University of Stavanger

EMIL ROALDSØY (9016) & SINDRE UNDEM (9059)
SUPERVISOR: PETER MOLNAR

Valuation of Kongsberg Gruppen ASA

"What is the fair value of Kongsberg Gruppen ASA as per May 30th 2023?"

Master thesis, 2023

Master of Science in Business Administration

University of Stavanger Business School

Specialization: Applied finance

Preface

This master's thesis has been prepared as part of our master's degree in Economics and Business Administration, with a major in applied finance at the University of Stavanger (UIS). We chose the topic of valuation regarding a listed company, based on both author's interest in the subject. Valuation is a great subject to showcase what we have learned through our bachelor program and the last two years of studying master's at UIS.

The thesis writing process has been an extensive and challenging journey, and we recognize the significance of having a comprehensive understanding of the economy when conducting a valuation. The master's degree programs have proven invaluable, providing us with the substantial knowledge required for this task. As a result, we have gained profound insights and comprehension of both Kongsberg Gruppen ASA and the intricacies involved in the valuation process.

Currently, the world resides in a period characterized by heightened uncertainties, armed conflicts, elevated inflation rates, and rising interest rates. Resulting in many companies facing increased costs of debt with uncertain prospects. In such volatile times, identifying companies that generate suitable returns on investments can be challenging. Notably, the recent Russian invasion of Ukraine has increased tension levels between Western and Eastern nations. Consequently, several countries allocate a larger percentage of their GDP towards military and defence expenditures. Our decision to conduct a valuation of Kongsberg Gruppen ASA was highly influenced by the situation described. This company holds particular interest, as it is one of the few Norwegian weapon manufacturers involved in defence and missile systems that is publicly listed on the Oslo Stock Exchange.

We especially wish to thank our supervisor Peter Molnar for guidance throughout the process.

X Erik Roaldsøg

X Sindre Undem

Executive Summary

The objective of this thesis is to determine the fair stock price value of Kongsberg Gruppen ASA as per May 30th, 2023.

The research commences with an introductory section that provides an overview of the company's industry and history, offering a foundational understanding before delving into deeper analysis. The qualitative aspects of the firm are examined through a strategic analysis encompassing Porter's five forces & PESTLE analysis for external conditions, followed by a VRIO analysis focusing on internal resources. These findings are consolidated in a SWOT table, summarizing the key points. Additionally, the substantial and quantitative aspects are investigated through balance sheet analysis, evaluating key financial metrics of Kongsberg Gruppen ASA. These factors serve as the basis for the subsequent valuation process.

Various valuation methods are utilized with the common objective of determining the fair value. The free cash flow to the firm model considers future cash flows and simultaneously serves as a basis and transition for our fundamental valuation. These future values are discounted to their present value using a cost of capital and equity. Furthermore, a relative valuation model is utilized, comparing different multiples, and provide support for the fundamental valuation. In the next part of the thesis, a sensitivity analysis is conducted to assess the impact of changes in variables on the estimated share value. Residual and relative valuation were both performed to compare estimates.

Weighted average cost of capital (WACC) was utilized to find the required rate of return on capital. The required return on capital was 6,79 percent. Then discount future cash flows from year 2023 to 2028. Estimating a terminal growth equal to 1,75 percent, of which year 2028 served as basis for the terminal year.

As of 30.05.2023, the market value per share is NOK 448,80. After weighing the results from all selected valuation methods, the valuation concludes with a per-share value of NOK 450,73 indicating that the company is slightly undervalued. Therefore, a hold recommendation is advised, given the stock price (30.05.2023) is only marginal lower than calculated value.

Contents

List of Figures

List of Formulas

List of Tables

1. Kongsberg Gruppen ASA

1.1 Introduction

Kongsberg Gruppen ASA (KOG) is a Norwegian publicly traded stock company, thriving in the Maritime, digital, defence & aerospace industry. With a well-established vendor reputation for high technology systems and solutions, their client portfolio comprises oil and gas companies, merchant fleet, Norwegian army and renewable industries. Priding in the ability to foresee and adapt to changes, while staying innovative in terms of technology development. The company is renowned for its innovative approach and commitment to delivering high-quality, reliable solutions to its global customer base.

Figure 1 1 Business segments - Kongsberg Gruppen ASA (Kongsberg, n.d.).

KOG leverages its expertise in areas such as automation, control systems, robotics, and digitalization to address complex challenges faced by its customers. Proven to pay dividends for the company, which is shown with their total earnings before interest tax depreciation & amortization (EBITDA). Year to date in 2022, equalling approximately 40 billion NOK. While their ambition the previous year was estimated to be 30 billion NOK (Lorentzen, 2021). Showing tremendous growth for each of the different industries.

Through strategic partnerships and collaborations, KOG continually expands their capabilities and stays at the forefront of technological advancements, enabling them to maintain a competitive edge in the market. Their commitment to sustainable business practices such as minimizing its environmental impact and promoting sustainable practices have provided the company with substantial attention. The company focuses on developing technologies and solutions that help reduce emissions, increase energy efficiency, and support the transition to a low-carbon economy (Kongsberg, n.d.).

1.2 History

Kongsberg Gruppen ASA has a long and rich history, spanning over 200 years. The company was founded as ‘’Kongsberg weapon factory’’ in 1814 as an incentive to create more jobs at that time. This was done to fight poverty due to the decline in silver mines in Kongsberg. Well into the 19th century, they produced rifles for the Norwegian Armed Forces. It was not until 1889 that they made a breakthrough internationally with their well-known ‘’Krag-Jørgensen’’ rifle developed by director Ole Hermann Johannes Krag and gunsmith Erik Jørgensen, hence the name. Both the Danish army and the US army invested heavily into these rifles, which became an important rifle for use in each of the armies. The ‘’Krag-Jørgensen’’ rifle became the dominant production product at Kongsberg weapon factory until the end of the first world war (Kongsberg, n.d.).

After World War 1, they started expanding into the civil market. Producing not only rifles, but also a diverse array of products, ranging from chisels and spade handles, to bicycles and components for cars and ships. It was in the 1930s that Kongsberg weapon factory started to manufacture anti-aircraft guns due to the increasing instability, which would soon become World War 2. During the second World War, both Norway and the company was occupied by Nazi Germany. After the second World War, the Norwegian government sought to rebuild the Norwegian industry, of which they made Kongsberg weapon factory a key company for this to happen. In 1953, the Norwegian Parliament ‘’*initiated a large-scale modernization of the company’’* (Kongsberg, n.d.). It was this modernization that made Kongsberg weapon factory move the focus from producing traditional rifles, into bigger artillery and missile defence systems ‘’*such as the Penguin missile, the HUGIN underwater vessel and the Naval Strike Missile.’’* (Kongsberg, n.d.).

Following this modernization, combined with the discovery of hydrocarbons on the Norwegian continental shelf, Kongsberg weapon factory started yet another diversification process, delivering and producing subsea oil installations and maritime equipment. A major turning point in the company’s history was in 1987. ‘’*Although the level of innovation was high, it was not profitable’’* (Kongsberg, n.d.). With the Norwegian state being the major shareholder and owning all shares, they decided to sell all divisions except the defence division, making shares in the other divisions publicly available for purchase. Following, was the merging of Kongsberg weapon factory and Kongsberg Maritime in 1995, creating what we know today as Kongsberg Gruppen ASA.

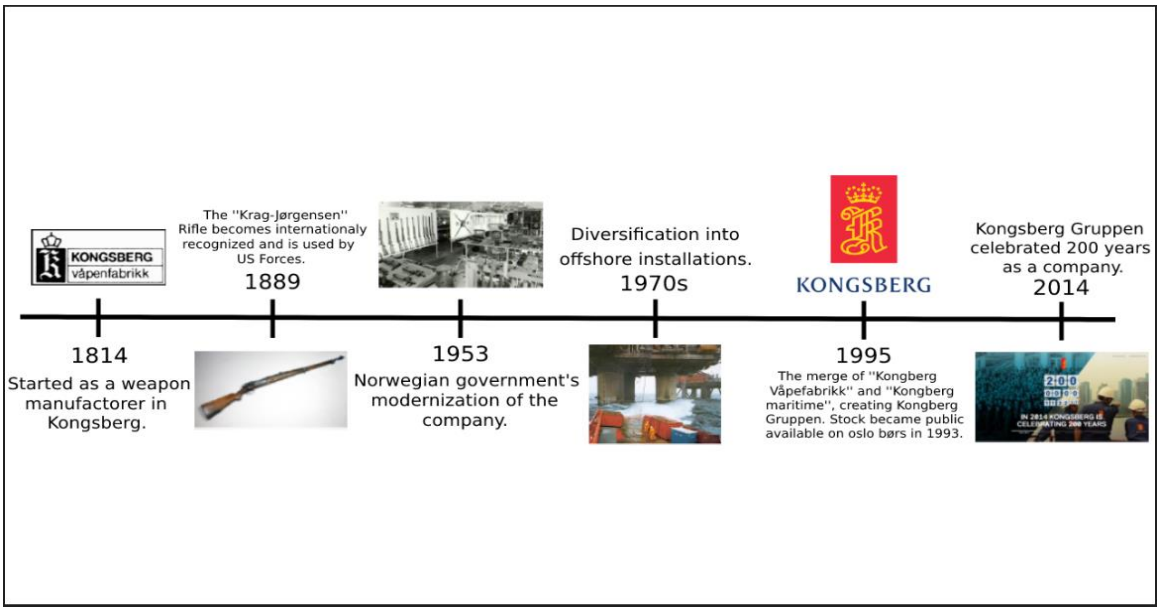

Figure 1 2 Timeline of Kongsberg Gruppen ASA

1.3 Ownership structure

Kongsberg Gruppen ASA (KOG) is a public limited company, with a sole exception of being a partial private company. This is due to the Norwegian state wanting to remain major shareholder in the company through (fiskeridepartementet, 2022) with an ownership of 50,004 percent of the shares (Kongsberg, n.d.). The main explanation for this is that the Norwegian Government wants to have control over KOG, as they are a strategic defence provider and a high-tech industry company. However, the remaining shares are available for the public. Shareholders with over 1% stake in KOG is mainly Norwegian, with the exception of State Street Bank and Trust Comp (1,27%, USA) and Danske Bank AS (1,01%, DNK). The ten major shareholders of KOG are listed below.

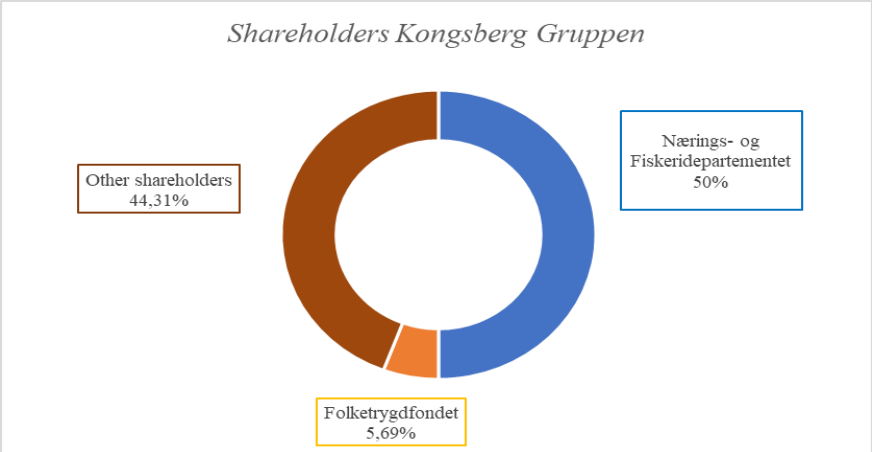

Figure 1 3 Shareholders of Kongsberg Gruppen ASA

The ten major shareholders in Kongsberg Gruppen ASA (as of 01.02.2023):

- Nærings- og Fiskeridepartementet (50%, NOR)
- Folketrygdfondet (5,69%, NOR)
- Must Invest AS (2,49%, NOR)
- MP Pensjon PK (1,36%, NOR)
- State Street Bank and Trust Comp (1,27%, USA)
- Fløtemarken AS (1,13%, NOR)
- Danske Bank AS (1,01%, DNK)
- The Bank Of New York Mellon SA/NV (0,92, BEL)
- JPMorgan Chae Bank, N.A, London (0,84%, GBR)
- The Northern Trust Comp, London BR (0,82%, GBR)

1.4 Business segments

As mentioned, Kongsberg Gruppen ASA is divided into different business segments. Although they are divided, both the production and technology are highly interconnect-able. Meaning a sensor produced for defence & aerospace might be useful for maritime and the other way around. Further information is presented below for each segment.

