet," and is based on professional investors' opinions in the Norwegian Association of Financial Analysts ("NFF").

Lastly, it is conceivable that companies operating in emerging markets will be exposed to various market risk types. It is, therefore, standard for a surcharge founded on a land-based risk premium. It is stated in the annual report of Aker BioMarine for 2019 that the group primarily has activities in the Antarctic waters and the US Collected data presented by Damodaran (2020b) show that the US, like Norway, is AAA-rated, which also indicates that you do not need a surcharge for land-based risk when operating. It is therefore considered reasonable not to impose a land-based risk premium in Aker BioMarine's case.

Systematic risk (β)

The CAPM uses the beta to measure the systematic risk of security concerning the aggregate market portfolio. Systematic risk, in turn, can be described as a non-diversifiable risk. In the CAPM world, only this type of risk can an investor require a return on, as unsystematic risk can be diversified away by holding a broad portfolio. The market portfolio is defined in theory as all accumulated assets, i.e., both listed and non-listed assets. In practice, this is problematic because securities that are not listed on the stock exchange are not traded on public platforms available to the public. Therefore, practitioners and theorists lean towards measuring the covariation of a stock against a broadly diversified portfolio.

The main index at Oslo Børs may be an alternative, but considering how exposed the index is to energy, it can be argued that the index is not to be described as "broadly diversified." Therefore, other alternatives can be the S&P500 or MSCI World Index, although S&P can also be heavily weighted towards a specific sector, such as technology. If a regression beta, often referred to as the equity beta, is greater than 1 it indicates that the security's share price has fluctuated more than the market index.

Similarly, a stock with an equity beta <1 have historically softer fluctuations, while a beta value <0 will suggest that companies are countercyclical and therefore move in the opposite direction of the market - within the period in which the regression analysis has been carried out. We distinguish between two types of betas: the equity beta (levered beta) and the asset beta (unlevered beta). The company's equity beta measures the market risk to the company when the capital structure is considered, whilst the asset beta reflects the risk on the company's investments without considering debt. Therefore, the company's asset beta will only reflect the risk based on its operations, without risk-adjusting for the effect of debt.

Many practitioners and theorists prefer an industry approach to determine the asset beta to overcome the high standard deviations associated with individual companies' equity beta. In practice, the method is based on the fact that similar companies will face much of the same investment risk and that their margins of error will be neutralized as long as the data sample is large enough. By stripping each company of its respective capital structure, one can compare the asset beta to similar industry companies. Based on an average or median value, one can then adjust the investment beta based on the capital structure, which results in an equity beta that can be installed in the CAPM.

We can calculate the equity beta through the following formula when we assume that the debt beta of the company is 0:

$$\beta_e = \beta_a \times \left[1 + (1 - t) \times \left(\frac{D}{E}\right)\right] \qquad \textit{Eq.21}$$

Where, β_a = *Asset beta*

t = *Marginal tax rate*

D = *Debt*

E = *Equity*

Marshall Blume (1975) presented empirical indications that the company's regression beta tends to converge towards the market beta of 1, from a long-term perspective. It may, therefore, make sense to adjust the equity beta. Adjusting the equity beta will reflect a long-term perspective, and its validity will be more correctly compared to the expected future equity beta. The adjustment factor is calculated as follows:

$$Blume\ Adjusted\ \ Equity\ Beta = \beta_e \times \left(\frac{2}{3}\right) + \left(\frac{1}{3}\right) \times 1 \qquad Eq.22$$

It may also be essential to discuss the intuition behind why companies' equity beta tends towards the market. Companies that mature over time, as a rule, become more diversified. If it is not expected that the company will achieve a more diversified product portfolio over time, we can reject this adjustment.

7.1.4 Theories for costs of debt

The cost of a company's debt tells us how much interest companies pay to finance their investments and assets. A company's perceived default risk is central in assessing the debt cost. Creditors will demand higher compensation for lending capital if the perceived default risk to the counterparty increases. Default risk is a combination of **(i)** a company's ability to generate operating cash flows and how highly levered the company is, and **(ii)** the volatility of the company's cash flows.

The former is based on the premise that companies with low default risk are expected to generate a cash flow that exceeds their financial obligations. Volatility in the same cash flows also plays a role, as companies with a stable operational cash flow will have a lower default risk than companies with larger fluctuations, everything else being equal. For instance, companies operating in cyclical markets such as the oil- and tank market where cash flow depends on oil prices and tank rates, will have a higher default risk than companies in stable markets, such as real estate and the healthcare sector.

The first method suitable to estimate the cost of debt is the long-term yield of straight bonds issued by a company. This method is appropriate for investment-grade corporate debt, which is BBB+ or higher, since only a small chance of default on these bonds (Koller et al., 2020).

Nevertheless, these bonds may include a premium for the reinvestment risk as earlier cited, but Koller et al. (2020) still argues that it is insignificant for investment-grade companies due to the low probability of default.

The second method used is to look at the industry to estimate the costs when the above method is inappropriate. The industry standard for calculating the cost of debt for a company is by looking at the bonds' credit rating or yield-to-maturity ("YTM"). If this is unobservable for a company, Damodaran (2020a) proposes calculating a synthetic credit rating that reflects the company's solvency and proposes in this context to use the interest coverage ratio as a starting point. The formula for the interest coverage ratio ("ICR") can be calculated as:

$$Interest\ Coverage\ Ratio = \frac{EBIT}{Interest\ payments} \qquad Eq.23$$

With the ICR ratio, Knivsflå (2020c) suggests that the equity ratio is applicable when estimating the synthetic credit rating. Companies with significant leverage are riskier investments than underleveraged companies. Thus, it is insightful to include the equity ratio in the analysis as the debt cost should reflect the risk associated with the investment. The company's interest coverage ratio and equity ratio can be assigned a synthetic credit rating as a mark-up on the borrowing cost over risk-free interest. We can therefore calculate the company's cost of debt as:

$$Pre-tax\ cost\ of\ debt = gross\ r_f + Credit\ default\ spread \qquad Eq.24$$

7.1.5 The weighted average cost of capital

The capital cost tells us what the debt and equity investors should demand compensation for incurring associated risks. If a company is financed with both debt and equity, it would be instinctive to use a weighted average of both the cost of equity and debt. In short, the WACC consists of three different components: **(i)** the company's objective and market-based capital structure, **(ii)** the cost of equity, and **(iii)** the cost of debt, adjusted for taxes, respectively. To calculate WACC, we utilize the following formula:

$$WACC = \left[\frac{E}{(D+E)} \times r_E\right] + \left[\frac{D}{(D+E)} \times r_d \times (1-t)\right] \qquad Eq.25$$

7.2 Calculations of costs of capital

7.2.1 **Estimation of the cost of equity**

The cost of equity will be calculated based on the CAPM and a liquidity risk premium. The CAPM elements consist of the risk-free rate, the market risk premium, and equity beta, and we will present the estimation of these values in the coming subchapter.

Risk-free rate

To estimate the future risk-free, we deploy the framework presented by Knivsflå (2020d), with the elements of a Norwegian 10-year bond, US 30-year bond, and 3M NIBOR. It is expected that the risk-free rate in the long-term will converge toward the average, and in a steady state, be constant (Knivsflå, 2020d). Today's interest rates are significantly below the historical average, making it challenging to forecast the risk-free rate. Since the historical average is substantially larger than today's level, it is plausible to expect that the interest will increase as the economy recovers from the pandemic. It is expected to increase to ~2.00% in the medium term, before normalizing at ~3.00% in the long-term (Knivsflå, 2020d). To estimate a "normal" risk-free rate, we weight the 3M NIBOR 2/3, and the average of a Norwegian 10-year bond and US 30-year bond with 1/3.

$$Rf = \left(\frac{2}{3}\right) \times (Average\ 3M\ Nibor) + \left(\frac{1}{3}\right) \times \frac{(10yNorwegianbond + 30yU.SBond)}{2} \qquad Eq.26$$

The estimated average of 3M NIBOR between 1996 and 2019 is 3.5%, and the average of the two bonds are 1.9%, providing a normal long-term interest rate to be 3.0%. We decided to implement the bond yields from November 2019, as the COVID-19 caused all interest rates (yields) to plummet, distorting the long-term estimation. If the risk-free rate in the steady state is artificially low, the other costs of capital will also be affected by this, which would affect the final valuation of Aker BioMarine.

Nonetheless, what exemplifies that the projected interest rate is adequate, is that the financing cost is fundamentally higher than long government security yields. Long government security yields are relied upon to give a good sign of how the interest level will develop over the long haul. This way, it is close to guaranteeing that a gross risk-free rate of 3.0% in a steady state can be safeguarded.

Further, to calculate the risk-free rate after tax in the forecasting, it is essential to predict its future tax rate and the Norwegian banks' risk premium. We have no indications that lead us to believe there will be changes in the statutory tax rates, therefore we project it to be fixed at 23% during the whole period. Lastly, we assume that the banks' average credit rating of AA will be constant during the whole period (Knivsflå, 2020d).

Exhibit 50: *Risk-free rate forecasting*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
3M NIBOR	0.51%	0.83%	1.32%	1.86%	2.01%	2.15%	2.35%	2.57%	2.78%	2.93%	3.00%
Credit premium (AA)	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Gross risk-free rate	**0.01%**	**0.33%**	**0.82%**	**1.36%**	**1.51%**	**1.65%**	**1.85%**	**2.07%**	**2.28%**	**2.43%**	**2.50%**
Tax (23%)	0.00%	0.08%	0.19%	0.31%	0.35%	0.38%	0.43%	0.48%	0.52%	0.56%	0.58%
Net risk-free rate	**0.01%**	**0.25%**	**0.63%**	**1.05%**	**1.16%**	**1.27%**	**1.42%**	**1.59%**	**1.76%**	**1.87%**	**1.93%**

Source: Knivsflå (2020d) and own projections

Market risk premium

It is problematic to predict how the market risk premium will develop in the coming years, and the best estimate for the future risk premium is based on the historical (Knivsflå, 2020d). Thus, we consider the current market risk premium of 5.1% to be constant in our forecasts. PwC's annual questionnaire (2019) suggests that the current risk premium is at ~5% and that there are no indications that the future risk premium will deviate significantly. Further, both Kaldestad et al. (2016) and Knivsflå (2020d) assert that the market's risk premium is likely to be constant at ~5%. Hence, we deem 5.1% to be the appropriate risk premium in all the forecasted years in the valuation.

Equity beta

To retrieve the equity beta of Aker BioMarine, we decided to use the average asset beta of the peers presented in the historical analysis, adjusted it for the capital structure of Aker BioMarine. Since the company only has been listed for a few months, there are not enough data to derive a reliable equity bet. Koller et al. (2020) suggest that the equity beta should be derived from a minimum of 60 data points with monthly returns, and Thomson Reuters' Eikon requires that the stocks have minimum been traded for 30 months to derive a reliable beta. Appendix 5 displays the regression analysis with the returns of Aker BioMarine against Oslo

Børs, whereas the implied equity beta was 0.845. The beta will neither be weighted nor included further in the analysis of Aker BioMarine as the data sample is inadequate.

Exhibit 51: *Average industry beta calculations*

Aker BioMarine - Beta calculations			
Peers	**Equity beta**	**Adjustment factor**	**Asset beta**
DSM	0.862	-0.187	0.675
Probi	0.971	-0.003	0.968
Midsona	0.790	-0.281	0.509
Glanbia	0.531	-0.166	0.365
Average industry beta			**0.629**

The equity betas were retrieved from Thomas Reuters' Eikon software and adjusted for their capital structure before arriving at the asset beta. We assume the asset beta will be constant throughout the valuation.

Exhibit 52: *Equity beta forecasting*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Asset beta	0.629	0.629	0.629	0.629	0.629	0.629	0.629	0.629	0.629	0.629	0.629
Adjustment factor	0.393	0.555	0.578	0.547	0.491	0.401	0.317	0.254	0.194	0.142	0.145
Blume adjustment	-	-	-	-	-	-0.010	-0.018	0.039	0.059	0.076	0.075
Equity beta	**1.022**	**1.184**	**1.207**	**1.176**	**1.120**	**1.020**	**0.964**	**0.922**	**0.882**	**0.848**	**0.850**

The asset beta has been adjusted for the capital structure changes every year in our forecast to find the appropriate beta for each year. The long-term equity betas are Blume-adjusted to incorporate the empirical evidence implying that all betas converge towards the beta of the market portfolio in the long haul. Since Aker BioMarine's beta is below 1, the Blume-adjustment increases the beta, and consequently the capital cost.

Liquidity premium

We deploy a liquidity premium of 4.20% in 2020, which is related to the low free float in the share and the lack of diversification in ownership. Aker BioMarine expects to be listed on the main index during 2021, so we adjust the liquidity premium to incorporate the probability. After 2022, we expect Aker BioMarine to be listed on the main index, but we still adjust the equity cost by 2.1% due to the substantial ownership concentration.

7.2.2 **Cost of equity calculation**

Based on the calculations and previous elements discussed in this chapter, it is possible to estimate the future cost of capital of Aker BioMarine. Exhibit 53 illustrates the development in the cost of equity over the forecasting period. The small fluctuations are driven by the increase in the risk-free rate and changes in the equity beta. The risk-free rate is assumed to converge towards the historical level, while the equity beta changes because of the projected capital structure changes. In the coming years, the debt will rise, which increases the risk associated with the company's equity, which investors require compensation for in the form of an enhanced required rate of return on the equity.

Exhibit 53: *Cost of equity calculations*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Risk-free	0.01%	0.25%	0.63%	1.05%	1.16%	1.27%	1.42%	1.59%	1.76%	1.87%	1.93%
Equity beta	1.022	1.184	1.207	1.176	1.120	1.020	0.964	0.922	0.882	0.848	0.850
Market risk premium	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%	5.10%
Liquidity premium	4.20%	3.45%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
Cost of equity	**9.42%**	**9.74%**	**8.89%**	**9.14%**	**8.97%**	**8.57%**	**8.44%**	**8.40%**	**8.35%**	**8.29%**	**8.36%**

7.2.3 **Estimation of the cost of debt**

Aker BioMarine's future debt costs must be rooted in the forecasted metrics and projected based on these numbers. The coming subchapter will calculate the synthetic rating of Aker BioMarine in the coming period. The synthetic rating is the foundation for the calculations of the future costs of debt. The projected rating consists of two important ratios: **(i)** interest coverage ratio and **(ii)** the equity ratio. The ratings are based on Knivsflå (2020c) and Damodaran's (2020c) thresholds for the various scores.

Exhibit 54: *Synthetic rating*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Interest coverage ratio	0.554	2.850	2.855	3.361	4.218	5.399	6.473	7.496	8.721	10.117	11.634
Equity ratio	0.552	0.466	0.456	0.470	0.497	0.547	0.604	0.656	0.714	0.773	0.769
Implied credit rating	**B**	**BB**	**BB**	**BBB**	**BBB**	**A-**	**A**	**A**	**A+**	**AA**	**AA**

Exhibit 54 illustrates the projected synthetic rating for Aker BioMarine in the period of 2020 – 2030. The healthy development can be attributed to a rapid expansion in the equity ratio and interest coverage ratio.

Bankruptcy risk

Bankruptcy risk (insolvency risk) is the likelihood that Aker BioMarine will be unable to meet its debt obligations. It is the probability of it becoming insolvent due to its inability to service the debt acquired. The credit agencies attempt to assess the bankruptcy risk through the bond rating and rating the issuers, such as we did with the synthetic credit rating. The synthetic credit rating implies that the company has the probability of 0.51% going bankrupt once it reaches the projected AA rating (Pirogova, 2019). The adjustment factor in the cost of debt estimation is to capture circumstances that should be reflected in the debt cost but are not fully considered in the synthetic rating.

7.2.4 **Cost of debt calculation**

Exhibit 55: *Cost of debt calculation*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Synthetic rating	B	BB	BB	BBB	BBB	A-	A	A	A+	AA	AA
Net risk-free rate	0.01%	0.25%	0.63%	1.05%	1.16%	1.27%	1.42%	1.59%	1.76%	1.87%	1.93%
Net risk premium	4.75%	2.70%	2.70%	1.73%	1.73%	1.54%	1.39%	1.39%	1.16%	0.77%	0.77%
Adjustment factor	3.30%	5.07%	5.00%	4.52%	3.97%	3.58%	3.18%	2.77%	2.15%	1.42%	1.20%
Cost of debt	**8.05%**	**8.02%**	**8.33%**	**7.30%**	**6.87%**	**6.39%**	**5.99%**	**5.75%**	**5.06%**	**4.06%**	**3.90%**

Exhibit 55 illustrates the projected cost of debt over the next ten years, and it is important to note that this is the net of taxes and adjusted with a premium. We consider the cost of debt to be artificially low if the adjustment factor is excluded.

The factor fluctuates with the modifications in the capital structure and the expected rise in the risk-free rate. The main driver of the increased cost of debt is the rise in the risk-free rate, which we expect to normalize over the decade. The net risk premium is obtained from Knivsflå (2020c).

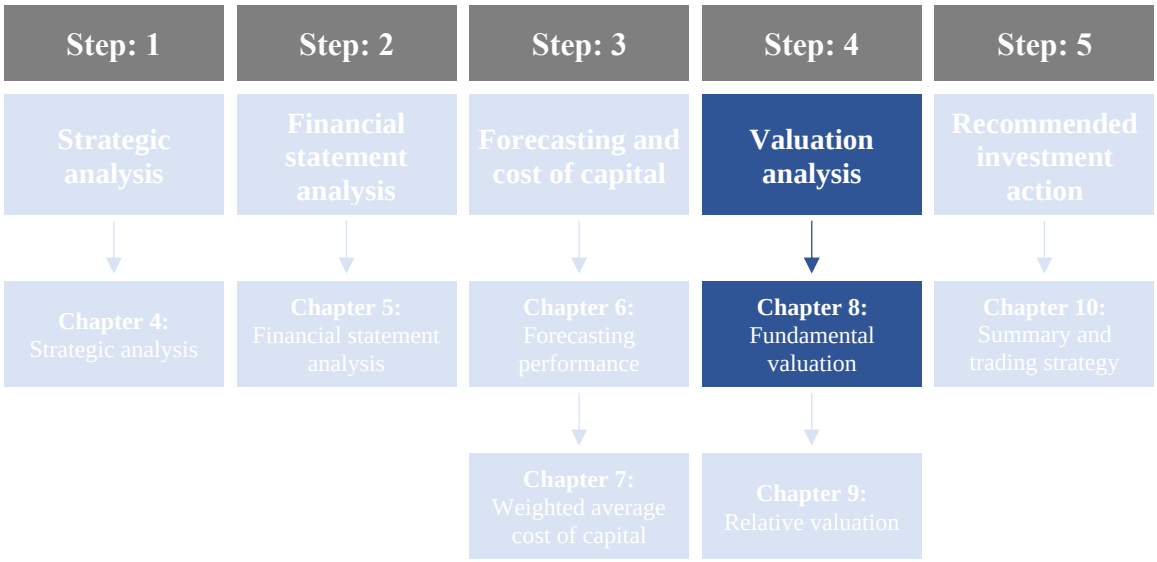
7.2.5 Calculation of the weighted average cost of capital

This subchapter had the purpose of explaining and providing calculations to Aker BioMarine's capital cost, which is positioned as the discount rate in the coming chapter. The WACC changes yearly due to significant capital structure changes in the coming years before stabilizing at the end of the forecasting period when Aker BioMarine approach its target capital structure in 2029. We believe it is necessary to have a dynamic WACC that captures the capital structure changes, such as Knivsflå (2020c) also suggests.

Exhibit 56: *Weighted average cost of capital*

	Forecast										CV
	2020E	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Cost of equity	9.42%	9.74%	8.89%	9.14%	8.97%	8.57%	8.44%	8.40%	8.35%	8.29%	8.36%
Net cost of debt	8.05%	8.02%	8.33%	7.30%	6.87%	6.39%	5.99%	5.75%	5.06%	4.06%	3.90%
WACC	**8.81%**	**8.82%**	**8.58%**	**8.17%**	**7.91%**	**7.58%**	**7.47%**	**7.49%**	**7.41%**	**7.33%**	**7.33%**

8. Fundamental valuation



The past chapters have built the foundation for the valuation of Aker BioMarine, which is presented in this chapter. Through the industry and Aker BioMarine's performance analysis, we have built projections for the cash flows that are discounted with the WACC presented in the subsequent chapter. These cash flows and economic profits are together with the WACC, the basis for this chapter, that aims to ultimately determine the fair market value of equity of Aker BioMarine as of October 30, 2020. We implement the two valuation approaches that are most suitable for this case: discounted cash flow and economic value added, both presented in chapter 3. The coming chapter illustrates step-by-step how we determine the fair market value of Aker BioMarine and finishes off with an interpretation of the results where we discuss the value drivers and the metrics' sensitivity.

The frameworks presented in chapter 3 are carried out in four separate steps. The frameworks commence with the valuation of the core operations of Aker BioMarine. We are continuing with a valuation of the non-operating assets added on the core operations' valuation, arriving at the “gross enterprise value.” Further, the non-equity claims must be adjusted to obtain the equity value. Finally, we divide the equity value with the number of outstanding shares to arrive at the fair value of Aker BioMarine's outstanding shares in Merkur Market. The coming subchapters will further dive into the frameworks and steps.

8.1 Discounted cash flow valuation

8.1.1 **Valuation of Aker BioMarine's core operations**

The previous chapter presented the computation to obtain the different WACC rates of Aker BioMarine, while chapter 6 presented the projection of future cash flows. Exhibit 58 illustrates the projections of the cash flows generated by the core operations of Aker BioMarine, together with the discount factor. The forecasts are presented in chapter 6, but we now include the discount factors to show the present value of these future cash flows. We expect Aker BioMarine to reach a steady state in 2029; while 2030 will be the continuing year in the valuation. The three components in the continuing year make up ~90% of the total value of Aker BioMarine; therefore, the free cash flow and WACC must be normalized without any abnormal growth rates. If not, it will overestimate (underestimate) the value of Aker BioMarine.

The free cash flows in CV are projected to be USD 98.73mn, without any abnormal items, and our WACC is estimated to be 7.33%. Knivsflå (2020d) stresses that a company's growth cannot exceed the global economy's expected growth. This is because if the company grows faster than the global economy, it will eventually become the global economy. This assumption is unrealistic, and the growth must therefore be realistic. The expected growth in the global economy consists of two elements: **(i)** the expected growth in the real economy and **(ii)** the expected global inflation. The latter is estimated to be 2.0%, whilst the former at 3.0%. The absolute maximum growth perpetuity of the company may be set to 5.0%. However, we do consider a perpetual growth rate of 5.0% to be overestimating the value of Aker BioMarine. We have estimated a perpetual growth rate of ~3.1% to be satisfactory in the continuing year.

The combined present value of all cash flows from core operations between 2020 and 2029, plus the continuing value is equal to USD 1 233.62mn. The estimates from 2020 are the reported numbers from Q1 to Q3 added on our estimates for Q4 to arrive at 2020 estimates. The cash flows are also mid-year adjusted, as we do not want to unfairly penalize Aker BioMarine as the cash flows occur steadily throughout the year. Without the adjustment, all cash flows would be treated in the end-year, but the adjustment assumes the cash flows occur in the middle of the year instead.

8.1.2 **Valuation of non-operating assets**

The second step in the valuation framework is to estimate the value of the non-operating assets to obtain the gross enterprise value, consisting of both the value of core operations and non-operating assets. Aker BioMarine is expected to have excess cash of ~USD 6.23mn in 2020, in addition to a minor equity post of USD 0.26mn. It is problematic to adjust the equity post to find the market value of the equity as it should be, but as the post is insignificant, we consider it not to impact the valuation of Aker BioMarine. The combined market value for all of Aker BioMarine's non-operating assets is approximated to be USD 6.47mn, implying a gross enterprise value of USD 1 240.08mn. The market value of debt is calculated as in *Eq.27*.

$$Market\ value\ of debt = C\left[1 - \left(\frac{1}{(1+Kd)^t}\right)\right] + \left[\frac{BV}{(1+Kd)^t}\right] \qquad Eq.27$$

Where, *C = interest expense*

Kd = Cost of debt

t = Weighted average maturity

BV = Book value of debt

Exhibit 57: *Aker BioMarine's market value of debt*

All values in USD thousands	
Aker BioMarine	**Book values**
Current debt	47 591
Non-current debt	197 473
Interest expense	28 144
Cost of debt	8.05 %
Total debt	245 064
Weighted average maturity	8.25
The market value of debt	**294 428**

After the gross enterprise value has been estimated, we need to correct non-equity claims in Aker BioMarine before arriving at the total equity value. The determinations of the book values of debt and other non-equity claims were presented in the previous chapter, and so it only needs to be adjusted to find the book values' market values. The total borrowings of Aker

BioMarine are estimated to be USD 245.06mn, with other non-equity claims being at USD 51.82mn. To estimate the debt's market value, one can think of the interest-bearing debt in the books as a single coupon, and the coupon should be equal to the interest expenses on all the debt with a maturity weighted on the debt. The current interest-bearing debt is assumed to have a maturity of one year, while the non-current is assumed to have ten years to maturity. Finally, after adjusting the book values to estimate the market values, the debt value increases to USD 294.43mn.