1.4.1 Kongsberg Maritime

Kongsberg Maritime (KM) is the one of three segments that Kongsberg Gruppen ASA (KOG) is in possession of. The segment identifies as a technology enterprise that delivers maritime systems regarding surveying, navigation, positioning and automation to naval vessels and subsea/offshore installations. One of the more essential products that KM delivers is sensors and transmitters, which measures pressure, motion, temperature, tank and gas levels (Kongsberg, n.d.). Another mentionable product is the collection of autonomous underwater vehicles, AUV for short, and marine robotic systems, which can be used both for civilian and military purposes. These include the HUGIN AUVs, which can be used for commercial applications such as pipeline- and subsea structure inspection, as well as defence applications such as underwater mine countermeasures (MCM) and intelligence, surveillance, and reconnaissance (ISR). Today, KM technology and services is applied to more than 30,000 vessels worldwide. In addition to a 7000-employee workforce and offices in 34 countries, making the maritime business segment crucial for KOG (Kongsberg, n.d.).

1.4.2 Kongsberg Digital

Another business segment of Kongsberg Gruppen ASA (KOG) is Kongsberg Digital (KD). This segment focuses on providing technological solutions such as hardware, software, data systems, and more to customers in shipping-, renewable energy- and oil- and gas sectors. These solutions aim to make businesses become more efficient, and in doing so reduce costs and the need for a greater workforce. Specific products include *''Kognitwin'' for the digitalization of oil and gas assets, ''Sitecom'' for safer and reliable drilling and wells operations, ''Vessel insight'', which provides fleet overview, vessel specific dashboards and analysis tools''* (Kongsberg, n.d.).

KD's solutions empower industries to embrace digital transformation and leverage the potential of advanced technologies to optimize operations. Essential is its value for the drive regarding their sustainable business performance. The company's commitment to innovation, domain expertise, and collaborative approach, positions it as a market leader in the digitalization space. Kongsberg Digital workforce consists of 771 employees (Kongsberg, n.d.).

1.4.3 Kongsberg Defence & Aerospace

Last, but not least, the third and one of the main business segments of Kongsberg Gruppen ASA (KOG), is Kongsberg Defence & Aerospace (KDA). It is this segment that made the Norwegian government wanting a majority stake in the company, as mentioned in chapter 1.3. Kongsberg Defence & Aerospace is described by KOG as ''*a leading supplier of defence products and systems for command and control, surveillance, space, tactical communications, remote weapon stations and missiles systems''* (Kongsberg, n.d.), as well as providing ''*extensive capabilities within advanced composite manufacturing and maintenance, repair and overhaul within the aircraft and helicopter market''* (Kongsberg, n.d.).

The different products are listed as follows: Aerostructures, Aviation maintenance, Defence & Security, Space & Surveillance, Maritime Surveillance and Support (Kongsberg, n.d.). With a workforce of more than 3300 employees and with headquarters in Kongsberg, Norway, Kongsberg Defence & Aerospace is the second largest business segment of Kongsberg Gruppen ASA (Kongsberg, n.d.).

2. Macroeconomic Environment

2.1 Defence & Aerospace

Since the start of the Russian invasion of Ukraine on the 24th of February last year, many countries have seen the need to increase their %GDP spending towards military and defence. This includes Norway where Kongsberg Gruppen ASA (KOG) is located. The Norwegian Government have announced an increase of roughly 9,8% in Norway's defence budget for 2023, resulting in a total spending of NOK 75,8 billion for 2023 (Forsvarsdepartementet, 2022). This includes the recently purchase of NASAMS missiles defence system from KOG (Persen, 2023).

Recently, in 2022, the global military market surpassed for the first-time 2$ trillion, making this market one of the biggest in the world (Sipiri, 2022). With this market potential, even a small stake in this market could provide billions of dollars in revenue, making it attractive to businesses. As of present day, it is not unlikely to believe that the military market will continue to grow, as war and tension between the west and the east increase.

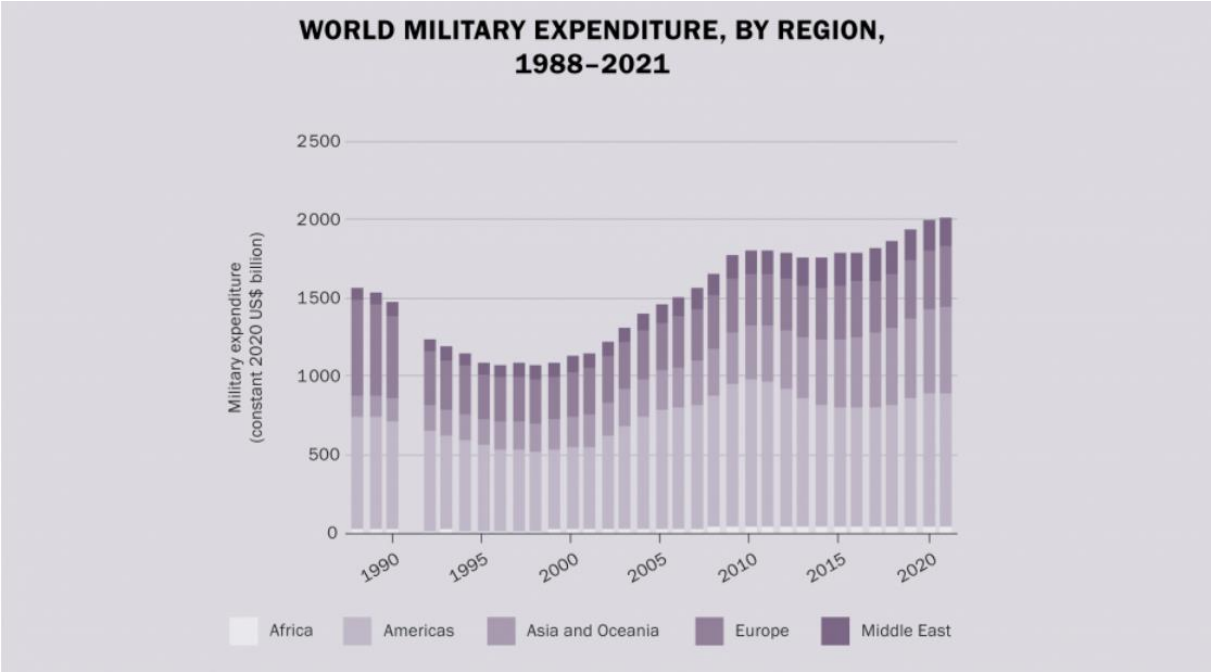

Figure 1 4 Military expenditure by region (Sipiri, 2022)

Additionally, the aerospace market is slowly moving to a better place. As for commercial aviation, a report published by PricewaterhouseCoopers (PwC) suggests that the market is on a ‘’*path to pre-pandemic activity’’* (PwC, 2023). Furthermore, PwC believe that the recovery of the aviation industry is not a matter of ‘’if’’, but ‘’when’’. Nevertheless, the same report also enlightens that the long-term growth of the aviation market is increasingly bullish. This could make sense since pent up demand for commercial aviation throughout the covid 19 pandemic can cause a spike in demand. However, ‘’*considering that approximately 82% of the global population has never experienced an aircraft flight’’* (PwC, 2023), one could argue that the projected growth of 60% in the aviation market by 2030 (PwC, 2023) could be something that comes to pass. Although the Ukraine-Russian war forced the air industry to reroute aviation routes resulting in increased fuel/administration costs, it seems unlikely that it will cause a significant amount of effects long-term (PwC, 2023).

2.2 Maritime & Shipping

The Maritime Market comprises many different sectors such as shipping, maritime technology, navigation, fish farming, naval information and more. The global shipping market, which includes transporting of goods from one part of the world to another, was valued at $2,2 trillion in 2021 (Allied Market Research, 2023). Secondly, fish farming had a global market value of $270 billion in 2021. Additionally, the maritime information market was valued at $1,8 billion in 2021 (Straitsresearch, n.d.).

This makes the shipping market the more significant market in this sector in terms of size. Furthermore, estimates suggest a continuous growth in these markets, as demand is forecasted to grow. Estimates suggests a compound annual growth rate (CAGR) of 7% in the shipping market towards 2031 (Allied Market Research, 2023). Furthermore, the fish farming and maritime information markets show an estimated CAGR of 5,4% towards 2030 (Straitsresearch, n.d.) and 6,2% towards 2028 (Yahoo Finance, 2022) respectively.

2.3 Oil, gas & renewable energy

Energy transition has been a common word mentioned in the past years. According to sources, the world is in the midst of such a transition (McKinsey, 2022). Consequentially due to the Russian invasion of Ukraine, many countries, especially in EU, sought to move forward with economic sanctions against Russia. Countries in the European Union was pre-war highly reliant on hydrocarbons from Russia, especially gas which yielded around 45% of all total gas imports in the EU (Kardaś, 2023). Availability diminished, the prices of both oil and gas went through the roof, resulting in energy companies that produces hydrocarbons making a fortune. An example of this is Equinor's record breaking result for 2022 of $74,94 billion, making it the largest yearly result a Norwegian company has ever historically produced in Norway (Hovland, 2023).

Furthermore, a report from McKinsey suggests a forecast of growth in both the use of hydrogen, but also other renewable sources. The forecast indicates that a mix of hydrogen, renewable energy and electrification could potentially yield 32% of global energy needs by 2035 and as much as 50% by 2050 (McKinsey, 2022). With these forecasts, significant investments in these areas are warranted. Below in *Figure 1 5*, is a figure from McKinsey that projects the global investments in the energy sector for the next decade and more. The report also suggest that global fossil fuel demand will peak between 2023 and 2025. (McKinsey, 2022)

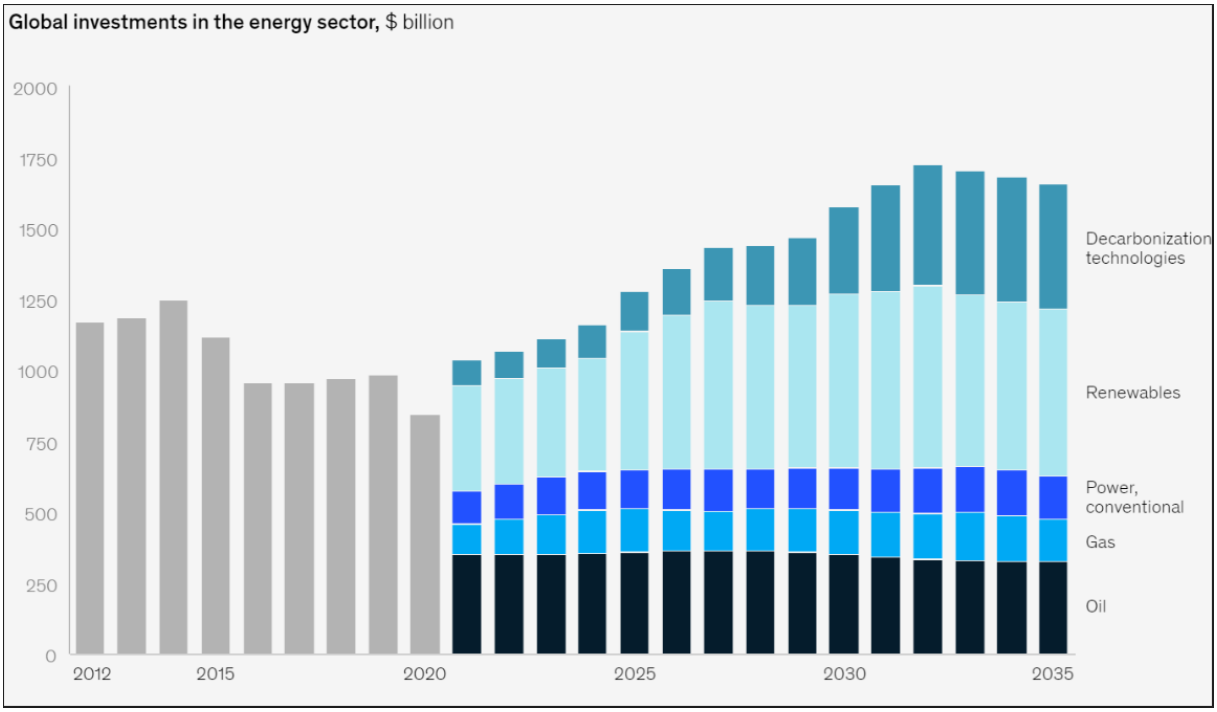

Figure 1 5 Projections of global investments in the energy sector (McKinsey, 2022)

2.4 Technology

The Technology Market is often regarded as the most innovative and fastest growing market in the world. Estimates suggests that the global market value of the technology sectors is $5,2 trillion (Zippa, 2023). Some reports indicate that the annual growth rate of the technology sector is 2-3 times of that of annual global growth rate in GDP (Sun, 2019). With annual global growth in GDP being at an average of 2,65% in the last decade (Worldbank, n.d.), this would make the annual growth rate in the global technology market at average between 5,3- and 8 percent. Furthermore, some sectors in the technology market may yield higher growth rates than others.

Sectors such as Artificial intelligence (AI) and Virtual reality/Augmented reality (VR/AR) could have higher growth rates than the average. Additionally, the 10 most prominent technology companies in the world amass a combined market capitalization of roughly $7,9 trillion, which indicates that significant investments are being made in the sector (Forbes, 2023).

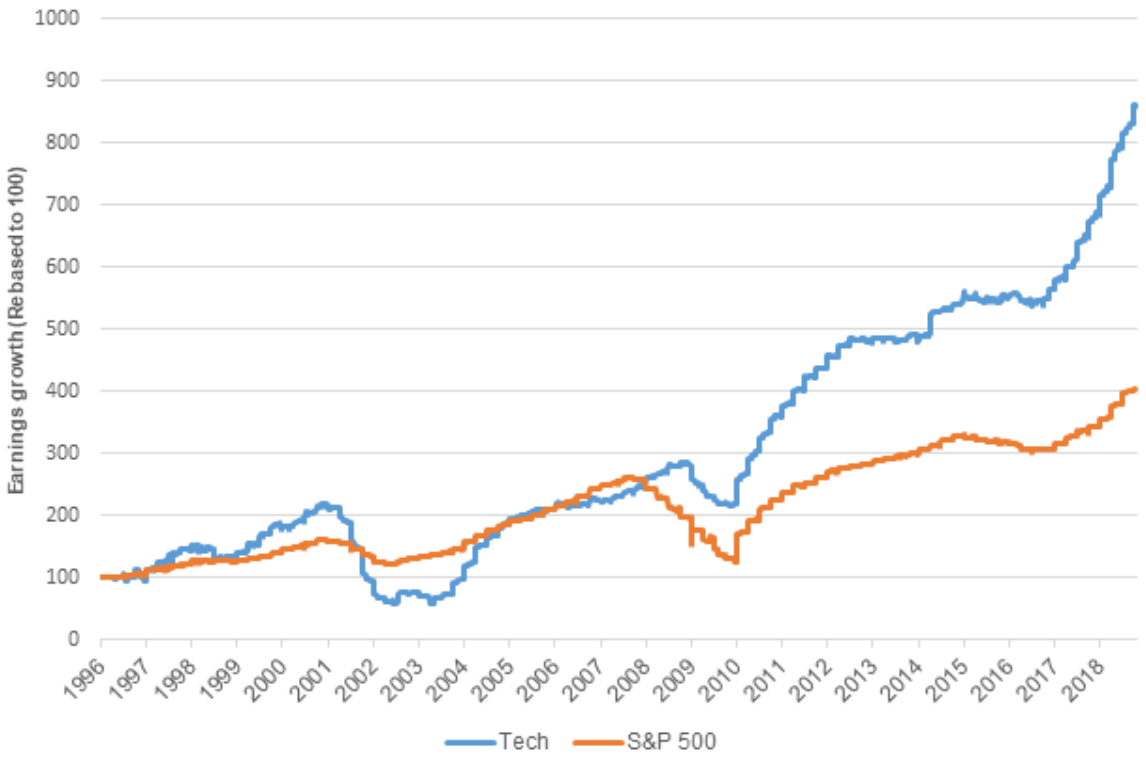

Figure 1 6 EPS share growth – Technology sector vs. Broad market (Dhanraj, 2018)

3.Valuation Theory

This chapter will we explain the different theories and methods used in valuation. We will also address the strengths and weaknesses of each method, as well as conclude with an explanation regarding the choice of method. Initially, there are three commonly known methods regarding valuation. These are fundamental, relative- and option-based valuation. These methods can be used in conjunction with each other. In addition, the results produced from each method can be jointly used. We will in the following chapters take a closer look at the different methods.

3.1 Fundamental Valuation

Fundamental valuation is a valuation method that mainly examines forecasts of future cash flows of a company. The estimated future cash flows can be determined by both strategic and macroeconomic conditions. However, it is mainly composed of reported historical accounting numbers. This includes reported historical revenues, expenses and taxes. The forecasted cash flows are then subjected to discounting of which the future cash flows are discounted to present value. The discount rate is determined by the company's required rate of return, risk and market premiums. In general, a higher risky asset warrants a higher discount rate (Damodaran, 2012). Stephen Penman summarizes fundamental valuation through five steps (Penman, 2010).

1. Knowledge of the company and the industry, as well as study the strategy the company is using to create value.
2. Information regarding quantitative accounting numbers such as sales, cash flows and profitability are analysed. Other variables to analyse is customer preferences, technological changes and board competence. It is also of importance to adjust and remove structural accounting numbers as well as additional irrelevant information.
3. Historic accounting numbers such as dividends, revenues, profits and book values are analysed. Mainly to use as a foundation to budget for future cash flows.
4. Next, the estimated future cash flows from step 3 are discounted. The present value is discounted based on risk, due to the uncertainty the future holds. From this, a required rate of return is established.
5. The final step, a company's value is created based on the future cash flow estimations. A comparison is then made between this value and the present-day value of the company. If present-day value is lower, then it means the stock is undervalued and if present value is higher - overvalued.

Furthermore, two methods are commonly used regarding fundamental valuation, branded as the equity- and total capital method. These methods are similar, but is differentiated when it comes to cash flows and discount rates. The equity method utilizes cash flows to equity holders, meanwhile the total capital method makes use of cash flows to the company (Damodaran, 2012). Both methods allow for consistency and should provide the same results. Lastly, an important assumption to make for fundamental valuation in general, is the assumption that a company's value is determined by all future cash flows a company makes during its lifetime.

3.1.1 Equity method

The primary purpose of the equity method in fundamental valuation is, as mentioned, to verify cash flows that is explicitly handed out to equity owners of a company. The cash flow calculation includes variables such as revenues, expenses, depreciations and more. The tables below describe the calculations necessary to calculate cash flow to equity owners, as well as a formula to determine the discount rate (Damodaran, 2012).

	Revenues
-	Operating Expenses
=	**EBITDA**
-	Depreciation
=	**EBIT**
+	Financial Income
-	Financial Expenses
-	Tax
=	**Net Profit**

Table 1 Cash Flow to Equity (1)

=	**Net Profit**
+	Depreciation
-	Investments
±	Change in Working Capital
±	Change in Debt
=	**Cash Flow to Equity**

Table 2 Cash Flow to Equity (2)

Nevertheless, to determine the discount rate, we need to calculate the required rate of return. This is done through use of the capital asset pricing model (CAPM). The formula is as follows:

$$ER_i = R_f + \beta_i (ER_m - R_f)$$

Formula 1 Capital Asset Pricing Model (CAPM)

Variable explanation

R_f = Risk-free rate. This is the rate of return received from risk-free investments such as government bonds (Damodaran, 2012).

Er_m = Expected return in the market. This value is subtracted by the risk-free rate, with the resulting value becoming excess return one would expect to receive from investing in riskier assets (Damodaran, 2012).

β_i = Systematic risk, also called company beta. This variable represents volatility of a stock in comparison to an index. In general, its description is how volatile a stock is compared to the market. Most common approach of calculating the beta is to calculate the covariance between the stock price with the price of a relevant index, then dividing this result with the variance of the relevant index (Damodaran, 2012). The formula is presented in *Formula 2* down below.

$$\beta_i = \frac{Cov\,(R_i, R_m)}{Var(R_m)}$$

Formula 2 Beta

Variable explanation

Cov = Covariance
Var = Variance
R_i = Rate of return stock
R_m = Rate of return index

Lastly, the significance of the Beta is often related to the amount of data available. For that reason, at least five years of historical data is used to compute a reliable beta. If a stock's beta is equal to 1, then the stock is equally volatile as the reference index. If the same beta value is higher than 1, then the stock will have a greater volatility than the reference index and vice versa (Damodaran, 2012).

3.1.1.1 Country Risk

An addition to the capital asset pricing model is the inclusion of country risk. A stable country with a solid fundamental government body might carry lower risk in terms of investment than a country with instability and war. Therefore, adjusting for country risk could be essential in receiving an increased accuracy when calculation the required rate of return. It is therefore warranted to add another variable to the existing CAPM-formula. This variable account for sovereign, economic and political risks, and is computed through a weighted average of the countries the specific company has its operations, resulting in a more accurate required rate of return (Damodaran, 2012).

In the event of valuating a company that have operations in multiple countries, the country risk variable (L_f = Country risk) is added to the capital asset pricing model as shown in *Formula 3* down below.

$$ER_i = R_f + \beta_i \left(ER_m - R_f\right) + L_f$$

Formula 3 Inclusion of country risk in the CAPM formula

3.1.2 Total capital method

The total capital method, as mentioned, is another way to calculate cash flows to use in fundamental valuation. In general, the cash flows calculated is the available cash flows for both equity- and credit holders of the company. As such, the calculations performed in this method exclude financial expenses/income. The table presented below shows the calculations necessary to find the cash flow using the total capital method (Damodaran, 2012).

	Revenues
-	Operating Expenses
=	**EBITDA**
-	Depreciation
=	**EBIT**
+	Depreciation
-	Investments
-	Tax
±	Change in Working Capital
=	**Cash Flow to Total Capital**

Table 3 Cash Flow to Total Capital

Likewise with the equity method, the resulting cash flow needs to be discounted to present value. The total capital method uses the weighted average cost of capital, also known as WACC, for this purpose. In general, WACC is the weighted average the company pays its equity and credit holders. It is this computed value that is used to discount the forecasted cash flows to present value (Brealey, Myers, and Marcus J. 2022). *Formula 4* down below presents how equity and debt can affect the resulting discount rate.

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

Formula 4 WACC formula

Variable explanation

E = Market value of equity. In general, this variable describes the how much a company's equity is worth. In the WACC formula, it is computed to understand how much weight equity has in comparison to debt.

D = Market value of debt. Again, this variable describes how much the debt in the company is worth. It is, likewise with equity in the WACC formula, the weight of debt in comparison to equity.

R_e = Cost of equity. This is the value computed in the capital asset pricing model (CAPM) and in other words is the same value as required rate of return, which we mentioned earlier. This is the estimated return on equity an equity holder can expect.

R_d = Cost of debt. In general, this is the same value as interest expense that a company pays its creditors.

T = Tax. Interest expense is taken into account in the WACC formula and is therefore subtracted from the tax. This can result in a lower cost, which differ from the costs presented (Brealey et al. 2022).

To summarize, when conducting the total capital method, the resulting value from using the WACC formula will be used as the discount rate to discount the future cash flows.

3.1.3 Terminal value

Terminal value is applied when using both the equity- and total capital method. In general, when using these methods to do fundamental valuation, one uses a horizon of six or less years. If the company is suspecting to operate after the six or less years, then an additional value of all future cash flows after the ended forecasted year is warranted. As such, a terminal value is added. This is to account for all future cash flows from the end date of budgeted period to the rest of the lifetime of the company.

$$TV = \frac{FCF_n(1+g)}{(r-g)}$$

Formula 5 Terminal value formula

Variable explanation

FCF_n= Cash flow in terminal year n
g = Estimated growth rate
r = Discount rate/Required rate of return

We find the terminal value by using the forecasted cash flow in year n, the estimated growth rate of the company's lifetime and lastly, the required rate of return. The discount rate used is different whether we use the equity- or total capital method. Since the terminal value estimated the sum of all cash flows of a company's lifetime, this value can alter the resulting valuation with ample margins. Therefore, essential to conclude a reasonable value (Damodaran, 2012).

3.1.4 Concerns regarding valuation methods

Valuation methods that mainly focus on discounting forecasted cash flows will return a significant result if the cash flows forecasted is positive, measures risks and in general, are backed by other macro-/microeconomic forecasts (Damodaran, 2012). However, there are practical concerns that arise in certain events. Firstly, if the company has economic issues or are not cash flow positive. Second, if the company is involved in takeover, hostile or not. Third, if the company is in undergoing restructuring. Lastly, if the company in question have limited information. These are all concerns that needs to be taken into account for the valuation methods presented to work well.

3.1.5 Residual earnings method

Another widely recognized valuation method is residual income/earnings models. These models focus on the available equity that is left after taken into account all of a company's costs. A company's income statement might not include a charge for the cost of equity capital (CFAinstitute, 2023). Residual earnings models do take this into account when calculating the intrinsic value of a stock (CFAinstitute, 2023). In general, these models *''attempt to measure economic profits after accounting for all opportunity costs of capital* (CFAinstitute, 2023)*.''*

The main variables necessary for the residual earnings model is earning per share, dividends per share and book value per share. These variables will usually be available or calculable from the historic income statements and balance sheets of a company. Furthermore, once in possession of these variables, we can calculate the return on common equity (ROCE), which is generally described as how much common shareholders receive from a company compared to how much they originally invested in the company.