Exhibit 58: *Absolute valuation of Aker BioMarine using the Discounted Cash Flow model*

All values in USD thousands				
Forecast year	**Free cash flow**	**NOPAT**	**Discount factor**	**PV of FCF**
2020E	(12 257)	24 015	0.919	(11 264)
2021E	(110 844)	45 719	0.845	(93 614)
2022E	(28 665)	53 994	0.778	(22 296)
2023E	15 778	62 131	0.719	11 345
2024E	38 213	74 849	0.666	25 464
2025E	57 343	87 682	0.619	35 518
2026E	63 971	98 088	0.576	36 869
2027E	75 245	106 516	0.536	40 345
2028E	90 983	114 758	0.499	45 420
2029E	98 382	124 433	0.465	45 760
Continuing value	98 726	128 270	0.465	1 085 242
PV of mid-year adjustment				34 829
The present value of core operations				**1 233 617**
Excess cash				6 225
Other financial assets				-
Investments in equity-accounted investee				240
Gross enterprise value				**1 240 081**
Less: Value of debt and capital leases				(294 428)
Less: Other non-equity claims				(51 823)
Less: Value of non-controlling interests				-
Equity value				**893 831**
Shares outstanding				87 586
Value per share (USD)				10.21
NOK/USD as of October 30, 2020				9.48
Value per share (NOK)				**96.74**

After correcting and adjusting for non-equity claims, the value of shareholder's equity and the fair market value is estimated to be USD 893.83mn, as illustrated in exhibit 58**.** We estimate the fair market value of a share of Aker BioMarine as of October 30, 2020, is **NOK 96.74**. This valuation implies that the stock is undervalued as it traded at NOK 82.00, indicating a potential upside of **17.98%.**

8.2 Economic value added

The economic value added approach is a measure of Aker BioMarine's financial performance based on the residual wealth derived from the deduction of the WACC from the operating profit, adjusted for taxes on cash. The framework attempts to capture the actual economic profit of Aker BioMarine to assess whether an organizational value was created or lost. The idea behind the framework is to investigate whether the return on capital invested exceeds the costs of capital, which is useful in capital intensive industries such as Aker BioMarine operates in. There are three common pitfalls one should be aware of when adopting the framework that Koller et al. (2020) describes.

i. The importance of using the invested capital from the beginning of the year, instead of averages or mid-years values.

ii. The invested capital for ROIC and economic profits must be defined by the same metric, either with or without goodwill. If consistent, it will lead to identical results with the DCF approach.

iii. The implementation of the same WACC in all projections, which is also consistent with our DCF approach.

Exhibit 59 illustrates the value of Aker BioMarine's core operations based on the EVA framework. The framework should provide the same results derived from the DCF approach, as clarified before. We project the ROIC to significantly exceed the cost of capital, providing Aker BioMarine a joyful growth. As with the DCF, a substantial part of the value creation is in the continuing year. Using the EVA frameworks, the gross enterprise value provides the same core operations as the DCF. As of October 30, 2020, the core operations' value is estimated to be USD 1 233.62mn**.** Similarly, as with the DCF, we must adjust for the non-operating assets before arriving at the gross enterprise value.

Exhibit 59: *Absolute valuation of Aker BioMarine using the Economic Profit model*

All values in USD thousands						
Forecast year	**ROIC***	**WACC**	**Invested capital***	**Economic profit**	**Discount factor**	**PV of EP**
2020E	5.42%	8.81%	443 448	(15 053)	0.919	(13 835)
2021E	9.53%	8.82%	479 719	3 416	0.845	2 885
2022E	8.49%	8.58%	636 282	(599)	0.778	(466)
2023E	8.64%	8.17%	718 940	3 395	0.719	2 441
2024E	9.78%	7.91%	765 294	14 317	0.666	9 541
2025E	10.93%	7.58%	801 929	26 871	0.619	16 644
2026E	11.79%	7.47%	832 268	35 897	0.576	20 689
2027E	12.29%	7.49%	866 385	41 646	0.536	22 330
2028E	12.78%	7.41%	897 656	48 271	0.499	24 097
2029E	13.50%	7.33%	921 431	56 906	0.465	26 468
Continuing value	13.54%	7.33%	947 482	58 833	0.465	644 547
PV of mid-year adjustment						34 829
Invested capital in 2019						443 448
The present value of core operations						**1 233 617**
Excess cash						6 225
Other financial assets						-
Investments in equity accounted investee						240
Gross enterprise value						**1 240 081**
Less: Value of debt and capital leases						(294 428)
Less: Other non-equity claims						(51 823)
Less: Value of non-controlling interests						-
Equity value						**893 831**
Shares outstanding						87 586
Value per share (USD)						10.21
NOK/USD as of October 30, 2020						9.48
Value per share (NOK)						**96.74**

**Excl. goodwill*

The final step is to adjust for the debt and other non-equity claims to obtain shareholder's equity. Our estimates from the EVA framework provides the same results as the DCF, valuing Aker BioMarine at **NOK 96.74** as of October 30, 2020.

8.3 Sensitivity analysis

The entire valuation chapter concludes with sensitivity analyses. The tool is installed to analyze how the independent variables' different values affect our final valuation under the set conditions. The sensitivity analysis is instrumental when output is an opaque function of several inputs and makes the relationship between the inputs and outputs easier to understand. Our estimation of Aker BioMarine's fundamental value has required numerous assumptions about its future performance and development. The sensitivity analysis illustrates how sensitive the obtained stock price is to these changes.

8.3.1 **Sensitivity analyses of input factors**

The cost of capital and the growth rate are the two most common elements to adopt in a sensitivity analysis, as they significantly impact the company's continuing value. The WACC consists of three unique elements that rely on assumptions and projections, and possible deviations illustrated in the sensitivity analysis and the growth rate. A change in the WACC may occur due to one of these three main reasons:

i. The cost of equity consists of three elements; the beta, return on the market portfolio, and the risk-free rate. The proportion of equity in Aker BioMarine is high; consequently, the cost of equity will significantly impact the WACC.

ii. If the cost of debt increases, so will the WACC, ceteris paribus. Hence, changes in the cost of debt are likely to affect the market value of Aker BioMarine, which again affects the debt-to-equity ratio used in the WACC calculations.

iii. A change in the target capital structure will change the debt-to-equity ratio, which changes the WACC, provided that the cost of debt- and equity is unaffected.

A sensitivity analysis of the continuing growth rate is also implemented, as much of the enterprise's value will be derived from this input. As discussed above, the realistic growth rates lie between 0~5%, and the input installed should reflect the realistic assumptions about

growth. As we utilized a 3.08% rate, it is useful to investigate how different growth rates affect the stock price's final estimation.

Exhibit 60 illustrates how the fair market price per share would change based on different growth- and WACC rates. The difference between the best and worst cases is ~510%, demonstrating how sensitive the estimated price is to these inputs.

Exhibit 60: *Sensitivity analysis – CV growth rate vs. CV WACC*

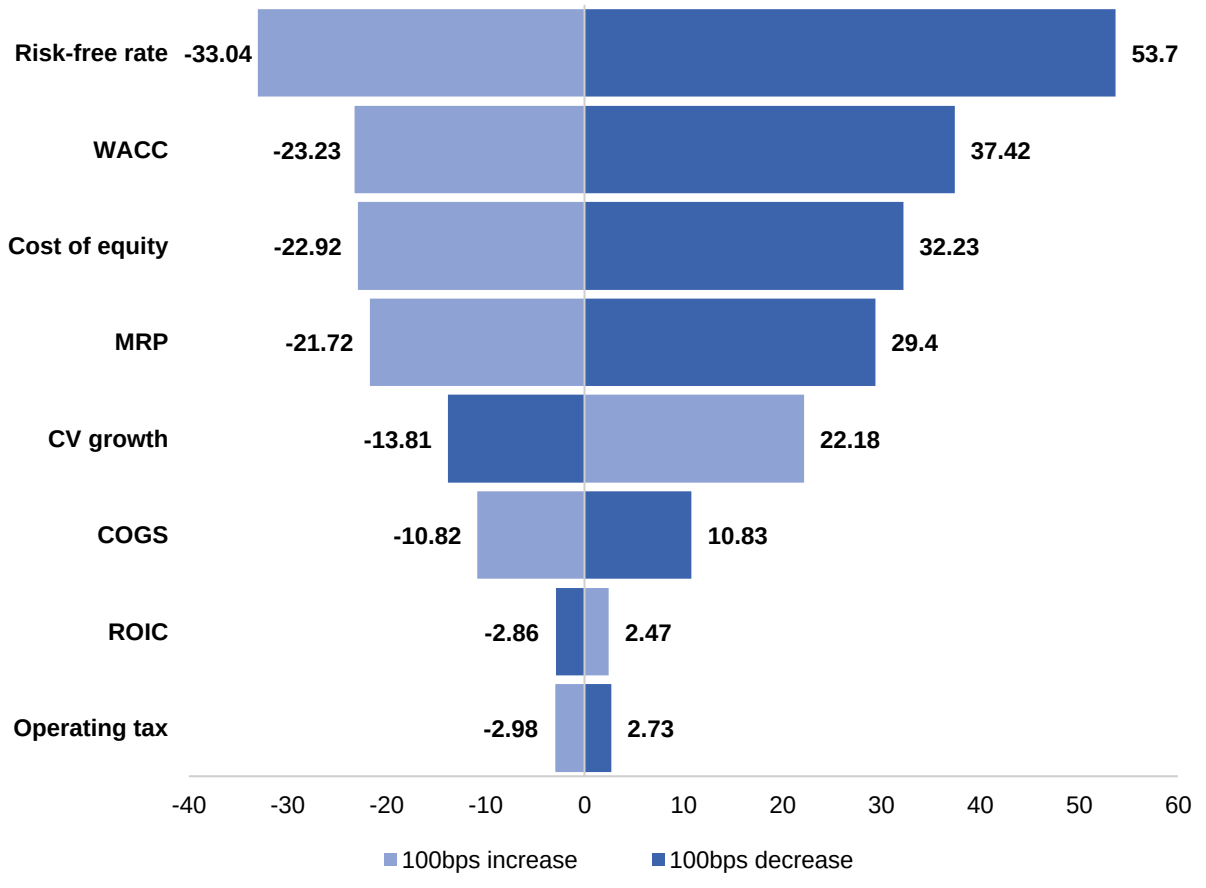
WACC	Share price	Growth rate						
		1.6 %	**2.1 %**	**2.6 %**	**3.1 %**	**3.6 %**	**4.1 %**	**4.6 %**
	5.8 %	114.53	126.83	142.98	164.22	197.29	248.41	342.14
	6.3 %	99.59	108.65	120.15	134.67	155.96	186.06	233.88
	6.8 %	87.52	94.33	102.76	113.06	127.54	146.81	174.83
	7.3 %	77.57	82.77	89.07	**96.74**	106.08	119.82	137.65
	7.8 %	69.22	73.23	78.01	83.60	91.00	100.12	112.09
	8.3 %	62.12	65.23	68.90	73.10	78.56	85.11	93.44
	8.8 %	56.00	58.43	61.25	64.44	68.51	73.30	79.23

In addition to the sensitivity analysis of CV growth and WACC, we deployed a tornado analysis, including six more variables that affect the valuation of Aker BioMarine. The illustration in figure 37 displays how the share price changes with a 100bps decrease (increase) in the different variables.