With this new variable available, we can calculate the Residual earnings, which subtracts cost of capital from return on common equity. Likewise, with the other models mentioned earlier, this model uses forecasted earnings per share and dividends per share, which advocate for the need to discount the resulting residual earnings. Additionally, a terminal value (continuing value) is added, which is similar to the other fundamental models, but with exchanging cash flows for residual earnings in terminal year.

$$Earnings\ per\ share = \frac{Net\ Income_t}{Total\ shares\ outstanding}$$

$$Dividends\ per\ share = \frac{Total\ Dividend_t}{Total\ shares\ outstanding}$$

$$Book\ value\ per\ share = \frac{Shareholders\ Equity - Prefered\ Equity}{Average\ of\ common\ shares\ outstandng}$$

$$Return\ on\ common\ equity = \frac{Earnings\ per\ share_{t+1}}{Book\ value\ per\ share_t}$$

$$Residual\ earnings = BPS * (ROCE_t - Required\ return_t)$$

$$Continuing\ value = \frac{ROCE_{terminal} * g}{r - g}$$

Formula 6 Variables to calculate in the residual earnings model

Lastly, as the formula below states, you add the book value of present date with the sum of all residual earnings from the first year to terminal year. This together with the calculated terminal value returns the present-day intrinsic value/stock price of the company.

$$V_0 = BV_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1+r)^t}$$

Formula 7 Residual earnings formula

Variable explanation

BV_0 = Book value in present year

RI_t = Residual Income in year t

R = Required rate of return/Discount rate

3.2 Relative valuation (multiples)

Relative-/multiple valuation is a valuation method that does not focus on the fundamentals of a company, but rather uses different variables from comparable firms in order to put a valuation on a company.

In general, these methods compare the market values of comparable firms to the equity of the company under valuation. These comparable firms needs, in theory, to be equal in size. Main reason for this, is that there could be differences in how a company is run or financed if size of the companies is unequal. Relative valuation is commonly used, as it is practical in terms of time efficiency and how easy it is to apply.

It is not uncommon to compare different multiples to calculate a value of a company in relative valuation. In the following chapters, we will take a closer look at the most common used variables. These are, but are not limited to: Price/Earnings, EV/EBITDA, Price/Sales and Price/Book (Damodaran, 2012).

3.2.1 Price/Earnings

Price/Earnings, or P/E for short, presents the ratio between the market value of a company's stocks and the results achieved per stock, within a certain period (quarterly or yearly). It is an effective method when analysing the different conditions in a market, as well as getting an understanding of what the market has for expectations to a company. This ratio show how long it will take for an investor to earn the amount of the initial invested capital (Koller et al. 2010).

$$\mathrm{P/E} = \frac{Market\ value_t}{Annual\ return_t} = \frac{Stock\ Price_t}{Annual\ return\ per\ stock_t}$$

Formula 8 P/E formula

High price/earnings ratio indicates that the market believes that the company will experience high growth in the future, with relative low earnings compared to market value at present time. Low price/earnings ratio indicates that the company is earning good at present time compared to the stock price, meanwhile with a lesser value for growth in the future (Koller et al. 2010).

3.2.2 EV/EBITDA

Enterprise value to EBITDA ratio is another commonly used multiple in relative valuation. The ratio is calculated through finding the total amount of a company's equity and debt, and subtracting cash equivalents. This ratio is often used by investors as it is common for companies to be EBITDA positive, resulting in a non-negative ratio. It is common that many companies' results can vary, as using different depreciation methods might result in different net profit calculations. However, this does not affect the EBITDA value, as depreciation is not part of this value's calculation. Furthermore, EV/EBITDA ratio by theory, makes it easier to compare different companies in comparison to other multiples. Mainly due to the differences in financial structures of companies. Companies with different equity to debt ratios might yield differences in both company structure and risk levels. This is particularly useful for companies that presently are in need for heavy investments in infrastructure, especially if the periods between these investments are long (Damodaran, 2012).

$$\mathrm{EV/EBITDA} = \frac{Market\ value\ equity + Market\ value\ debt - Cash\ equivalents}{EBITDA}$$

Formula 9 EV/EBITDA formula

3.2.3 Price/Sales

The Price/Sales multiple shows the relationship between the market value of a company and sales. With companies of which sales makes up a lot of the company's revenue, this ratio becomes a great tool to use when comparing similar firms. In general, this ratio indicates what the market is willing to pay for each NOK the company brings in sales. In turn, one will be able to study the relationship between a company's sales and the company's stock price.

$$P/S = \frac{Market\ capitalization_t}{Sales_t} = \frac{Stock\ Price_t}{Sales\ per\ stock_t}$$

Formula 10 P/S formula

3.2.4 Price/Book

Price/Book is yet another multiple used in relative valuation and is all about showcasing the ratio between a company's market value with book value. This ratio is often used by companies and investors to compare different firms in a sector. Additionally, book value is often consistent when comparing businesses, making it a good tool to use for analysis of the relationship between market value and the actual book value of a company. Another advantage of this multiple is that it still can be used when a company is net profit negative, which does not work when for example using P/E. Several different factors need to be taken into account when using P/B for analysis. Firstly, an important factor is to have a look at how capital intensive the selected sector is. A low P/B ratio in comparison to other firms in the same sector might present that the stock is undervalued, but it might also indicate fundamental flaws in the company.

Furthermore, in the event of a company becoming insolvent and go bankrupt, the P/B ratio will describe how much an investor will get. An example would be if the P/B ratio of a company that went bankrupt was 5, then you as an investor would receive 1/5 of the value an investor bought the stock (Koller et al. 2010).

$$P/B = \frac{Market\ value_t}{Book\ value_t} = \frac{Stock\ Price_t}{Book\ value\ per\ stock_t}$$

Formula 11 P/B formula

Variable explanation

Book value = Total Equity - Total Debt

3.2.5 Concerns regarding relative valuation

Some concerns may arise if the whole valuation is solely based on relative valuation. Firstly, no companies are equal. It is abnormal to find companies that operates in the same sectors, is of equal market values, have same products and have same capital structure. This makes it difficult to find comparative firms. Secondly, several factors might alter the value of these multiples, that it raises some concern regarding the comparability of these numbers, even if the companies are relatively equal. Furthermore, relative valuation is a difficult tool to use in newly established sectors/industries/businesses, as there are limited historical available information. Additionally, new sectors/industries/businesses might have a high growth rate, further altering the different multiples. Therefore, it can be difficult to determine, and estimate forecasted cash flows for a longer period, as relative valuation often advocates for short time periods. With these presented facts, relative valuation should be used as a tool to compare the results derived from fundamental valuation, rather than used alone as a tool to value a selected company.

3.3 Option-based valuation

Option-based valuation is a valuation method that seeks to find the present value of an option. An option is a financial instrument that gives an investor the right to buy or sell a specific underlying asset at a predetermined price. The investor is however not obligated to do invoke his right to buy. There are generally to forms of options, call-options and put-options. A call option allows an investor to buy an asset at a predetermined price. The value of this option is then the difference between the predetermined price and the present-day market price. A put option is the opposite. It allows an investor to sell an asset at a predetermined price. The value is then, yet again, the difference of the predetermined price and the current market price of the asset. In general, the predetermined price usually deviates from the present-day market value of an asset. This in turn could mean that a company have assets in options that are greater or less than the present value of the asset in question.

There are different models used in option-based valuation. The most common however, is the binomial model and the Black & Scholes model. Both models try to determine value of an asset by comparing it to a risk-free loan. Some variables are needed in order to conduct an option-based valuation, these are as follows: Strike price, expiration time, risk-free rate, variance, current value and dividends (Kaldestad & Møller, 2016).

3.4 Choice of method

Considering recent presented valuation methods, we will need to disclose our chosen method of valuation that is most relevant to Kongsberg Gruppen ASA (KOG). Theory provided from Yngve Kaldestad & Bjarne Møller suggest there are 5 important factors regarding selection of valuation methods. These factors in no particular order are as follows: Availability of information, what industry is the firm located, availability of time to do research, present lifecycle of the firm, and lastly, availability of reliable sources, (Kaldestad & Møller, 2016).

KOG is a stock exchange noted firm on the Oslo exchange. By being noted, rules regarding information availability are in place, making information regarding the company publicly available. This includes both quarterly and yearly reports as well as company presentations. With this information in mind, we can safely say there are enough information regarding the company for us to perform a valuation.

Next, as mentioned in chapter 1 & 2, KOG has business areas in many different industries. Further analysis of these industries might yield different growth factors, costs and risks. This in turn might require valuating these different sectors one by one. That said, analysing future cash flows will still be a key factor in evaluating the company. Furthermore, as this is a master thesis with an expected period of 6 months, there will be enough time to do research and conduct a thorough analysis. Lastly, as mentioned in chapter 1, KOG has existed since the 19th century. Although the company has been reinvented and repurposed over its history, we can safely assume that it is not in the introduction or growth phase. Rather, it's more likely that it is a mature company.

With these facts presented, we conclude that the preferred valuation method for KOG will be a fundamental valuation, with chosen method being the total capital method. In our opinion, and from sources presented, this kind of valuation provides the most accurate and relevant valuation for this firm. Using multiple valuation methods can potentially distort a valuation if resulting values deviate from each other. However, using different valuation methods can advocate for a more precise valuation if the resulting values do not deviate from each other. Therefore, we will additionally perform a multiple valuation as well as a residual income valuation in an effort to conclude whether the resulting value from the fundamental valuation will be considered reasonable.

4. Strategic analysis

Preceding chapters provided a comprehensive description of the sequential steps involved in the valuation process. In the subsequent chapter, our objective is to delineate the most pertinent strategic considerations pertaining to Kongsberg Gruppen ASA (KOG). Through the application of a carefully selected array of strategic models and tools, our aim is to discern critical factors encompassing the company's contextual milieu, market positioning, and resource endowments that engender enduring competitive advantages.

The underlying analysis seeks to unveil KOG's strategic value drivers while illuminating potential latent risks and threats that may impinge upon the company. Consequently, the identification of salient factors influencing the company's future cash-flows and by extension, the valuation of KOG is envisaged. Visual representation of the specific analyses to be conducted is presented in *Figure 1 7* below.

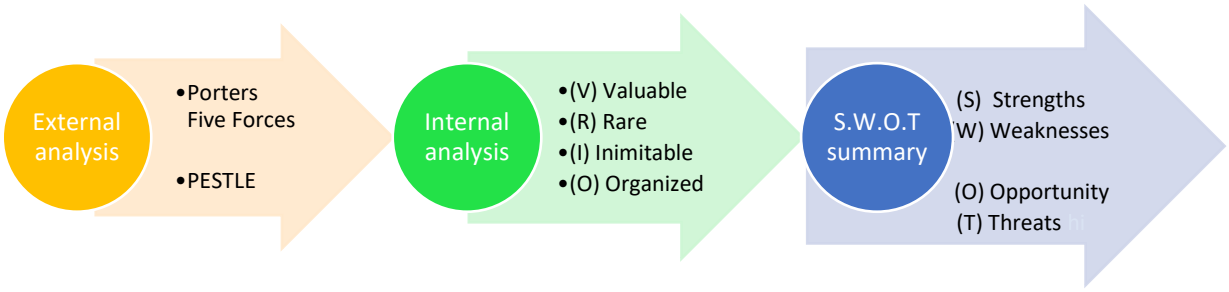

Figure 1 7 Strategic analysis content

The strategic analysis will be segmented into two distinct sections: internal analysis and external analysis before summarized. Purpose of the strategic analysis is to map out KOG's competitive situation and examine opportunities and threats concerning the further development. When examining the external environment of the company, we will employ Porter's Five Forces and PESTLE (Political, Economic, Social, Technological, Legal and Environmental) analysis model.

Internal resource analysis will employ the VRIO (Valuable, Rare, Inimitable, Organized) framework. This model enables the identification of KOG's internal strengths and weaknesses, which directly impact the organization. Conclusively, findings from both the external and internal analyses will be consolidated in a comprehensive SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis.

4.1 Porter's Five Forces

Porters five forces is a well-known analytical tool for mapping potential threats, in terms of the company's competitive factors. The in-depth analysis will provide an objective understanding for how sensitive Kongsberg Gruppen ASA (KOG) might be too the external factors in the weapons industry. Porters five factor model has its main purpose in uncovering the company's ability to manage these external factors in a competitive setting.

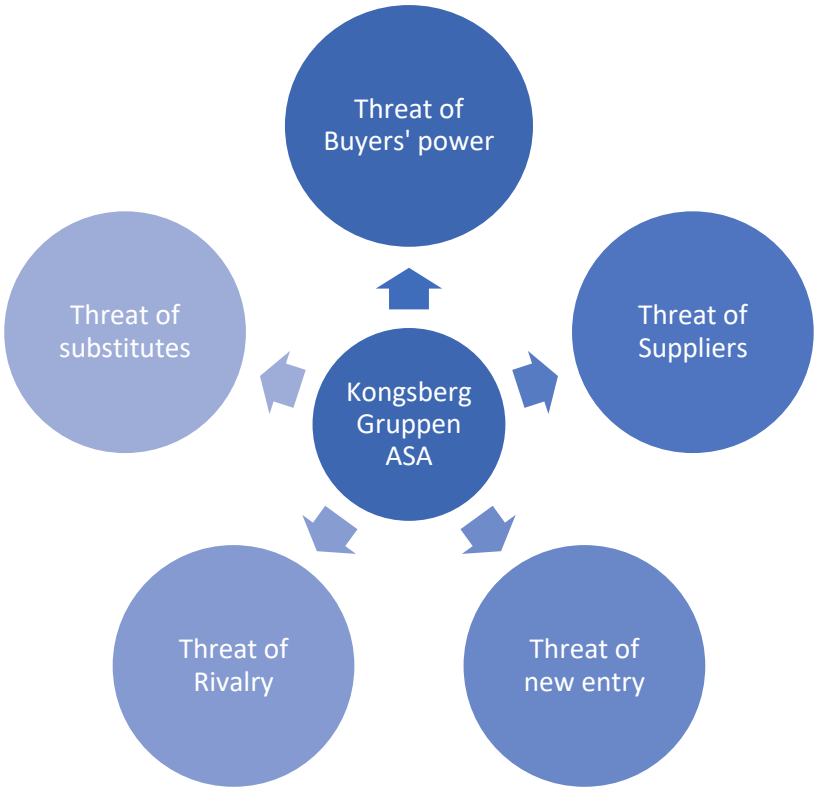

Figure 1 8 Porter's Five Forces

Collectively the strengths of each force depicted in the model, determines the profit in a competitive industry (Porter, 1979). For KOG, this analysis will create a better picture of how and to what extent the company's further development is threatened by its competition.

In addition to the overall competitive market regarding suppliers, we map out the potential threat for each force respectively pertaining to KOG. The first force focuses on the threats a potentially new entry could have and will be discussed subsequently.

4.1.1 Threat of new entry

Producing components for the weapons industry requires substantial knowledge, advanced machinery, and access to facilities & large amount of capital. The size of the production facility will, however, depend on which products are to be delivered. Indicating that it will be higher entry barriers for suppliers compared to suppliers who have specialized within a product group.

Economies of scale refer to cost advantages that arise from increased production levels in an industry. These advantages result in lower average unit costs as output expands, but only up to a certain threshold. Established companies often possess distinguishing factors like well-known brand names and loyal customer bases, making it challenging for new entrants to compete. The production scale benefits established players serving as barriers to entry. Particularly when the production volume of a company represents a substantial portion of the overall market supply. This constitutes establishment barriers for new competitors at the national level, although not as significantly on a global scale pertaining to KOG.

The threat of new entrants in the industries where KOG operates (defense, maritime, and aerospace) is relatively low. The company has established quite a strong market position, benefiting from its technological expertise, extensive product portfolio, and long-standing customer relationships. High capital requirements, complex regulatory frameworks, and substantial R&D investments serve as significant barriers to entry. Making it challenging for new competitors to enter and establish themselves in these industries.

Figure 1 9 Kongsberg Gruppen risk assessment - threat of entry (E24, Aas 2018)

4.1.2 Threat of substitutes

Substitutes are alternative products or services that can replace the function of the current one products or services. Substitutes provide a risk regardless of the quality and service, as this gives the customer options which can be leverage for price negotiations. Substitutes can simultaneously reduce or replace the demand for the existing product.

Regarding Kongsberg Gruppen ASA's (KOG) situation, there is currently no threat of substitution regarding the Norwegian market. Because they are the sole provider in terms of weapons manufacturing. Their competitors are primarily companies operating in either defence aerospace, maritime or digital market, residing other countries. In chapter 1, we established that all of KOG's divisions have the sustainability aspect in common. Should this aspect become more vital and the technology not meet the environmental requirement, their product could be subjected to substitution on this basis.

KOG operate with large scale operations. Meaning that the equipment shipped during transactions are substantial. Regarding both of their technological performance and service, clients reasoning to look for substitutes would be either cost, or specialist related. Chosen risk assessment is low, due to there being only two justifiable reasons for substitution pertaining to their clients.

1. Cost measures - client dependent
2. Diversification vs. specialism - immersion in sector

Figure 1 10 Kongsberg Gruppen risk assessment – substitutes (E24, Aas 2018)

4.1.3 Buyer's power

Customers with great bargaining power are a threat on equal terms as powerful suppliers. Large number of customers is advantageous, to sustain powerful customers from reducing the income. On the other hand, if the number is small, the dependency created on each customer is bigger, and the bargaining power decreases. Three conditions influence the buyer's power:

Concentrated buyers:

Few yet big customers, creates competition among the suppliers - push prices downwards.

Low switching costs:

Price negotiations are more powerful if the costs for switching supplier is low.

Buyer competition threat:

If buyers can do a backward vertical integration - supplying themselves.

KOG is quite special in this regard as they are situation dependent. During peaceful times consumers are likely to hold higher bargaining power. This can also be pertained to their specific divisions. Classified KOG should be categorized in the concentrated buyer's category. However, KOG's strong brand reputation, innovative solutions, and customer-centric approach provide the company with some leverage in negotiating contracts and maintaining long-term relationships with its buyers. While having a diversified customer base from its different divisions they are heavily situational dependent. Nevertheless, chosen risk assessment is still considered to be high, due to uncertainty in this aspect.

Figure 1 11 Kongsberg Gruppen risk assessment - buyer's (E24, Aas 2018)

4.1.4 Threat of suppliers

A supplier that achieves great bargaining power over its customers will be able to exert pressure of the margins in their customers' industry by charging higher prices for their products, or in other ways, exploit this power to the customers' disadvantage. Manufacturers are consequently the most important supplier for weapons suppliers. In the following, it will therefore limit the analysis of suppliers to the weapons industry.

The human capital will also have an impact on how well the suppliers are doing in the development of new technology. In other words, how innovative they are. We observe among another thing that well-capitalized companies are more interested than before in technology development. This represents a form of pressure on the human capital of the suppliers as the probability that competent employees can be bought up by strong capital companies, are larger.

While KOG relies on various suppliers for their materials, components, and technologies, the company often works closely with them to ensure a stable supply chain. KOG's strategic partnerships and collaborations with suppliers may provide some advantages in terms of pricing, quality control, and access to specialized resources. However, the availability of alternative suppliers and the company's ability to vertically integrate certain operations can help mitigate supplier power. On this basis, risk assessment for suppliers bargaining power should be considered moderate.

Figure 1 12 Kongsberg Gruppen risk assessment - suppliers (E24, Aas 2018)

4.1.5 Rivalry

The threat of rivalry in an industry is determined by the intensity of competition between industry players. Intense competition can heavily impact companies' profitability and reduce expected results. Large number of competitors with roughly the same strength ratio often results in very tough rivalry. Furthermore, if products and services are similar, nothing stops costumers from switching to competitors. In such circumstances, price is the only way to compete.

The competitive rivalry in KOG's industries is moderate to high. The company faces competition from other established players, including large multinational corporations and specialized firms. Competitors often possess similar capabilities and offerings, leading to intense competition for market share. However, KOG's strong brand, extensive product portfolio, technological expertise, and long-term customer relationships provide it with a competitive advantage. Continuous investments in R&D and strategic collaborations contribute to its ability to differentiate itself from competitors.

Figure 1 13 Kongsberg Gruppen risk assessment – rivalry (E24, Aas 2018)

4.1.6 Summary Porter Five Forces

Porters' framework overall show, Kongsberg Gruppen ASA (KOG) faces moderate competitive pressure. The company benefits from its strong market position, technological expertise, and customer relationships. The barriers to entry, combined with the company's strategic advantages, help maintain its competitive position and mitigate some of the forces in the industry. However, KOG needs to stay vigilant and adapt to changes in customer preferences, technological advancements, and emerging competitive threats to sustain its strong market positioning.

4.2 PESTLE model

PESTLE analysis is a systematic mapping of external factors that identifies macroeconomic conditions in the company's environment (Knudsen and Flåten, 2018). PESTLE is an acronym for political, economic, social, technological, legal and environmental, and it is a valuable tool for organizations to ensure that all potential risks and issues are captured (Rastogi & Trivedi, 2016).

4.2.1 Political (P) & legal (L) factors

Political factors can significantly impact Kongsberg Gruppen ASA (KOG). Their decisive challenge is managing the political power balance in the international market. Adapting to the rules and regulations provided by the Norwegian government, for conducting contractual deals with other countries. Having operations in multiple countries they are subjected to, changes in political stability, government policies, and regulations. This can influence several of their operations which might be subjected to change at any given moment. For example, defense contracts may be influenced by geopolitical tensions or changes in defense spending by governments. Additionally, government regulations and policies related to maritime safety, environmental standards, and trade agreements can affect KOG's operations and market opportunities. Kongsberg have clear procedures and guidelines for how to handle political disputes and uncertainties. Preventing them for capitalising on potential unethical profitable offers.

Operating in the weapons and arms industry there are multiple legal factors. KOG carries out large parts of its business within the defense industry, which according to Global justice is an industry that is largely exposed to corruption (Globaljustice, 2021) . Stating that approximately 40% of global corruption originates from global arms trade. Although KOG follows strict ethical guidelines and control procedures with their active operations (Kongsberg, 2022), this does not necessarily mean that business partners do.

Proper investigating for business partners is therefore necessary to not hurt the reputation of the company. If proper investigation lacks follow up, the adverse impact would be greater than be benefits. Indicating that both political and legal factors are of magnitude for the industry and KOG.

4.2.2 Economic factors

Economic factors are elements in the economy that directly affects a company and have resonating long term effects. These factors have significant impact on the performance of the company's industry and how profitable their operations become. Factors include, economic growth, interest rates, inflation, and exchange rates. These will be discussed subsequently.

Economic growth and inflation:

Conjunctionally the economic growth and inflation rate are tangible with one another. The economic growth would be equal to zero if it matches the inflation rate. If Kongsberg Gruppen ASA (KOG) operates in an industry where it can pass on increased costs to customers through price adjustments, a higher inflation rate can contribute to income growth. This may be particularly relevant if KOG operates in sectors where contracts are linked to inflation indices, which again leaves room for adjustments and protecting against rising costs. Nevertheless, according to information from their yearly report, KOG is projected to have an economic growth over the inflation rate.

High inflation can also present challenges for the KOG. It can increase the company's operating costs, including raw material prices, labor costs and other input factors. If the company is unable to pass these increased costs on to customers, it may experience margin pressure and reduced profitability. In addition, inflation can affect consumers' purchasing power and demand for certain products or services, which can affect KOG's income growth potential. Changes in regional and global economic conditions may affect the decision to invest in KOG's products and services, based on overall market stability. Conclusively, inflation impact on the consumer's purchasing power is of high importance to keep in mind for future operations.

Several macroeconomic variables work in tandem with the economic growth of a company. Subsequently there will be elaborated more on interest and exchange rates due to the detrimental impact it can have on the KOG's future economic growth.

Interest- & exchange rates:

Their main challenge is with large scale operations in other countries, being more sensitive to the appreciation or depreciation of currency & interest rates. Dependent on the economic capability of a country, while being a company that thrives in uncertain times - makes the currency impact and interest rates more critical to evaluate for the company before entering into an agreement.

To mitigate the impact of interest rate and exchange rate fluctuations, KOG can use various risk management strategies. These may include hedging techniques, such as forward contracts or currency options, to manage currency risk exposure. The company can also monitor interest rate trends closely and adjust its financing strategies, such as assessing opportunities for geographical diversification to reduce currency risk and exploit local market conditions.

Corporate tax rate:

In Norway the corporate tax rate is currently 22%, this will remain constant for the future according to the Norwegian government (Regjeringen, 2022). The tax rate determines how large a share of profit a company is allowed to keep, thus influencing the company's ability to save, invest or pay dividends, where a low tax rate will increase these opportunities. Illustrated below is the percentage of corporate tax rates the last decade - showing reduced tax. Meaning KOG should be able to capitalize more than previous years.

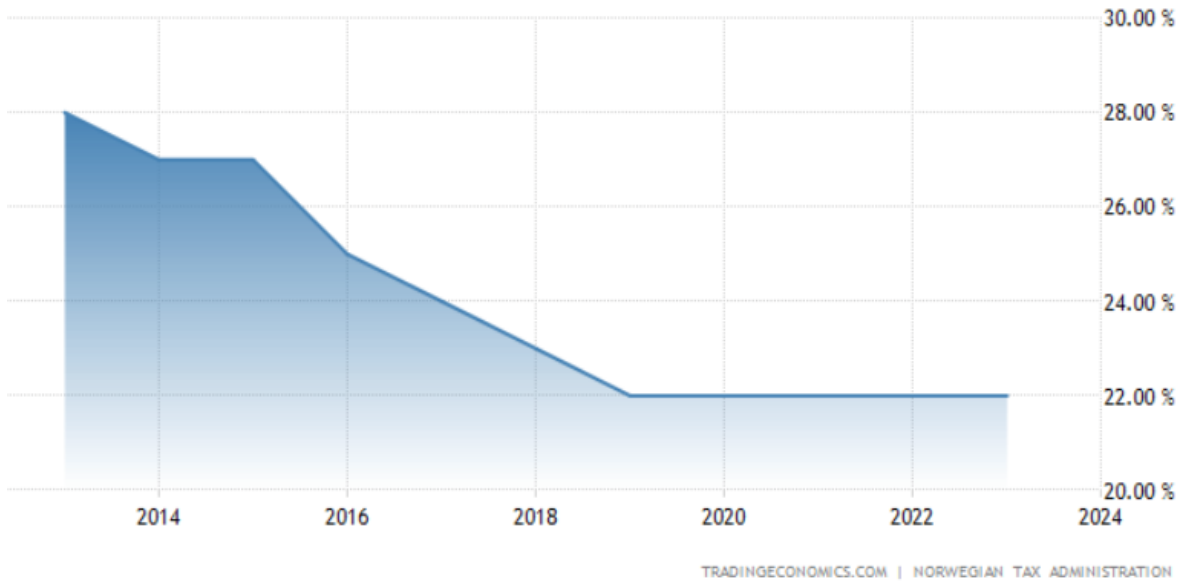

Figure 1 14 Norwegian corporate tax rate source (Tradingeconomics, 2023)

4.2.3 Social factors

Kongsberg Gruppen ASA (KOG) holds a great magnitude of social responsibility pertaining to their society. Divided into separate parts, ethical, sustainable, and demographical aspects. Their core values should be reflected in these aspects as they are crucial for maintaining a great reputation.