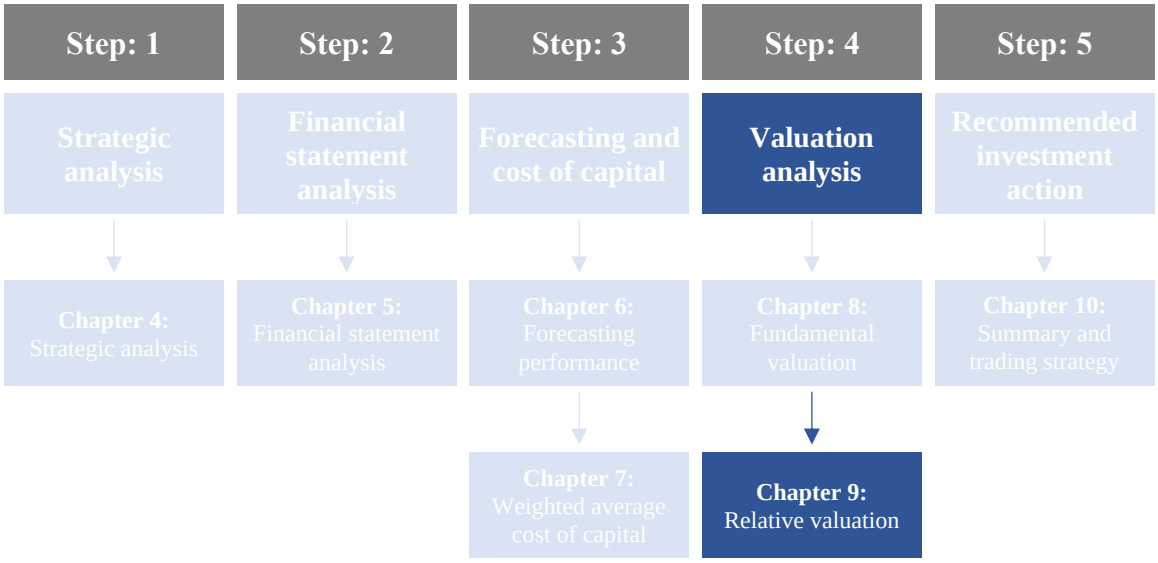
The variable that affects the price estimate the most is the risk-free rate. The estimation of the net risk-free rate is 1.93% in the CV, such that an increase (decrease) of 100bps would pose a change in the risk-free rate of ~52%. This rate is also one of the most ambiguous variables, as the interest rates are problematic to forecast. Thus, it is essential to demonstrate the effects of the risk-free rate on a 100bps change. Further, the cost of equity has been estimated through comparable firms' asset beta and adjusted for the projected capital structure, making it susceptible to any changes in the equity beta. The market risk premium is also assumed to be 5.1%, which is in line with Knivsflå (2020d). However, if it were to change with 100bps, it would significantly impact the price. All the mentioned factors have an enormous impact on the valuation through the WACC. The ROIC is an element in the final discount rate to find the appropriate discount rate in the continuing value. The ROIC is estimated to be ~13.5%, and a 100bps change would not be as large a percentage change in this ratio as the other elements. Thus, it is not surprising that the effect on the final valuation is minuscule.

Finally, the last two elements affect the valuation through either the cash flow or the discount rate. An increase in the COGS as a percentage of revenues would cap the estimation with almost NOK 11, while a decrease will increase the value with almost NOK 11. The changes are close to symmetric either it goes up or down. A change in the operating tax would affect the cash flow in the same way as COGS do. An increase (decrease) in the ratios implies a lower (higher) cash flow.

Figure 37: *Tornado analysis – Input factors vs. share price effect*



9. Relative valuation



A relative valuation analysis, or a multiple analysis, is a simplified valuation technique in which the value estimate of an asset or a company is derived by comparing its valuation with other similar assets or companies. Consequently, just like the discounted cash flow analysis, a multiple analysis can be used to value both private and publicly listed businesses. A comparable multiple analysis is performed through three necessary steps: **(i)** selecting the appropriate comparable companies, **(ii)** selecting the correct multiple, and lastly **(iii)** to apply the multiple to the relevant earnings base (Gaughan, 2020). Along with this outline, we will use Damodaran (2012), Knivsflå (2020f), and Koller et al. (2020) as the relevant theoretical grounding to support our multiple analysis. In a relative valuation analysis, the choice of multiples and comparable companies is of great significance for the value estimate that is ultimately derived from the analysis. Hence, we believe a broad theoretical backing is of considerable importance in producing a meaningful valuation estimate from our multiple analysis of Aker BioMarine.

9.1 Choice of multiples

To assess the value of Aker BioMarine in comparison with peers, we will utilize financial multiples that are commonly used in relative valuation. In our case, this is important as our comparable companies are not directly linked to the krill industry. This implies that the use of certain industry-specific multiples, i.e., EV/KG, commonly used in the seafood industry, would not be applicable to our analysis.

Accordingly, we have selected four flexible, and in our view highly relevant valuation multiples as the basis for our relative valuation analysis. Below is a summary of our selected multiples.

Price-to-Earnings

Price-to-Earnings multiple is a widely used and easy-to-interpret equity valuation multiple that uses the company's market value of equity as the numerator and divides it by the firm's earnings. Using this comparative valuation ratio, one can assess the market value of a firm based on a fundamental indicator of firm performance, in this case, earnings. Although the P/E multiple perhaps is the most used peer valuation multiple, it also has several pitfalls to be kept in mind while assessing the valuation output. Firstly, the P/E multiple is distorted by capital structure, which is not accounted for in the metric. Furthermore, the P/E multiple uses accounting-based earnings as its denominator, which may be subject to influence from accounting rules like historical cost in inventory valuation and depreciation (Bodie et al., 2018). Ergo, analysts should proceed with caution when using Price-to-Earnings multiple.

Enterprise value-to-EBIT

As we discussed briefly in section 3.2, enterprise value multiples are widely recognized by analysts as they allow for analysis across companies without influences from differences in the capital structure. Accordingly, we have selected three multiples based on total enterprise value. To obtain the EV-to-EBIT ratio, the total market value of a company's equity and financial debt, separate from any cash and marketable securities, is to be divided by the firm's earnings before financial items.

Enterprise value-to-EBITDA

This multiple takes the company's EBITDA and divides it by the enterprise value of the company. As this EV-multiple is based on the earnings measure before subtracting financing items, depreciation, and amortization, it gives us valuable insights into the underlying's of the company's operational performance. The EV-to-EBITDA multiple is applicable for the valuation of a broader range of companies, as such (Berk & DeMarzo, 2020).

Enterprise value-to-Sales

Our fourth multiple is also a valuation multiple based on firm value. This multiple deploys the firm's top line, sales, and divides it by its value. The EV-to-Sales multiple is useful in assessing firm valuations when the industry is characterized as unstable or has negative profits. EV-to-

Sales helps value industries such as start-ups with negative profits and in industries where margins tend to be highly volatile. Nonetheless, it is used as a supplement to a broader peer valuation as it does not account for essential fundamentals in a firm's valuation, such as margins, growth, and return on invested capital (Koller et al., 2020).

Forward-looking multiples

Aker BioMarine has recently made an acquisition as well as significant structural changes to their operations, making multiples based on historical profits less relevant (Koller et al., 2020). Besides, this choice is also motivated by historical empirical evidence showcasing that forward multiples have predicted the future value of the company's more accurately than backward-looking multiples (Liu, Nissim, & Thomas, 2002). More so, forward-looking multiples has received wide-spread acceptance among professional financial analysts in recent decades. The use of several forward-looking and backward-looking multiples will also allow us to produce a range of valuation estimates of how Aker BioMarine is priced based on crucial future and historical financial indicators, compared to that of just a single valuation estimate. Hence, we deem the inclusion of forward-looking multiples as key to a successful relative valuation analysis. Thus, our selection of multiples will include multiples based on sales, earnings, EBIT, and EBITDA for the latest fiscal year (2019), as well as forward-looking multiples based on consensus estimates for 2020E, 2021E, and 2022E. All equity analyst consensus estimates are collected from the Bloomberg Terminal on October 30, 2020, and are converted into US dollars.

9.1.2 **Choice of comparable companies and other considerations**

Selection of comparable companies

Based on the arguments presented regarding our selection of comparable companies in chapter 5, we selected *ten* comparable companies within the Ingredients and Brands segments for our relative valuation analysis. Our selection of companies has mainly been motivated by comparable companies' growth characteristics, operational profitability, and geographical position. In total, our peer group consists of *five* Brands companies and *five* companies within the Ingredients segment.

Out of the ten companies selected for our relative valuation analysis, we have chosen *DSM, Novozymes, Probi, Biogaia,* and *AAK* in the Ingredients segment. The companies we have grouped in the Brands segment are *Orkla, Procter & Gamble, Nestlé, Midsona*, and *Glanbia*.

Consistent with previous peer analysis, Ingredients companies are colored in blue and Brands companies in green.

Multi-business multiple valuation

For multi-business companies, a valuation using multiples needs to be valued through a sum-of-the-parts approach, in which each business unit is valued at a multiple appropriate to its peers and performance (Koller et al., 2020, p. 369). This implies that the different business units should be valued with different multiples to reflect their differences in marketplace valuation. As we have decided to split our peer group into companies in two different segments, we have decided to use a weighting to derive our final valuation estimate. Today, Aker BioMarine reports that out of their USD 246mn revenue in 2019, 68% was attributable to the Ingredients segment, and 32% came from the Brands segment. Therefore, in deciding on our final valuation estimate, we will apply this weighting to our estimates.

Other considerations

We have also made considerations in terms of which multiples that will be the most relevant for our final valuation estimate. First and foremost, we will include multiples on both actual 2019 numbers and 2020-2022 consensus estimates. These are mainly included to provide quantitative backing to our assumptions, accompany discussions, and reveal potential irregularities or abnormalities in our final relative valuation estimate. This will provide us with a relatively wide range of valuation estimates, and due to Aker BioMarine's growth characteristics and our assumptions of considerable revenue and margins to be captured within the coming years, we have concluded that the 2021E multiples provide the best basis for a single conclusion on our relative valuation. As we have argued previously, empirical evidence showcases that future multiples may allow for better future operations forecasts.

Therefore, we decide that ***future 2021E multiples*** are to provide the basis for our final valuation estimate. We have summarized our general assumptions for Aker BioMarine's share price, shares outstanding, and NOK/USD currency rate as of October 30, 2020, in exhibit 61 below:

Exhibit 61: *General assumption for the relative valuation analysis*

General assumptions in Aker BioMarine's relative valuation	
Price per share 30.10.20 (NOK)	82.00
Shares outstanding (Million)	87.59
NOK/USD FX rate 30.10.20 (NOK)	9.48
Weighting in Ingredients	68%
Weighting in Brands	32%

Source: Bloomberg LP (October 30, 2020)

9.2 Relative valuation analysis

Before we start our relative valuation analysis, we collect the necessary financial information of our comparable companies. This includes calculating the firms' enterprise value, which requires financial information such as market capitalization, financial debt, minority interest, and cash and marketable securities. Given the time we have at hand to complete our master thesis and consideration of costs and benefits, we decided not to perform a full reorganization of the ten comparable firms' financial statements. We dug into each company's financial statements and collected relevant market values to extract the information relevant for our comparable company analysis. This includes the market value of equity as of October 30, 2020, and the latest financial data publicly available for each firm to estimate enterprise value on the same date. Moreover, we also extracted the latest available equity analyst consensus estimates for forward-looking EBITDA, earnings, and sales from the Bloomberg Terminal on October 30, 2020.

Exhibit 62: *Enterprise value calculation Ingredients segment (USD thousands)*

Enterprise value calculation: Ingredients comparable companies					
In USD thousands ($)	**DSM**	**Novozymes**	**Probi**	**Biogaia**	**AAK**
Relevant USD FX rate (30.10.20)	1.17	0.16	0.11	0.11	0.11
Price per share (30.10.20)	160.2	60.1	43.5	47.6	19.5
Shares outstanding	181 430	286 600	11 394	17 336	254 391
Market capitalization	29 067 960	17 211 486	495 830	824 484	4 953 709
Financial debt	4 388 597	853 358	6 446	2 003	550 944
Cash & marketable securities	(2 011 877)	(133 836)	(23 556)	(32 835)	(128 359)
Non-controlling interest	106 072	1 720	-	0.2	10 219
Enterprise value	**31 550 752**	**17 932 729**	**478 720**	**793 652**	**5 386 513**

Source: Annual and quarterly reports for all companies, 2020

Exhibit 63: *Enterprise value calculation Brands segment (USD thousands)*

Enterprise value calculation: Brand comparable companies					
In USD thousands ($)	**Orkla**	**P&G**	**Nestlé**	**Midsona**	**Glanbia**
Relevant USD FX rate (30.10.20)	0.11	n.a.	1.09	0.11	1.17
Price per share (30.10.20)	9.5	137.1	112.4	7.2	9.5
Shares outstanding	1 015 000	2 625 800	2 934 000	65 005	295 281
Market capitalization	9 644 641	359 997 180	329 641 337	470 121	2 794 812
Financial debt	1 088 186	34 720 000	41 838 388	167 327	860 818
Cash & marketable securities	(205 485)	(16 181 000)	(5 494 469)	(15 497)	(102 109)
Minority interest	48 523	357 000	946 984	-	-
Enterprise value	**10 575 865**	**378 893 180**	**366 932 240**	**621 951**	**3 553 521**

Source: Annual and quarterly reports for all companies, 2020

9.2.1 **Price-to-Earnings**

$$Price - to - Earnings = \frac{Price\ per\ share}{Earnings\ per\ share\ ("EPS")} \qquad Eq.28$$

The first multiple in our relative valuation analysis is the Price-to-Earnings ratio. This multiple is one of the most frequently used peer valuation metrics among financial analysts and other finance practitioners. Firstly, in our P/E analysis, we extract the earnings per share consensus estimates from the Bloomberg Terminal along with the price per share data on October 30.