Social issues focus in particular on social responsibility and ethical business operations. For KOG, an important area to focus on, as the company's core business is to develop, manufacture and deliver high-tech weapon systems. It follows from the annual report to KOG that the board emphasizes that the company must conduct its business ethically, socially, and environmentally responsibility. KOG has zero tolerance for corruption, and high ethical standards considering it an integral part of business operations. KOG focuses on routines for following up the supplier network and subsidiaries concerning issues linked to social responsibility, human and employee rights, and the external environment.

KOG strives to reduce its carbon footprint. The company implements measures to manage waste, reduce energy consumption, and minimize greenhouse gas emissions across operations. Promoting sustainability throughout its supply chain by working closely with suppliers to ensure adherence for environmental and social standards. The company encourages responsible sourcing, supplier diversity, and ethical practices, as well as advocating for development of environmentally friendly & energy-efficient products. The company invests in research and innovation to create sustainable solutions that meet customers' needs while also reducing environmental impact (Kongsberg, 2022).

Kongsberg is one of the world's largest equipment suppliers to all segments in the shipping industry (Kongsberg, 2023). Briefly mentioned in chapter 1, KOG have operations in countries such as Spain, Australia, Romania, and the United Kingdom. Widely different demographic groups, that could react differently to KOG supplying specific countries with defensive support. This is also a key takeaway in-terms of the social elements in companies that supply products on a global scale, which warrants a need of consideration.

4.2.4 Technological factors

Kongsberg Defense & Aerospace (KDA) works with high-tech solutions within an industry where the protection of technology and information is very important. A potential threat for the future is cyber security and attacks from hostile quarters. At the same time this represents a potential threat, it also represents an opportunity to further develop digital competence and digital security in the organization. Demand for KDA's solutions increased significantly in 2022. The Naval Strike Missile was chosen by Australia, Spain, the United Kingdom, Netherland, and Romania. Bringing the total nation using this missile up to 11. NASAMS air defence system is a world leader in its segment and is used by 13 nations. KDA meets customers' defence needs by increasing capacity, as shown in order- intake and backlog growth presented in chapter 5.

KOG is in the process of building new facilities and growing the workforce. This includes the construction of a new modern missile-production factory. Space technology industry segment is in rapid growth internationally with high rate of innovation and technology development. KOG acquired majority ownership in NanoAvionics, a Lithuanian world leader in production of small satellites (Kongsberg, 2023).

4.2.5 Environmental factors

Environmental factors that directly impacts KOG is mostly considered external pressure. With the green energy movement gaining much attention in the recent years. Pressure to produce environmental and climate friendly solutions are expected from each of their divisions within the industry.

Environmental considerations are becoming increasingly important in KOG's business segments. The company operates in sectors like maritime and aerospace, where environmental regulations and sustainability goals are shaping industry practices. KOG needs to develop environmentally friendly technologies and solutions, aligning with global initiatives to reduce emissions and promote sustainable operations. Being one of the world's largest equipment suppliers to all segments in the shipping industry, their focus must be to preserve country's environments. Including reducing the carbon emission footprint from not just their weapons, but also the transportation of the equipment.

4.3 VRIO

VRIO is a framework for analysing a company's internal resources and capabilities, and how they are utilized to attain competitive advantage (Knudsen and Flåten, 2018). For Kongsberg Gruppen ASA (KOG) to achieve a sustained competitive advantage, four criteria must be met. According to Barney (Barney, 1995), the four main resources and capabilities are financial, physical, human and organizational. Our analysis will look deeper into these metrics to identify which resources gives KOG competitive advantage in the market.

4.3.1 Value (V) - Financial resources

The financial assets illustrate a company's financial depth and power. They include internal and external funds and capital, such as cash and securities, but also a company's profitability (Peng and Meyer, 2019).

KOG's revenues are constantly increasing the net profit margin, seeing a positive further development. This into account, the profit margin can be classified as valuable, but not rare - resulting in a parity. The company's liquidity is worth mentioning, where both the current- and quick ratio is below the industry average, indicating poorer financial health compared to the competitors (chapter 5.2). The lower liquidity then contributes to a competitive disadvantage, as it makes it harder for KOG to meet short-term obligations.

4.3.2 Rareness (R) - Physical resources

Physical resources involve special natural resources, machines, tools, buildings, patents or localization (Knudsen and Flåten, 2018).

Innovative and high-efficient facilities and technology enable KOG to strengthen its competitiveness. The resource is therefore valuable. In the short term, it is a rare resource, as it is a costly investment to undertake, and few competitors possess correspondingly high-efficient and innovative technology. KOG opts for increasing its already large capacity, building new factories, and increasing the work force. Their current facilities are located close to its operations, ensuring rapid transportation from manufactory to delivery processing. Thus, the facilities are effectively organized, resulting in a situational advantage. In the long term, competitors will most likely acquire such facilities and technology. Therefore, the resource is therefore considered imitable.

4.3.3 Limitability (L) - Human resources

A company’s human resources include employees' skills and competencies, creativity and collaboration skills. Humans are the most important and expensive resource for the company, and employees with the right competence are therefore vital for the company’s competitiveness (Knudsen and Flåten, 2018).

Highly competent employees are essential in cost-effectiveness. Systematic efforts to recruit the best suited personnel are made through seminars, university attendance, giving exposure to the company’s performance-oriented culture. KOG’s employee capabilities are illustrated through the company’s current and historical market position. Employees as a resource is therefore considered a competitive advantage because it is valuable, rare, and difficult to imitate, specific to KOG. The executive management consists of highly competent and educated people with experience and a focus on adapting to a transparent world. This puts KOG in a great position, providing a competitive advantage.

4.3.4 Organization (O) - Organizational resources

According to Knudsen and Flåten (2018) the organizational resources include routines and systems for coordination, management, and control, but also organizational culture and organization of development and innovative processes.

KOG has a well-organized structure and management system that effectively utilizes its resources and capabilities. The company has a culture of innovation and collaboration, fostering creativity and knowledge sharing within the organization. KOG also emphasizes employee development and training, ensuring a skilled workforce that can effectively leverage the company's resources and capabilities. Additionally, the company's strong network of strategic partnerships and collaborations contributes to its organizational effectiveness. While this is adding value, amongst its competitors it would not be considered rare at the top level.

4.3.5 VRIO summary

While KOG's resources and capabilities are valuable and rare, some of them can be imitated or replicated by competitors. However, the company has several factors that increase the difficulty of imitation. Firstly, KOG's technological expertise and R&D capabilities require substantial investments. Additionally, time to develop and maintain. Secondly, the company's long-standing experience and deep industry knowledge cannot be easily replicated. Lastly, KOG's strong brand reputation and customer relationships are built over time and are challenging to imitate.

Possessing several unique and rare resources and capabilities. KOG have a strong research and development (R&D) division, which enables it to develop cutting-edge technologies and maintain a competitive edge. KOG also has a diverse portfolio of intellectual property rights and patents, which provide a significant competitive advantage. Furthermore, the company has established strategic partnerships and collaborations with industry-leading organizations, enhancing its access to rare resources and knowledge.

Kongsberg Gruppen Resource/Capability	V	R	I	O	Result
-	Valuable	Rarity	Imitation	Organized	-
Financial	✓	✗	✗	✓	Competitive advantage
Physical	✓	✓	✗	✗	Neutral
Human	✓	✓	✓	✓	Intellectual - temporary advantage
Organizational	✓	✗	✓	✓	Temporary advantage
Technology	✓	✓	✗	✓	Sustained advantage
Combined results	✓	✓	✗	✓	

Figure 1 15 VRIO summary

4.4 Conclusion strategic analysis - S.W.O.T

The SWOT analysis identifies a business' strengths and weaknesses, as well as opportunities and threats in the environment (Knudsen and Flåten, 2018). The analysis presents the factors identified in Porters Five Forces, PESTLE and VRIO analysis. Purposely acting as a link between the internal and external findings.

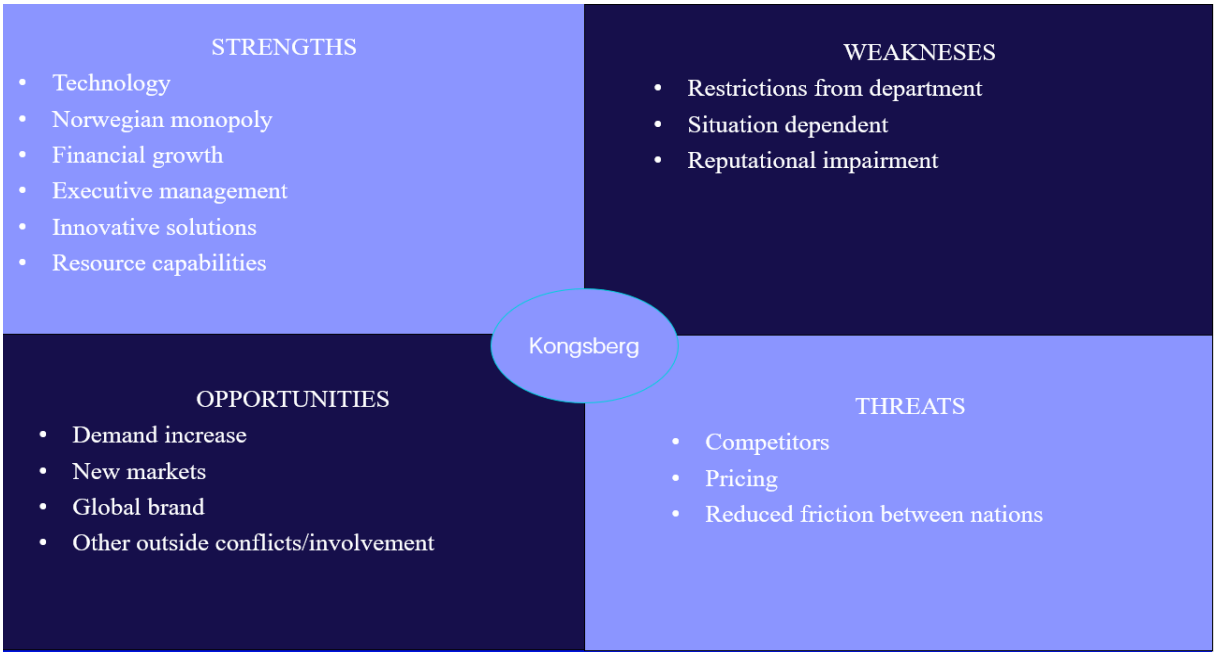

Figure 1 16 SWOT illustration - Kongsberg

Porters Five Forces & PESTLE analysis revealed that the prospect for the weapons industry looks promising. With opportunities for further profitable growth, despite the threats regarding weapons volatile market and cyber security. Kongsberg Gruppen ASA (KOG) works continuously to improve its sustainable operations and market position through large investments in innovative technology. At the same time, it is dependent on the authorities' granting licenses and generating large profits. However, the profitability is threatened by increasing interest rates. Great opportunities lie in the market, where a free trade agreement could further increase growth and a continued depreciation of NOK would be beneficial.

The VRIO analysis identified KOG's strengths through continued investments in cost-effective technology. Capable employees who further cultivate a successful business culture, KOG can undoubtedly keep the position as a market leader. The weaknesses are connected to the lack of patent on technology. Competitors can imitate technology more cost efficiently if they are if this is not acquired, as well as maintaining customer relations in volatile markets.

5. Financial statement analysis

In this chapter, an analysis of Kongsberg Gruppen ASA's (KOG) financial statement will be provided. The purpose of this analysis is to examine the financial health of the company and make comments on a company's economic development and position (Kristoffersen, 2016).

The analysis will be split into parts consisting of income statements, balance sheet, profitability, operating margin and ROE (return on equity). Data collected will range from the company's quarterly- and yearly reports from year 2017 to 2022. All metric values are from KOG's yearly and quarterly reports, available on their website (Kongsberg, 2023).