Exhibit 64: *Actual EPS '19 and forward-looking consensus estimates '20-'21-'22*

Peer valuation: Price-to-Earnings					
In USD	**Basis (Price)**	**P/E '19**	**P/E '20E**	**P/E '21E**	**P/E '22E**
DSM	160.2	33.3x	35.2x	25.2x	24.8x
Novozymes	60.1	36.4x	37.1x	34.3x	31.7x
Probi	43.5	54.5x	42.7x	37.2x	32.3x
Biogaia	47.6	41.6x	40.3x	36.4x	32.1x
AAK	19.5	32.1x	28.1x	25.0x	22.8x
Median ingredients		**36.4x**	**37.1x**	**34.3x**	**31.7x**
Orkla	9.5	21.8x	20.1x	18.7x	18.0x
Procter & Gamble	137.1	27.6x	24.8x	23.1x	21.4x
Nestlé	112.4	26.0x	25.1x	24.3x	22.6x
Midsona	7.2	33.8x	25.4x	20.0x	16.6x
Glanbia	9.5	13.9x	16.6x	12.2x	10.5x
Median Brands		**26.0x**	**24.8x**	**20.0x**	**18.0x**
Aker BioMarine	8.6	**-**	**-**	**39.7x**	**30.0x**

Source: Bloomberg LP (October 30, 2020)

We calculate P/E as in *Eq. 28* by dividing price per share over EPS, showcased in exhibit 64. The relevant input for each computation is presented in appendix 7. It is worth noting that Aker BioMarine did not deliver positive earnings in 2019 and is not expected to do so in our 2020 estimates. Further, since we anticipate that 2021 is the first year of positive net income for the company, our estimates are relatively conservative, and the firm is priced in the marketplace at the highest 2021 forward-looking multiple among its peers.

To compute our final price per share based on P/E multiples, we multiply Aker BioMarine's estimated earnings with the corresponding median multiple for both segments in each given year. In our selected year of analysis, 2021, Aker BioMarine's implied valuation is NOK 70.8 per share on Ingredients multiples and as low as NOK 41.2 on Brands multiples. After applying the weights introduced in our introduction, we arrive at a final weighted stock price of **NOK 61.3** per share. The full range of valuation estimates of Aker BioMarine's market value of equity per share based on historical and future earnings are presented in exhibit 65. 2021E multiples are highlighted as this is our primary year of analysis.

Exhibit 65: *Price-to-Earnings relative valuation analysis of Aker BioMarine*

Aker BioMarine: Price-to-Earnings relative valuation				
In USD	**2019A**	**2020E**	**2021E**	**2022E**
Aker BioMarine EPS basis	-	-	0.22	0.29
Ingredients median multiple	36.4x	37.1x	34.3x	31.7x
Brands median multiple	26.0x	24.8x	20.0x	18.0x
Aker BioMarine implied USD price (Ingredients)*	-	-	7.5	9.1
Aker BioMarine implied USD price (Brands)*	-	-	4.4	5.2
Price per share: Ingredients (NOK)*	**-**	**-**	**70.8**	**86.6**
Price per share: Brands (NOK)*	**-**	**-**	**41.2**	**49.1**
Weighted price per share (NOK)	**-**	**-**	**61.3**	**74.6**

** Negative values removed for visual purposes*

9.2.2 **EV-to-Sales**

$$EV - to - Sales = \frac{The\ market\ value\ of\ equity + Net\ financial\ debt}{Sales} \quad Eq.29$$

Exhibit 66: *Actual sales '19 and forward-looking consensus estimates '20-'21-'22*

Peer valuation: EV-to-Sales					
In USD thousands	**Basis (EV)**	**EV/Sales '19A**	**EV/Sales '20E**	**EV/Sales '21E**	**EV/Sales '22E**
DSM	31 550 752	3.1x	3.1x	2.9x	2.8x
Novozymes	17 932 729	8.3x	8.0x	7.7x	7.4x
Probi	478 720	7.2x	5.9x	5.5x	5.1x
Biogaia	793 652	9.8x	9.5x	8.6x	7.7x
AAK	5 386 513	1.8x	1.7x	1.6x	1.5x
Median ingredients		**7.2x**	**5.9x**	**5.5x**	**5.1x**
Orkla	10 575 865	2.1x	2.1x	2.0x	2.0x
Procter & Gamble	378 893 180	5.3x	5.1x	5.0x	4.8x
Nestlé	366 932 240	3.9x	3.9x	3.9x	3.7x
Midsona	621 951	1.9x	1.5x	1.3x	1.3x
Glanbia	3 553 521	0.8x	0.8x	0.8x	0.7x
Median Brands		**2.1x**	**2.1x**	**2.0x**	**2.0x**
Aker BioMarine	1 099 345	**4.5x**	**3.7x**	**2.7x**	**2.3x**

EV-to-Sales is an enterprise value multiple frequently used in the relative valuation of firms that operate in industries with volatile or negative profits, such as start-up industries or cyclical industries. In its traditional sense, the krill industry is not new, but due to heavy growth and investments in recent years to become commercially viable and potentially highly profitable, it shares the same characteristics as industries in its early phases. All peer group multiples based on actual sales and forward-looking consensus estimates are summarized in exhibit 66 above.

The final estimate of Aker BioMarine's share price based on EV-to-Sales multiples is determined in three steps. First, we multiply the company's sales in each given year by the corresponding segment median multiple to get the enterprise value. From this, we add the firm's excess cash and marketable securities and subtract the market value of debt to get the implied value of Aker BioMarine's equity. Finally, we divide the implied market value of equity by the shares outstanding and convert the price to NOK to get the NOK price per share. Aker BioMarine's implied price per share of NOK 209.5 in 2021 on Ingredients multiples is significantly higher than the NOK 51.4 based on median Brands EV-to-Sales multiples. Our final weighted valuation estimates for 2021 is **NOK 158.9** per share.

Exhibit 67: *EV-to-Sales relative valuation analysis of Aker BioMarine*

Aker BioMarine: EV-to-Sales relative valuation				
In USD thousands	**2019A**	**2020E**	**2021E**	**2022E**
Aker BioMarine sales basis	246 170	298 367	414 023	484 666
Ingredients median multiple	7.2x	5.9x	5.5x	5.1x
Brands median multiple	2.1x	2.1x	2.0x	2.0x
Aker BioMarine EV (Ingredients)	1 778 782	1 754 776	2 284 204	2 457 344
Aker BioMarine EV (Brands)	524 943	612 284	824 058	945 479
Cash and marketable securities	6 485	6 485	6 485	6 485
Financial debt	(355 354)	(355 354)	(355 354)	(355 354)
Minority interest	-	-	-	-
Implied equity value (Ingredients)	1 429 913	1 405 907	1 935 335	2 108 476
Implied equity value (Brands)	176 074	263 415	475 189	596 611
Price per share: Ingredients (NOK)	**154.8**	**152.2**	**209.5**	**228.2**
Price per share: Brands (NOK)	**19.1**	**28.5**	**51.4**	**64.6**
Weighted price per share	**111.3**	**112.6**	**158.9**	**175.8**

9.2.3 **EV-to-EBIT**

$$EV - to - EBIT = \frac{The\ market\ value\ of\ equity\ +\ Net\ financial\ debt}{EBIT} \qquad Eq.30$$

Exhibit 68: *Actual EBIT '19 and forward-looking consensus estimates '20-'21-'22*

Peer valuation: EV-to-EBIT					
In USD thousands	**Basis (EV)**	**EV/EBIT '19**	**EV/EBIT '20E**	**EV/EBIT '21E**	**EV/EBIT '22E**
DSM	31 550 752	26.2x	27.3x	23.4x	21.1x
Novozymes	17 932 729	29.6x	30.1x	28.5x	27.0x
Probi	478 720	40.6x	32.7x	29.1x	25.5x
Biogaia	793 652	30.9x	29.5x	25.8x	22.8x
AAK	5 386 513	23.6x	22.0x	19.7x	18.3x
Median ingredients		**29.6x**	**29.5x**	**25.8x**	**22.8x**
Orkla	10 575 865	18.3x	18.5x	16.8x	16.3x
Procter & Gamble	378 893 180	23.5x	21.4x	20.3x	19.0x
Nestlé	366 932 240	22.4x	22.3x	21.8x	20.7x
Midsona	621 951	34.6x	22.0x	15.8x	14.3x
Glanbia	3 553 521	14.7x	19.5x	15.5x	13.5x
Median Brands		**22.4x**	**21.4x**	**16.8x**	**16.3x**
Aker BioMarine	1 099 345	**108.8x**	**70.6x**	**23.5x**	**18.4x**

EV-to-EBIT is an enterprise value multiple measuring EV on top of earnings before financial items and is one of the most used multiples by practitioners (Knivsflå, 2020f). Due to the inclusion of depreciation and amortization, this ratio takes into account the future need for maintenance and re-investments. Our peer group multiples will be calculated as in *Eq. 30*.

As with the Price-to-Earnings multiple, it is worth noting that Aker BioMarine trades at significantly inflated multiples on actual 2019 EBIT and 2020 estimates compared to its peers. Some of the share price computations in 2019 and 2020 earnings will consequently come back as negative values, and these are excluded from our analysis and visualization of estimates in exhibit 69. Nonetheless, this does not affect our final value estimate based on 2021 earnings. From our forecasted EBIT basis of ~USD 46.80mn in 2021, we ultimately obtain a price per share of **NOK 78.3** based on our selected comparable companies' market value.

Exhibit 69: *EV-to-EBIT relative valuation analysis of Aker BioMarine*

Aker BioMarine: EV-to-EBIT relative valuation				
In USD thousands	**2019A**	**2020E**	**2021E**	**2022E**
EBIT basis	10 108	15 581	46 797	59 905
Ingredients median multiple	29.6x	29.5x	25.8x	22.8x
Brands median multiple	22.4x	21.4x	16.8x	16.3x
Aker Bio EV range (Ingredients)	299 304	458 912	1 207 315	1 366 034
Aker Bio EV range (Brands)	226 648	332 646	785 046	974 721
Cash and marketable securities	6 485	6 485	6 485	6 485
Financial debt	(355 354)	(355 354)	(355 354)	(355 354)
Minority interest	-	-	-	-
Implied equity value (Ingredients)*	-	110 044	858 446	1 017 166
Implied equity value: (Brands)*	-	-	436 178	625 852
Price per share: Ingredients (NOK)*	**-**	**11.9**	**92.9**	**110.1**
Price per share: Brands (NOK)*	**-**	**-**	**47.2**	**67.7**
Weighted price per share (NOK)	**-**	**11.9**	**78.3**	**96.5**

** Negative values removed for visual purposes*

9.2.4 **EV-to-EBITDA**

$$EV - to - EBITDA = \frac{The\ market\ value\ of\ equity + Net\ financial\ debt}{EBITDA} \quad Eq.31$$

Exhibit 70: *Actual EBITDA '19 and forward-looking consensus estimates '20-'21-'22*

Relative valuation: EV-to-EBITDA					
In USD thousands	**Basis (EV)**	**EV/EBITDA '19**	**EV/EBITDA '20E**	**EV/EBITDA '21E**	**EV/EBITDA '22E**
DSM	31 550 752	16.7x	16.9x	15.2x	14.1x
Novozymes	17 932 729	22.6x	22.9x	22.0x	20.9x
Probi	478 720	24.7x	20.2x	18.9x	17.3x
Biogaia	793 652	29.1x	27.5x	24.2x	21.4x
AAK	5 386 513	17.9x	16.3x	14.9x	14.1x
Median ingredients		**22.6x**	**20.2x**	**18.9x**	**17.3x**
Orkla	10 575 865	13.6x	13.4x	12.5x	12.2x
Procter & Gamble	378 893 180	19.8x	18.2x	17.3x	16.2x
Nestlé	366 932 240	17.8x	17.9x	17.4x	16.7x
Midsona	621 951	20.3x	13.8x	11.1x	10.3x
Glanbia	3 553 521	9.8x	11.2x	9.6x	8.7x
Median Brands		**17.8x**	**13.8x**	**12.5x**	**12.2x**
Aker BioMarine	1 099 345	**20.7x**	**17.3x**	**12.2x**	**9.9x**

The final enterprise value multiple included in our relative valuation analysis is the EV-to-EBITDA multiple. The EV-to-EBITDA peer valuation input and median multiples are summarized in exhibit 70. To see our full range of forward-looking inputs to derive the multiples, we refer to appendix C. As with the previous multiple valuation ratios, Ingredient peers are consistently trading at notably higher multiples in comparison to Brands companies and Aker BioMarine. We explain this with the considerable growth expected in the ingredients market in coming years, leading to a high multiple for companies in this peer group.

Further, a relative valuation of the firm's price per share on EV-to-EBITDA multiples is computed in the same manner as for EV-to-Sales multiples. From an EBITDA basis of USD 90.06mn in 2021E, Aker BioMarine is priced at NOK 146.8 per share on the Ingredients median and NOK 84.5 on the median multiple of peers in the Brands segment. As seen in exhibit 71, our final weighted share price is **NOK 126.9**.

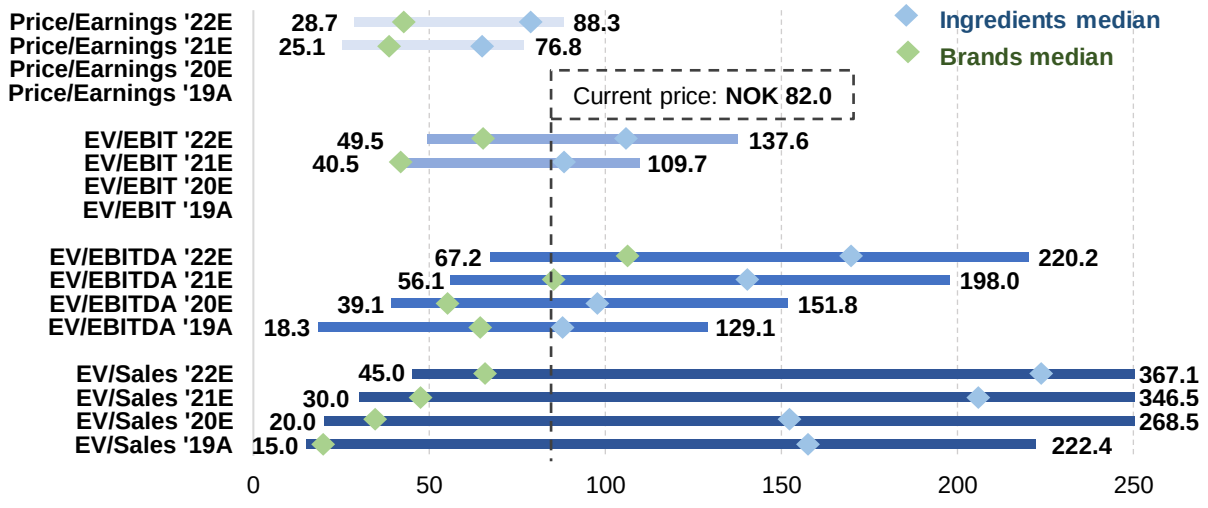
Exhibit 71: *EV-to-EBITDA relative valuation analysis of Aker BioMarine*

Aker BioMarine: EV-to-EBITDA relative valuation				
In USD thousands	**2019A**	**2020E**	**2021E**	**2022E**
Aker BioMarine EBITDA basis	53 039	63 581	90 060	111 259
Ingredients median multiple	22.6x	20.2x	18.9x	17.3x
Brands median multiple	17.8x	13.8x	12.5x	12.2x
Aker BioMarine implied EV (Ingredients)	1 198 663	1 283 742	1 705 598	1 921 066
Aker BioMarine implied EV (Brands)	941 875	874 826	1 129 159	1 355 486
Cash and marketable securities	6 485	6 485	6 485	6 485
Financial debt	(355 354)	(355 354)	(355 354)	(355 354)
Minority interest	-	-	-	-
Implied equity value (Ingredients)	849 794	934 873	1 356 730	1 572 197
Implied equity value: (Brands)	593 007	525 958	780 291	1 006 618
Price per share: Ingredients (NOK)	**92.0**	**101.2**	**146.8**	**170.2**
Price per share: Brands (NOK)	**64.2**	**56.9**	**84.5**	**109.0**
Weighted price per share	**83.1**	**87.0**	**126.9**	**150.6**

9.3 Summary of relative valuation estimates

As we stated in chapter 3, we have decided to use the relative valuation methodology as a complementary valuation method to our discounted cash flow-based valuation. In sum, it has provided us with valuable insight as to how the marketplace is assessing the fair valuation of assets with similar characteristics as Aker BioMarine. Figure 38 provides a visual summary of the high-to-low range of our relative valuation estimates for all years included and all companies included in our analysis, with the Ingredients and Brands peer group medians marked by blue and green dots, respectively.

Figure 38: *Summary of relative valuation estimates*



** Negative values removed for visual purposes*

From our visualization of valuation estimates, it is evident that Aker BioMarine's stock price of NOK 82.00 per share today is well below our final relative valuation estimates of 2021E EV/EBITDA and EV/Sales estimated to be NOK 126.9 and NOK 158.9, respectively. The firm is priced lower on the peer group's median on 2021E EV/EBIT with a share price of NOK 78.3 and Price/Earnings multiples with our weighted price estimate of NOK 61.3 per share. This is partially due to our moderate forecasts of earnings and EBIT in the two coming years, as we believe that Aker BioMarine's earnings will be limited in these years due to the firm's intensive revenue growth prospects. More so, this is also reflected in the high valuation on EV/Sales multiples.

If Aker BioMarine is to be priced in the upper end of peer companies in the Ingredients segment, it could expect a upside to its stock price as of October 30. However, we note that pricing in this peer group spans widely, and pricing for companies in the lower end of this peer group is more or less equal to Aker BioMarine's pricing as of today. Overall, we see a clear trend from our visualization in figure 38 that the implied share prices based on the brand median (green diamonds) are lower than the black dotted line that resembles Aker BioMarine's stock price of today. On the other hand, the Ingredients median pricing (blue diamonds) is consistently above the current share price. While Aker BioMarine trades slightly above the Brands peer group on trailing multiples, our estimates of steep growth in financial indicators in coming years make the company's relative valuation converge with Brands on forward-looking multiples.

These findings confirm our discussion that a valuation of Aker BioMarine at the higher end of its peer groups may not be entirely justified as of today. We argue that should Aker BioMarine be successful in transforming a higher amount of its krill meal into high-profit krill oil, a valuation somewhere closer to its Ingredient peers may very well be warranted.

9.4 Final relative valuation estimate

As we have mentioned, consistent with Koller et al. (2020), we have concluded that 2021E enterprise multiples best provide the basis to obtain our ultimate relative value estimate. We recognize the three metrics as equally essential and thus arrive at a final stock price by weighting the three enterprise multiple valuation estimates on equal weights. As discussed previously, we consider price multiples to be less relevant for our analysis as it does not recognize the firms' capital structure, and we decide not to weight the P/E multiple in our final

estimate. Further, we have chosen to use median multiples as opposed to average multiples for the two peer groups, as the median value is less exposed to outliers in our comparable group than mean values (Knivsflå, 2020f). We obtain a final estimate of Aker BioMarine's stock price of **NOK 121.4** per share with our selected weights. This share price constitutes a **48.0%** upside to the current share price of NOK 82.0 per share. The final value estimate based on average multiples is also presented in exhibit 72 for comparison.

Exhibit 72: *Calculation of final weighted relative valuation estimate*

Final relative valuation estimate					
			Stock Prices		
Multiple		Average		**Median**	Weighting
Price-to-Earnings	NOK	57.4	**NOK**	**61.3**	0%
EV-to-EBIT	NOK	78.6	**NOK**	**78.3**	33.3%
EV-to-EBITDA	NOK	130.9	**NOK**	**126.9**	33.3%
EV-to-Sales	NOK	159.7	**NOK**	**158.9**	33.3%
The final weighted estimate of the stock price (NOK)	NOK	123.1	**NOK**	**121.4**	100%

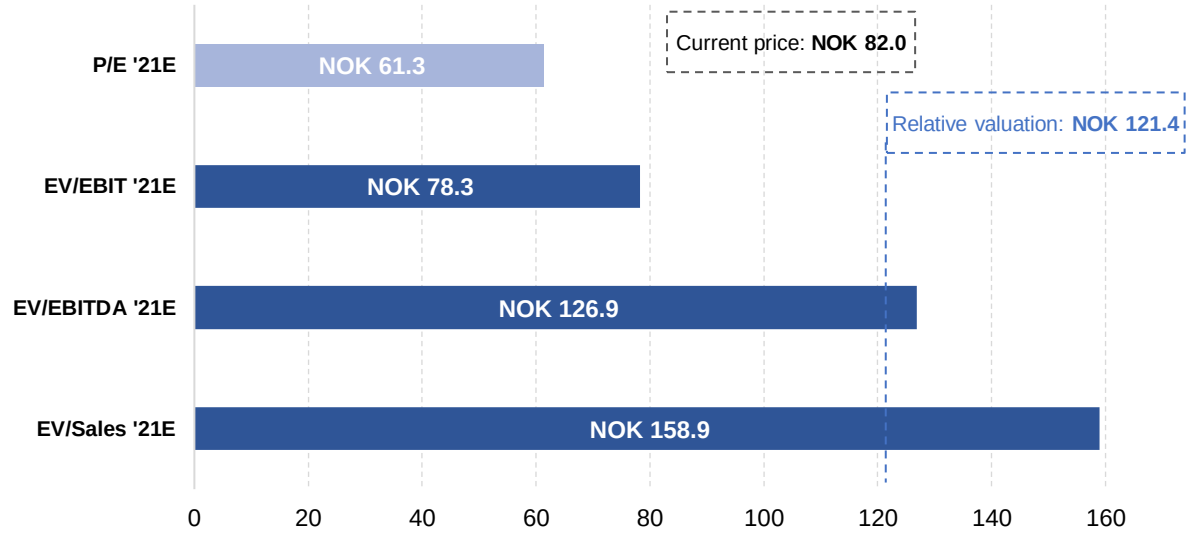
In simple terms, our estimated stock price suggests that Aker BioMarine is undervalued in the stock market as of October 30, 2020. However, we argue that several factors make it challenging to draw an unambiguous conclusion on our valuation estimate. Firstly, none of our comparable firms can be said to be directly comparable to Aker BioMarine.

All these companies are operating in the same end-markets as Aker BioMarine, but none are making ingredients or branded products with krill as their primary input. Consequently, our peer groups do not share the exact characteristics such as metrics as growth, cash flow potential, and riskiness. Moreover, as an extension of this, we acknowledge that our final valuation estimate is influenced by the choices we have made to determine the peer group and select relevant comparable companies. Further, the significant growth implied in our future financial estimates for Aker BioMarine also makes peer valuation on future estimates a challenging task.

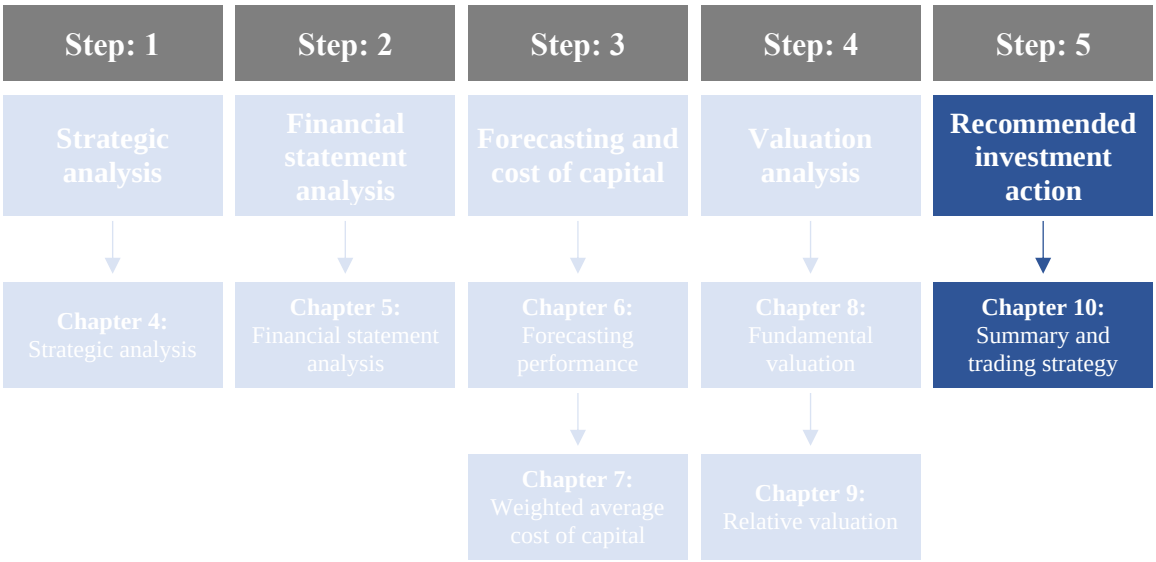
In conclusion, there are several potential pitfalls in relative valuation analysis, and the relative valuation methodology has its weaknesses as any other valuation methodology. Despite this, we have undertaken a conventional approach and have attempted to be transparent in our assumptions and consistent in our calculations. Hence, to the best of our knowledge, our

relative valuation gives us a highly relevant estimate of how the market assesses the market value of assets with similar characteristics as Aker BioMarine.