5.1 Income statements

As mentioned in chapter 3, it is of paramount importance to gather information regarding a company's performance over time when performing fundamental analysis. Initially, one of the main resources we have available, is the company's historical income statements and balance sheets. In this chapter, we will analyse the different metrics regarding how Kongsberg Gruppen ASA (KOG) has performed in the past six years. Since KOG also consist of three divisions, we advocate for analysing each segment's key figures, as this might provide insights in how the different divisions contribute to the company as a whole. First and foremost, we will analyse KOG's historical income statements.

5.1.1 Income statement Kongsberg Gruppen ASA

MNOK	2017	2018	2019	2020	2021	2022
Operating revenues	14490	13807	23245	25612	27449	31803
Total revenue	14490	13807	23245	25612	27449	31803
Operating expenses	-13398	-12681	-21132	-22362	-23363	-27201
EBITDA	1092	1126	2113	3250	4086	4602
Depreciation & amortisation	-507	-425	-1084	-1345	-1223	-1293
EBIT	585	701	1029	1905	2863	3309
Financial income/expense	69	79	-196	-50	59	188
EBT	654	780	833	1855	2922	3497
Income tax expense	-95	-76	-116	-374	-632	-688
Annual profit	559	704	717	1481	2290	2809

Table 4 Kongsberg Gruppen ASA's historical income statements

Above in *Table 4*, we can see the different metrics measuring both KOG's revenue and expenses, as well as annual profit from the past six years. Firstly, KOG's consolidated income statement for 2020 includes the divestment of Hydroid Inc, an autonomous underwater vehicle (AUV) that KOG bought back in year 2007. Annual profit from their income statement is a value of NOK 2932 million. Deemed as an extraordinary event, by which excluded from the income statement, resulting in an annual profit of NOK 1481 million in 2020. Another mentionable variable to consider is IFRS16 implemented by KOG in their yearly reports in 2018 and 2019. IFRS16 stands for international financial reporting standard, aiming to measure and recognize how leases are presented and reported (IFRS, 2023). This implementation increased annual profits for said years by some degree. Inflated values by accord of reporting standards are impractical; therefore, chose to exclude inflated values for annual profits.

That said, KOG has made increased annual profits for every year in the past six years. This increase has been particularly significant between year 2019 and 2020, recording an 107% increase, as presented in *Table 5* below. Apart from year 2021 to 2022, operating revenue has increased more than operating expenses, which advocates for this incline in annual profits. On average, operating revenue has increased by almost 2% more than operating expenses in the past six years. Furthermore, extraordinary values in *Table 5* below, are presented in year 2018 to 2019. KOG explains this increase with strong growth, both organic and through acquisitions. KOG acquired both the companies Rolls-Royce Commercial Marine and Aerospace Industrial Maintenance during this period, making KOG a significant larger company. Kongsberg Defence & Aerospace (KDA) mentioned earlier, ''*won the largest contract ever for an air defence system for Qatar with a value of NOK 5,6 Billion''* (Kongsberg, 2019). Additionally, KOG entered year 2020 with its highest backlog to date, this metric has continued to increase as we reach present day (Kongsberg, 2019). This will be addressed in the subsequent chapter.

Growth (%)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Average
Operating Revenue	-4.71%	68.36%	10.18%	7.17%	15.86%	19.37%
Operating expence	-5.35%	66.64%	5.82%	4.48%	16.43%	17.60%
EBITDA	3.11%	87.66%	53.81%	25.72%	12.63%	36.59%
Depreciation & amortization	-16.17%	155.06%	24.08%	-9.07%	5.72%	31.92%
EBIT	19.83%	46.79%	85.13%	50.29%	15.58%	43.52%
Annual profit	25.94%	1.85%	106.56%	54.63%	22.66%	42.33%

Table 5 Average increase in Kongsberg Gruppen ASA's metrics

5.1.2 Income statement & key figures of Kongsberg Maritime

First and foremost, it is important to mention that the sum of historical values from all of Kongsberg Gruppen ASA's (KOG) business segments does not add up to the group as a whole. This is due to eliminations and that property and corporate functions are not included in each division's income statements and is only reported in the group's income statements.

MNOK	2017	2018	2019	2020	2021	2022
Operating revenues	7429	7545	16038	16319	16507	18978
Total revenue	**7429**	**7545**	**16038**	**16319**	**16507**	**18978**
Operating expenses	-6840	-6951	-15183	-14787	-14530	-16588
EBITDA	**589**	**594**	**855**	**1532**	**1977**	**2390**
Depreciation & Amortisation	-221	-141	-419	-814	-654	-670
EBIT	**368**	**453**	**436**	**718**	**1323**	**1720**

Table 6 Kongsberg Maritime historical income statements

Nevertheless, we begin with analysing key figures of which the values owner is Kongsberg Maritime (KM). When looking at the values provided from *Table 6*, we identify a steady increase in operating revenues through the presented period. Similar to the whole company's values presented previously in *Table 4* in chapter 5.1.1, the income statement for KM presents an especially significant 112,5 percent increase in operating revenue between 2018 to 2019.

KOG explains that this is due to higher efficiency, which increased the amount of order intake and order backlog they could manage, increase can be viewed in *Table 8* below. Since 2019, operating revenue has remained on a stable increase, picking up speed as we reach present day. Efficiency also increases throughout the period, *Table 7* presents increase in both EBITDA and EBIT as well.

Growth (%)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Average
Opreating revenue	1,56 %	112,56 %	1,75 %	1,15 %	14,97 %	**26,40 %**
Operating expense	1,62 %	118,43 %	-2,61 %	-1,74 %	14,16 %	**25,97 %**
EBITDA	0,85 %	43,94 %	79,18 %	29,05 %	20,89 %	**34,78 %**
Depreciation & Amortisation	-36,20 %	197,16 %	94,27 %	-19,66 %	2,45 %	**47,61 %**
EBIT	23,10 %	-3,75 %	64,68 %	84,26 %	30,01 %	**39,66 %**

Table 7 Average increase in Kongsberg Maritime's metrics

Furthermore, *Table 8* presents increasing values in metrics such as order- intake and backlog. This table also presents the relationship between EBITDA, EBIT, and operating revenue. Apart from a decrease in year 2019, the remaining historical five years present an increase in both variables, confirming KM's increased efficiency during this period. This yield especially in the past two years, with EBITDA as a percentage of revenue, have a value in the doble digits. EBIT as a percentage of revenue also is close to this milestone. As mentioned, order- intake and backlog have both increased in this period, picking up significant pace from year 2019 and additionally in the past two years. This provides information regarding both KM's effort to increase efficiency, but also the increase in customers demand and willingness to buy KM's services and products.

MNOK	2017	2018	2019	2020	2021	2022
Order intake	7336	8884	15469	15925	17936	24353
Order backlog	4820	5739	12095	11385	13023	18641
EBITDA % of revenue	7,9 %	7,9 %	5,3 %	9,4 %	12,0 %	12,6 %
EBIT % of revenue	5,0 %	6,0 %	2,7 %	4,4 %	8,0 %	9,1 %

Table 8 Kongsberg Maritime key figures

5.1.3 Income statement & key figures of Kongsberg Defence & Aerospace

Next income statement and key figures we want to analyse is the statements and figures of Kongsberg Defence & Aerospace (KDA).

MNOK	2017	2018	2019	2020	2021	2022
Operating revenues	6333	6104	7245	8503	10078	11860
Total revenue	**6333**	**6104**	**7245**	**8503**	**10078**	**11860**
Operating expenses	-5721	-5241	-6255	-6847	-7928	-9344
EBITDA	**612**	**863**	**990**	**1656**	**2150**	**2516**
Depreciation & Amortisation	-203	-242	-232	-499	-530	-597
EBIT	**409**	**621**	**758**	**1157**	**1620**	**1919**

Table 9 Kongsberg Defence & Aerospace historical income statements

KDA has consistently increased its operating revenue over the past six years, with the exception of 2018. This was mainly due to a decrease in operating expenses, leading to higher EBITDA

and EBIT compared to year 2017, this despite an increase in depreciation and amortization. The efficiency and margin of KDA are even more impressive when compared to Kongsberg Maritime (KM), despite the latter's higher operating revenues. The significant EBITDA and EBIT values of KDA in the past six years, particularly in the last three years, highlight this difference. The metrics in *Table 10* demonstrate an average increase in operating revenue of 13.73 percent, nearly 3 percent higher than the increase in operating expenses. Resulting in a margin difference of approximately 2.5 percent between the two divisions in comparison to the values presented in *Table 7* in chapter 5.1.2.

Growth (%)	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Average
Opreating revenue	-3,62 %	18,69 %	17,36 %	18,52 %	17,68 %	**13,73 %**
Operating expense	-8,39 %	19,35 %	9,46 %	15,79 %	17,86 %	**10,81 %**
EBITDA	41,01 %	14,72 %	67,27 %	29,83 %	17,02 %	**33,97 %**
Depreciation & Amortisation	19,21 %	-4,13 %	115,09 %	6,21 %	12,64 %	**29,80 %**
EBIT	51,83 %	22,06 %	52,64 %	40,02 %	18,46 %	**37,00 %**

Table 10 Average increase in Kongsberg Defence & Aerospace's metrics

KDA has seen a significant increase in both order- intake and backlog in the past six years. Presented in *Table 11* below, KDA's order backlog has almost doubled from year 2020 to 2022. Exception being year 2020 of which order intake has increased as well, this is especially significant between year 2018 and 2019. This in turn indicates that Kongsberg Gruppen ASA (KOG) want to expand this division, taking on more orders and constantly increasing the order backlog. Similar to KM, these values confirm an increasing demand for this business segment's products and services. Making demand increase more plausible, especially in defence, as countries expect to upscale their defences with rising uncertainty because of the Russian invasion of Ukraine. Presently, the aerospace segment has had a turnover, delivering vital parts to known scientific project (Påsche, 2023).

MNOK	2017	2018	2019	2020	2021	2022
Order intake	5376	6885	16060	11891	22221	19560
Order backlog	9956	10744	20146	23477	35632	43540
EBITDA % of revenue	9,7 %	14,1 %	13,7 %	19,5 %	21,3 %	21,2 %
EBIT % of revenue	6,5 %	10,2 %	10,5 %	13,6 %	16,1 %	16,2 %

Table 11 Kongsberg Defence Aerospace key figures

5.1.4 Income statement & key figures Kongsberg Digital

The analysis of the income statements and key figures for Kongsberg Digital (KD). Despite being a smaller and newer segment within Kongsberg Gruppen ASA (KOG), studying its historical and current performance will help determine its viability and growth potential. Note that data for year 2017 and 2018 is unavailable, therefore excluded in the following statements.

MNOK	2019	2020	2021	2022
Operating revenues	799	821	845	989
Total revenue	**799**	**821**	**845**	**989**
Operating expenses	-784	-787	-890	-1248
EBITDA	**15**	**34**	**-45**	**-259**
Depreciation & Amortisation	-43	-56	-77	-121
EBIT	**-28**	**-22**	**-122**	**-380**

Table 12 Kongsberg Digital income statement

First, operating revenue has continued to increase since year 2019, as presented in *Table 12* above. This can also be said for operating expenses. Year 2019 and 2020 was the only period that KD were EBITDA positive. KD is yet to become EBIT positive, resulting in the need for further investments and financing. This is mainly due to operating expenses increasing on average 10 percent more each year compared to operating revenue. These metric values align with what we constitute as a growth phase.

Growth (%)	2019-2020	2020-2021	2021-2022	Average
Opreating revenue	2,75 %	2,92 %	17,04 %	**7,57 %**
Operating expense	0,38 %	13,09 %	40,22 %	**17,90 %**

Table 13 Average increase in Kongsberg Digital's metrics

That said, despite not being EBIT positive. KD have seen an increase in order- intake and backlog in the past four years, as shown in *Table 14* below. This, much like the other two business segments, indicates KOG's willingness to expand this business segment.

MNOK	2019	2020	2021	2022
Order intake	260	203	789	1275
Order backlog	842	977	932	1150
EBITDA % of revenue	1,9 %	4,1 %	-5,3 %	-26,2 %
EBIT % of revenue	-3,5 %	-2,7 %	-14,4 %	-38,4 %

Table 14 Kongsberg Digital key figures

5.1.5 Division contribution to Kongsberg Gruppen ASA

With all values from income statements and key figures in previous subchapters presented, we can create an overview on how much each division contributes to the group as a whole.

Firstly, we want to analyse how each business segment in Kongsberg Gruppen ASA (KOG) contributes to revenue for the group. Each segment's operating revenue from year 2017 to 2022 is divided by the group's total operating revenue for the same year. This results in values that showcases how much, in percentage, each segment contributes to the group. Changes in these values over time provide insights regarding whether each segment have a greater potential to contribute in operating revenue to the group. *Table 15* presents these values for each segment. In the past six years, Kongsberg Maritime (KM) is the main contributor to operating revenue to the whole group, contributing over 50% of the group's revenue each year over this historic six-year period. Kongsberg Defence & Aerospace (KDA) is not far behind, contributing between 30% to 45% of total operating revenue for the group. As mentioned earlier, Kongsberg Digital (KD) have values that represents that this business segment is in a growth phase, resulting in as of present day and time period, not providing large amount of operating revenue to the group.