Figure 39: *Summary of key multiple valuation estimates*



10. Summary and trading strategy



This master thesis aims to answer the research question: "*What is the intrinsic value of Aker BioMarine's equity on October 30, 2020?*". Based on analyses of the financial performance and strategic outlook, we have estimated the future financial performance and cost of capital of Aker BioMarine to value the equity of the company. We have installed both fundamental models and relative valuations to estimate the fair share price. In this chapter, the thesis's vital findings are summarized, and, lastly, we recommend a trading strategy for the stock.

10.1 Summary

The master thesis consists of two components. The first component includes chapters 2, 3, 4, and 5. The second chapter is the introduction to both Aker BioMarine and the krill industry. The third chapter introduced relevant theories and frameworks applied later in the thesis and argued why the fundamental valuation would carry the most weight in the valuation. It was further elaborated that the relative valuation would be supplementary to the fundamental valuation.

The fourth chapter was an extensive and detailed strategic analysis of the krill industry and Aker BioMarine. The external analysis revealed that the krill industry's competitive environment is moderate, attributed to the considerable entry barriers and limited close competitors. The findings from the external industry analysis indicate that it is possible to sustain long-term competitive advantages.

The internal-oriented analysis indicated that the brand name, value chain, patents, and strategic collaborations represent some of the most critical competitive advantages for Aker BioMarine. It was reasoned that the stated resources provide a short-term competitive advantage, but all the resources are replicable, making a competitive advantage limited. The fifth chapter presents the historical financial analysis of Aker BioMarine. The financial statements were presented, reorganized, and adjusted. The financial statement analysis was limited to three years, as Aker BioMarine was only required to disclose the past three years associated with the initial public offering at Merkur Market. It would be possible to derive more information about the previous years, but as we regard Aker BioMarine to be a high-growth company, we consider the historical financials to have limited importance.

The second component of the thesis includes chapters 6, 7, 8, 9 and 10. The sixth chapter presented the projected financial statements of Aker BioMarine in the coming ten years based on the strategic- and financial analyses in the previous chapters. The seventh chapter presented the cost of capital we expect the company will have in the coming years. The WACC estimate is dynamic until reaching a steady state.

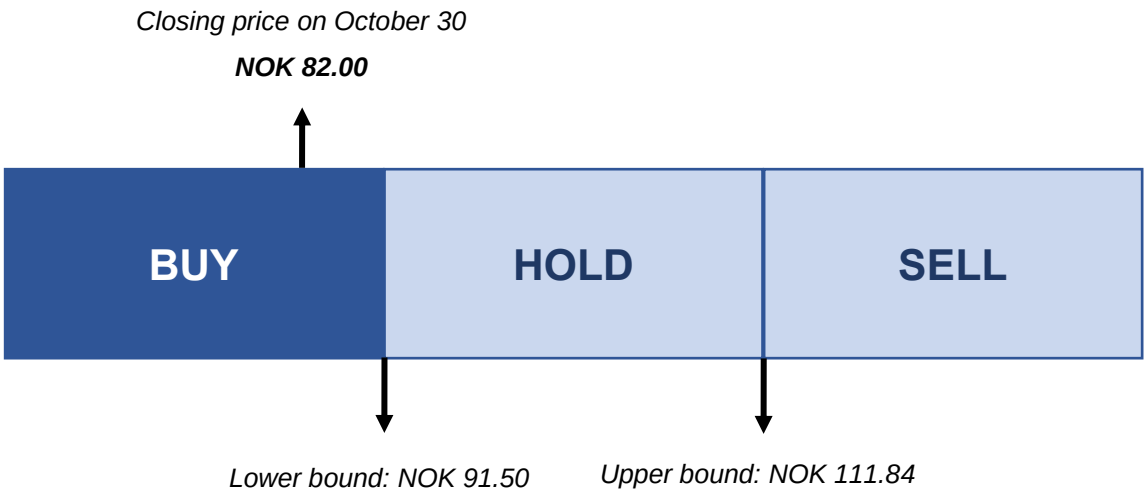
The forecasted statements were utilized in the eight chapter to estimate the equity's fair market value with two different valuation techniques, DCF and EVA. These valuation techniques indicated a fair share price of NOK 96.74. The chapter concluded with a sensitivity analysis of the WACC and growth that illustrated our estimates' sensitivity. The ninth chapter contained the relative valuation where we deployed the multiples EV/EBIT, EV/EBITDA, EV/Sales, and P/E. Based on the enterprise multiples, the median estimate of the fair share price was at NOK 121.40. We decided to weigh the multiple analysis and fundamental analysis with 20.0% and 80.0%, respectively. This resulted in a final estimation of the fair stock price to be at **NOK 101.67**.

10.2 Trading strategy

Based on the final estimation of the fundamental value of Aker BioMarine as of October 30, 2020, we present a trading strategy. To evaluate whether the Aker BioMarine stock is underpriced (overpriced) as of October 30, 2020, the estimated value of NOK 101.67 must be compared with the closing price the same day. Due to our estimates' uncertainties, it is decided to present a trading strategy with a buy, hold, or sell recommendation with a deviation of +/- 10% of the value estimation. With this deviation implemented in the strategy, a hold-recommendation will be in the interval of NOK [91.50,111.84].

If the closing price is below NOK 91.50, we recommend buying, is it above NOK 111.84**,** we recommend selling. If the closing price is in the interval, we recommend holding. As of October 30, 2020, the closing price was at NOK 82.00, which is well below our final valuation estimate. Thus, we recommend **BUYING** Aker BioMarine on October 30, 2020, as we see a potential upside of **23.98%**.

Exhibit 73: *Recommended investment strategy*



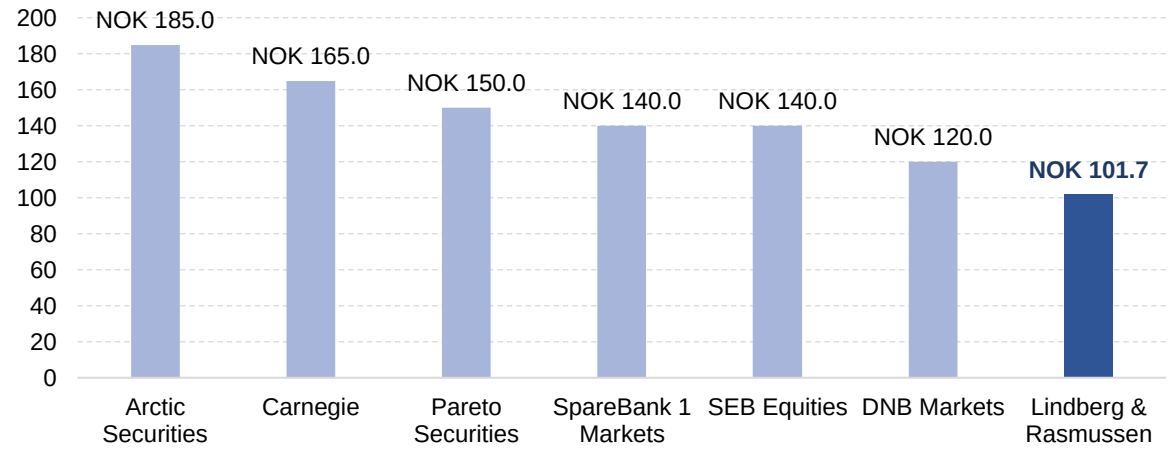
10.3 Closing thoughts

To conclude our thesis, we want to leave the reader with our closing thoughts on three interesting topics and how they can be the basis for though-provoking discussions on why the fair value may differ in the viewpoint of different investors. Firstly, we take a brief glance at how professional equity research analysts are assessing the fair value of the Aker BioMarine share price. Further, we also want to address the significant stock price development that occurred after the cut-off date of our analysis. Finally, we wrap up the chapter with our closing thoughts on the "ESG premium" and its implications for the intrinsic value of a firm.

10.3.1 **Analyst target prices as of October 30, 2020**

Compared with analyst target prices as of October 30, 2020, our analysis is placed at the low end of the selected range of analysts. On average, the equity analyst's target price is as high as NOK 150.0. At the top of this range, Arctic Securities issued a target price of NOK 185.0. This represents an upside of 125.6% on the October 30 market value. The most conservative, DNB Markets, has issued the lowest target price of NOK 120.0, a reiteration of their initial NOK 130.0 target price in September.

Figure 40: *Analyst target prices as of October 30, 2020*



Source: Bloomberg LP (October 30, 2020)

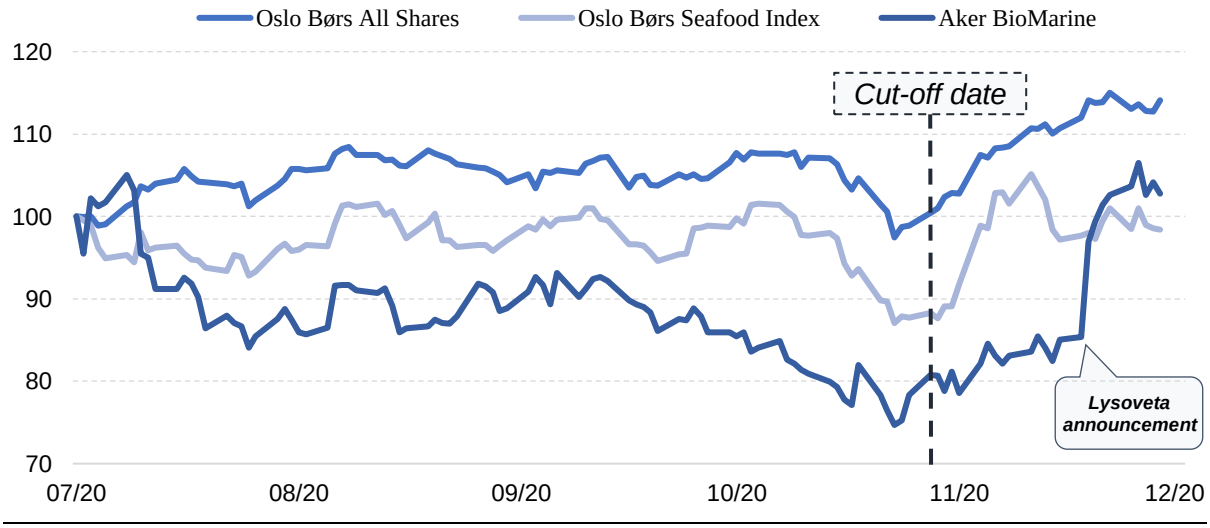
Interestingly, although our price estimate constitutes a 23.98% upside to Aker BioMarine's pricing in the market as of today, we have issued a target price 15.27% below the lowest price target among the industry analysts. As reasoned throughout our thesis, we believe that the firm is too ambitious on specific projections and metrics, reflected in an overall underperformance compared to their growth guidance releases so far this year. Hence, we place at the bottom of

the consensus bracket as it is evident that the equity research analysts seemingly view the magnitude of future growth opportunities and risk differently.

10.3.2 Aker BioMarine's price development after our cut-date

Aker BioMarine's price development since its Merkur Market listing on July 6, 2020, can be characterized as volatile. On the first day of trading on the platform, the stock closed at NOK 104.7. From this date until our cut-off date on October 30, the stock fell to NOK 82.0, hovering between a high in the period of NOK 110.0 and a low of NOK 78.2. After drifting around the NOK 80 mark during October and until mid-November, the stock surged by 34% to a price of NOK 109.9 as of closing on December 7, 2020.

Figure 41: *Aker BioMarine's total return before and after the cut-off date (Indexed to 100)*



Source: Bloomberg LP (October 30, 2020)

We see two primary reasons for the significant surge: firstly, on November 24, Aker BioMarine launched an all-new business segment called Lysoveta. This segment is intended to produce commercially viable krill-based products with a broad range of applications and health benefits primarily for brain and eye health to a large and fast-growing market (Aker BioMarine, 2020d). In the week following the announcement, the company's stock price rose by more than 20%.

Second, as illustrated in figure 41, the broader stock market in Norway has been steadily increasing since our cut-off date, and some of the day-to-day stock price increases in Aker BioMarine may also be attributable to the overall positive sentiment in the Norwegian stock market. This overall positive stock market uptick is likely to be closely linked to recent news about several successful COVID-19 vaccine trials (Jack, 2020).

10.3.3 Growing evidence of a potential ESG premium

As discussed in the strategical analysis in chapter 4, several finance academics and practitioners argue that one can observe a premium in the marketplace today on stocks that perform well on specific ESG metrics. This effect has picked up pace in recent years, and there is a growing collection of empirical evidence that works in favor of this viewpoint (Ciciretti, Dalò, & Dam, 2019). More so, more money than ever is flowing into sustainability-linked investments. As of October 25, ESG ETFs has seen an inflow of more than USD 22bn this year. Despite this, the ESG label is not under the policy by most global regulators as of today (Wagner & Ballentine, 2020).

However, although formal mechanisms are not fully implemented by the government and regulators to incentivize sustainability and climate action today, an increasing investor attention towards ESG performance is driving the transition from conventional to sustainable finance. Aker BioMarine's business model answers several of the UN's 17 Sustainable Development Goals, and the company has been vocal about including them as a part of their mission statement. In a sense, this may leave an additional upside to Aker BioMarine's valuation that is challenging to quantify.

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Overview of exhibits

Overview of figures

Appendix A: Peer group historical financial performance

Appendix 1: *Probi AB adjusted historical financial highlights*

In SEK thousands	**2017**	**2018**	**2019**
Revenue	612 244	604 117	626 192
EBITA	145 535	143 402	173 615
EBITA, adjusted	146 935	143 402	173 615
NOPAT	109 960	110 942	136 147
Invested capital, incl. goodwill	1 055 983	1 153 180	1 226 574
Invested capital, excl. goodwill	776 277	848 619	910 372
Operating margin	24,0%	23,7%	27,7%
Capital turnover, incl. goodwill	0,6	0,5	0,5
Capital turnover, excl. goodwill	0,8	0,7	0,7
Operating taxes	25,2%	22,6%	21,6%
Return on invested capital, incl. goodwill	**10,4%**	**9,6%**	**11,1%**
Return on invested capital, excl. goodwill	**14,2%**	**13,1%**	**15,0%**

Source: Probi AB annual report 2019 (2020)

Appendix 2: *DSM Koninklijke adjusted historical financial highlights*

In EUR thousands	**2017**	**2018**	**2019**
Revenue	8 632 000	9 267 000	9 010 000
EBITA	1 030 000	1 434 000	1 189 000
EBITA, adjusted	1 147 000	1 534 000	1 310 000
NOPAT	969 230	1 273 864	1 079 002
Invested capital, incl. goodwill	9 794 000	10 666 000	10 672 000
Invested capital, excl. goodwill	7 861 000	8 757 000	8 389 000
Operating margin	13,3%	16,6%	14,5%
Capital turnover, incl. goodwill	0,9	0,9	0,8
Capital turnover, excl. goodwill	1,1	1,1	1,1
Operating taxes	15,5%	17,0%	17,6%
Return on invested capital, incl. goodwill	**9,9%**	**11,9%**	**10,1%**
Return on invested capital, excl. goodwill	**12,3%**	**14,5%**	**12,9%**

Source: DSM Koninklijke annual report 2019 (2020)

Appendix 3: *Midsona AB adjusted historical financial highlights*

In SEK thousands	**2017**	**2018**	**2019**
Revenue	2 146 000	2 852 000	3 081 000
EBITA	160 000	213 000	252 000
EBITA, adjusted	182 000	226 000	258 000
NOPAT	136 500	178 859	215 741
Invested capital, incl. goodwill	2 379 000	3 045 000	4 102 000
Invested capital, excl. goodwill	1 145 000	1 637 000	2 292 000
Operating margin	8,5%	7,9%	8,4%
Capital turnover, incl. goodwill	0,9	0,9	0,8
Capital turnover, excl. goodwill	1,9	1,7	1,3
Operating taxes	25,0%	20,9%	16,4%
Return on invested capital, incl. goodwill	**5,7%**	**5,9%**	**5,3%**
Return on invested capital, excl. goodwill	**11,9%**	**10,9%**	**9,4%**

Source: Midsona AB annual report 2019 (2020)

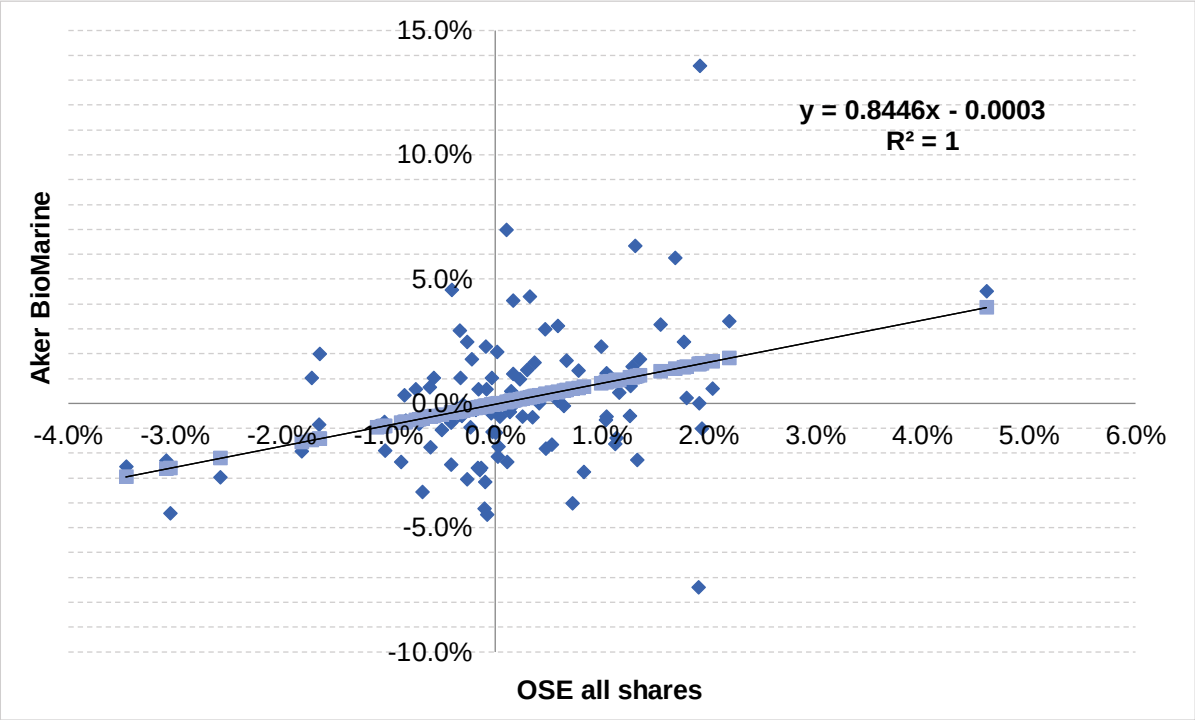
Appendix 4: *Glanbia PLC adjusted historical financial highlights*

In EUR thousands	**2017**	**2018**	**2019**
Revenue	2 387 100	3 170 500	3 875 700
EBITA	278 400	284 900	237 700
EBITA, adjusted	283 900	287 700	261 900
NOPAT	237 152	252 331	237 039
Invested capital, incl. goodwill	2 094 400	2 617 300	2 830 700
Invested capital, excl. goodwill	1 698 200	2 067 500	2 256 400
Operating margin	11,9%	9,1%	6,8%
Capital turnover, incl. goodwill	1,1	1,2	1,4
Capital turnover, excl. goodwill	1,4	1,5	1,7
Operating taxes	16,5%	12,3%	9,5%
Return on invested capital, incl. goodwill	**11,3%**	**9,6%**	**8,4%**
Return on invested capital, excl. goodwill	**14,0%**	**12,2%**	**10,5%**

Source: Glanbia PLC annual report 2019 (2020)

Appendix B: Aker BioMarine beta calculations

Appendix 5: *Aker BioMarine's equity beta calculations*



Appendix 6: *Aker BioMarine's equity beta regression statistics*

Regression Statistics	
Multiple R	0.3614
R Square	0.1306
Adjusted R Square	0.1222
Standard Error	0.0253
Observations	106

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.0100	0.0100	15.6229	0.0001
Residual	104	0.0666	0.0006		
Total	105	0.0766			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.0003	0.0025	-0.1385	0.8901	-0.0052	0.0046	-0.0052	0.0046
OSE all shares	0.8446	0.2137	3.9526	0.0001	0.4209	1.2684	0.4209	1.2684

Appendix C: Bloomberg consensus for relative valuation

Appendix 7: *Bloomberg consensus estimates: Earnings per share*

In USD thousands	EPS '19	EPS '20E	EPS '21E	EPS '22E
Ingredients				
DSM	4.82	4.55	6.37	6.45
Novozymes	1.65	1.62	1.75	1.89
Probi	0.80	1.02	1.17	1.35
Biogaia	1.14	1.18	1.30	1.48
AAK	0.61	0.69	0.78	0.85
Brands				
Orkla	0.44	0.47	0.51	0.53
Procter & Gamble	4.96	5.53	5.93	6.42
Nestlé	4.33	4.47	4.62	4.96
Midsona	0.21	0.28	0.36	0.43
Glanbia	0.68	0.57	0.78	0.90

Source: Bloomberg LP (October 30, 2020)

Appendix 8: *Bloomberg consensus estimates: Sales*

In USD thousands	Sales '19	Sales '20E	Sales '21E	Sales '22E
Ingredients				
DSM	10 086 585	10 193 176	10 725 701	11 268 296
Novozymes	2 155 275	2 247 811	2 324 125	2 424 585
Probi	66 251	81 397	86 770	94 419
Biogaia	81 291	83 680	92 550	102 842
AAK	3 016 364	3 179 652	3 370 103	3 487 590
Brands				
Orkla	4 959 515	5 153 632	5 313 524	5 421 334
Procter & Gamble	70 950 000	74 041 059	76 363 235	79 450 364
Nestlé	93 161 973	93 246 386	94 930 799	98 207 013
Midsona	325 970	412 517	477 851	490 044
Glanbia	4 337 531	4 538 203	4 704 011	4 960 811

Source: Bloomberg LP (October 30, 2020)

Appendix 9: *Bloomberg consensus estimates: EBIT*

In USD thousands	**EBIT '19**	**EBIT '20E**	**EBIT '21E**	**EBIT '22E**
Ingredients				
DSM	1 203 449	1 153 996	1 349 734	1 492 374
Novozymes	605 618	594 856	628 691	662 976
Probi	11 797	14 647	16 444	18 738
Biogaia	25 658	26 945	30 763	34 804
AAK	228 211	244 889	273 964	294 877
Brands				
Orkla	578 563	571 329	630 427	649 983
Procter & Gamble	16 143 000	17 746 750	18 643 500	19 936 000
Nestlé	16 364 334	16 419 479	16 834 287	17 707 689
Midsona	17 986	28 223	39 466	43 493
Glanbia	241 627	181 971	229 921	263 958

Source: Bloomberg LP (October 30, 2020)

Appendix 10: *Bloomberg consensus estimates: EBITDA*

In USD thousands	**EBITDA '19**	**EBITDA '20E**	**EBITDA '21E**	**EBITDA '22E**
Ingredients				
DSM	1 885 217	1 862 946	2 076 247	2 242 092
Novozymes	793 496	784 344	816 661	859 348
Probi	19 404	23 710	25 278	27 725
Biogaia	27 307	28 817	32 821	37 050
AAK	300 896	330 486	360 765	381 673
Brands				
Orkla	776 761	790 910	843 517	868 073
Procter & Gamble	19 156 000	20 814 000	21 892 000	23 382 778
Nestlé	20 662 739	20 508 392	21 055 710	22 035 211
Midsona	30 682	45 202	56 142	60 472
Glanbia	363 615	317 969	369 086	407 663

Source: Bloomberg LP (October 30, 2020)