Operating revenue in %	2017	2018	2019	2020	2021	2022
Kongsberg Defence & Aerospace	44 %	44 %	31 %	33 %	37 %	37 %
Kongsberg Maritime	51 %	55 %	69 %	64 %	60 %	60 %
Kongsberg Digital	5 %	1 %	3 %	3 %	3 %	3 %

Table 15 Operating revenue by division

Next is the order intake by each segment. Values is calculated in the same way as with operating revenue above, by taking amount of order intake in each segment and dividing it with total order intake for the group. These values are presented in *Table 16* below. With an exception in year 2020, the whole group has seen an increase in total order intake. KM has on average the greater order intake during this period in comparison to the other two segments. That said, KDA have closed gap to KM when comparing order intake and operating revenue. Additionally, KDA even having the majority order intake in both year 2019 and 2021. With limited data in year 2017 and 2018, and with lowest of percentage of the three segments in terms of order intake, KD have historically, slowly increased its order intake year by year.

Order intake in % (Exc Total)	2017	2018	2019	2020	2021	2022
Kongsberg Defence & Aerospace	42 %	44 %	51 %	42 %	54 %	43 %
Kongsberg Maritime	58 %	56 %	49 %	57 %	44 %	54 %
Kongsberg Digital	-	-	1 %	1 %	2 %	3 %
Total order intake	**12712**	**15769**	**31789**	**28019**	**40946**	**45188**

Table 16 Order intake by division

Last, but not least, is the order backlog by each segment comparing to the total order backlog in each year. Calculations is done in the exact same way as order intake mentioned above, with dividing each segments order backlog with the total backlog of each year. This metric's values are presented in *Table 17* down below. Firstly, Kongsberg Gruppen ASA (KOG), has seen a significant increase in the total order backlog over time as mentioned previously. Additionally, KDA has the largest backlog throughout the whole period with a value that is constant 60% and above. KM's order backlog is, except for the last two years, above 30%. KD, as with the other two metrics mentioned above, has the smallest order backlog when comparing each segment to the group.

Order backlog in % (Exc Total)	2017	2018	2019	2020	2021	2022
Kongsberg Defence & Aerospace	67 %	65 %	61 %	66 %	72 %	69 %
Kongsberg Maritime	33 %	35 %	37 %	32 %	26 %	29 %
Kongsberg Digital	-	-	3 %	3 %	2 %	2 %
Total order backlog	**14776**	**16483**	**33083**	**35839**	**49587**	**63331**

Table 17 Order backlog by division

5.1.6 Summary income statement, key figures and segment contribution

Kongsberg Gruppen ASA (KOG) has seen a steady increase in annual profits during the past six years. Values provided from subchapter 5.1.1 through 5.1.5, presents information regarding which segment has larger revenue-, EBITDA- and EBIT margins, as well as which segment have the greater order- intake and backlog. Kongsberg Maritime (KM) has the largest revenue contribution to KOG, which make sense, as this segment also have the largest order intake compared to the other two segments during the past six years.

Even though KDA have smaller operating revenue compared to KM, KDA have the double amount of order backlog. Further increasing efficiency in KDA, as well as expanding this business segment should be a key priority for KOG, as this segment also provides the better operating margins. In general, Kongsberg Digital (KD) has seen a slower growth compared to the other segments during the past six years. This segment is also not profitable as of present day, which warrants for further financing and development.

5.2 Balance sheets

Balance sheet is a sheet containing important company information and is divided in multiple groups. These are assets, equity and liabilities. In general, a company's total assets should equal the total amount of equity and liabilities the company has. Analysis of historical balance sheets is useful in that it provides information that can later be used to calculate forecasts of both a company's working capital and capital expenditure, which in turn is used when calculating forecasted cash flows. That said, let's analyse Kongsberg Gruppen ASA's (KOG) balance sheets from year 2018 to 2022, starting with the company's assets.

5.2.1 Assets

MNOK	2018	2019	2020	2021	2022
Property, plant and equipment	2531	3924	3665	3901	4107
Leasing assets	-	2141	1965	1715	1743
Goodwill	2011	4272	3143	3139	3686
Other intangible assets	878	2215	2053	1900	2095
Deferred tax assets	-	167	306	248	235
Shares in joint arrangement and assosciated companies	3400	3247	3465	3609	3868
Other non-current assets	188	213	209	172	585
Total non-current assets	**9008**	**16179**	**14806**	**14684**	**16319**
Inventories	2174	3964	4132	4306	5493
Trade receivables	2802	6363	5542	4518	6957
Other short-term receivables	460	998	5784	6518	8031
Customer contracts, assets	2994	5888	964	545	1596
Derivatives	182	376	580	620	896
Cash and cash equivalents	10038	5654	7420	8118	3932
Total current assets	**18650**	**23243**	**24422**	**24625**	**26905**
Total assets	**27658**	**39422**	**39228**	**39309**	**43224**

Table 18 Historical view of Kongsberg Gruppen ASA's assets

First and foremost, a company's assets are divided into two groups, these are non-current- and current assets. Non-current assets are considered long-term assets which theoretically have a useful life of more than one year. Current assets are the opposite and is made up of assets that are expected to be converted into cash in less than one year. As presented in *Table 18* above, KOG has had a steady increase in total assets over this period. The majority of KOG's assets are current assets, which allows for good liquidity if KOG needs to pay its day-to-day operating expenses and financial payments.

Noteworthy information from *Table 18* is the decline in cash and cash equivalents and the increase in other current assets, such as short-term receivables and inventories. This in turn constitutes that KOG is building inventories for finished goods, meanwhile increasing its short-term receivables, which is usually converted into cash within one year. This increase/decrease is especially significant in year 2022.

5.2.2 Equity

MNOK	2018	2019	2020	2021	2022
Issued capital	5933	5933	5933	5932	5930
Other reserves	554	571	559	458	693
Retained earnings	6119	6249	6754	7079	6911
Equity attributable to owners of the parent	12606	12753	13246	13469	13534
non-controlling interest	20	57	55	149	209
Total equity	12626	12810	13301	13618	13743

Table 19 Historical view of Kongsberg Gruppen ASA's equity

Next part of the balance sheet is equity. Equity is in theory, the value of a company when deducting total liabilities from total assets. In Kongsberg Gruppen ASA's (KOG) case, it is largely made up by retained earnings and issued capital. As presented in *Table 19* above, KOG has had limited increase in total equity in the last five years, with an increase of around 9% during this period.

5.2.3 Liabilities & Provisions

MNOK	2018	2019	2020	2021	2022
Long-term interest-bearing loans	4020	3469	1971	2450	2003
Long-term leasing liabilities	-	1850	1753	1500	1526
Pension liabilities	538	974	1137	1104	553
Provisions	128	122	117	121	115
Deferred tax liability	1293	1350	1194	1281	1112
Other non-current liabilities	11	36	61	72	75
Total non-current liablilities	**5990**	**7801**	**6233**	**6528**	**5384**
Customer contracts, liabilities	5157	10481	11217	11787	14159
Derivatives	580	493	546	378	1559
Provisions	515	1513	1608	1596	1563
Short-term interest-bearing loans	312	620	1500	-	450
Current leasing liabilities	-	348	339	380	419
Other current liabilities	2478	5356	4486	5024	5948
Total current liabilities	**9042**	**18811**	**19696**	**19165**	**24098**
Total liabilities and provisions	**15032**	**26612**	**25929**	**25693**	**29482**
Total equity and liabilities	**27658**	**39422**	**39230**	**39311**	**43225**

Table 20 Historical view of Kongsberg Gruppen ASA's liabilities and provisions

Last but not least, is a company's liabilities. Liabilities are classified as debts a company are obligated to pay and are divided into two groups. These are non-current- and current liabilities. Similar as mentioned in chapter 5.2.1 regarding assets, non-current liabilities are liabilities that are payable outside of 1 year, meanwhile current liabilities are debts that a company must pay within 1 year. Looking at Kongsberg Gruppen ASA's (KOG) liabilities presented in *Table 20* above, the company's non-current liabilities have stayed approximately the same over this period. However, current liabilities have significantly increased, mainly due to the increase of KOG's customer contracts.

Customer contracts is made up by prepayment of goods, in which the goods have not been delivered yet. In KOG's case, they have received payment, or are due to receive payment, but will deliver the goods for some time after the payment has been made.

5.3 Profitability

The profitability of a company is perhaps the most vital part, as it is all about a company's ability to generate profit. Without sufficient profitability, companies will not survive in the long term (Kristoffersen, 2016). We want to analyse three different variables when it comes to profitability. These are: operating margin, return on equity and liquidity.

5.3.1 Operating margin

Firstly, we want to look at operating margin, which additionally is considered to be the same as EBIT margin. In general, we divide the EBIT of each year with total operating revenue for that same year. The variable obtained from this calculation explains how profitable a business is and how much of the operating revenue is used to cover for costs. It is important in an operating margin analysis to conduct research of historical data, and even use operating margins of similar firms in the same period (Hayes, 2022). Since Kongsberg Gruppen ASA (KOG) differentiates itself from competitors when it comes to product lines, we will look at historical data. We did analysis of KOG's segments operating margins in chapter 5.1.2 through 5.1.4 but are yet to analyse the operating margin of the whole company.

$$Operating\ margin = \frac{EBIT_t}{Operating\ revenue_t} * 100\%$$

Formula 12 Operating margin

MNOK	2017	2018	2019	2020	2021	2022
EBIT	585	701	1029	1905	2863	3309
Operating revenue	14490	13807	23245	25612	27449	31803
Operating margin	4,04 %	5,08 %	4,43 %	7,44 %	10,43 %	10,40 %

Table 21 Historical view of Kongsberg Gruppen ASA's operating margins

As *Table 21* above presents, with an exception in year 2019, KOG has had an increase in operating margins during the past six years. A positive percentage indicates that profitability is present when excluding interest income, interest expenses and taxes, and only focusing on operations.

5.3.2 Return on equity (ROE)

Next, we want to analyse Kongsberg Gruppen ASA's (KOG) historical return on equity (ROE). Main purpose of analysing return on equity is to verify whether the company advocate for the same amount of return as an investor would get from similar investments. It is important to comment that these similar investments need to carry the same risk.

Additionally, the return on equity (ROE) is a similar ratio to the ROC, but the ROE only shows the return on the equity invested (Kristoffersen, 2016). ROE examines the profitability by relating the equity profit, meaning the profit earned after interest and taxes are paid, against the company's book value of equity (Damodaran, 2012).

Presented in *Table 22* below, KOG has had a steady increase in return on equity when looking at profits before tax. Similarly, *Table 23* also presents an increase for the same time. With a mature company of which KOG is, an investor would expect a greater return on equity, when comparing to say a growth company. In general, this increase in return on equity tells us that even when KOG invests in projects, they still increase the profitability.

$$\textbf{Return on equity} = \frac{\textbf{Profit (before or after tax)}_t}{\textbf{Average equity}_t} * 100\%$$

Formula 13 Return on equity

MNOK	2019	2020	2021	2022
Profit before tax	780	833	1855	2922
Average equity	12718	13055,5	13459,5	13680,5
Return on equity	**6,13 %**	**6,38 %**	**13,78 %**	**21,36 %**

Table 22 Return on equity before tax

MNOK	2019	2020	2021	2022
Profit after tax	559	704	717	1481
Average equity	12718	13055,5	13459,5	13680,5
Return on equity	**4,40 %**	**5,39 %**	**5,33 %**	**10,83 %**

Table 23 Return on equity after tax

5.3.3 Liquidity

During our analysis, we aim to gain insights into the risks associated with Kongsberg Gruppen ASA's (KOG) short-term financial position. Specifically focus on evaluating the company's liquidity, which pertains to its capacity to access short-term financial resources. Assessing liquidity allows us to anticipate how effectively the company can meet its financial obligations and manage its debt. The current ratio is often referred to as the liquidity ratio, dividing current assets by current liabilities, providing valuable information about the company's ability to cover its short-term liabilities with its current assets (Fernando, 2023).

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

Formula 14 Current ratio

Liquidity is important as it gives flexibility to the operations. Cash is considered the most liquid asset of a company, but tangible assets such as stocks, bonds, commodities, and inventory are also considered liquid.

Current Ratio	Average	2018	2019	2020	2021	2022
Current assets	23569	18650	23243	24422	24625	26905
Current Liability	18162	9042	18811	19696	19165	24098
Liquidity	1.30	2.06	1.24	1.24	1.28	1.12

Table 24 Historical liquidity ratio & average

Two conclusions can be extracted from these liquidity results. First, KOG's liquidity ratio has been averaging 1.30 within the latest five-year time span. Indicating that their overall ability to withstand obligations or debt for their short-term financing is sufficient, as their liquidity is above the threshold. Noting that their declining trend from 2018 is due to increasing current liability more than current assets which also has been increasing each year, with the exception of 2021. However, while they are in a downwards going trajectory their numbers are still sufficient, as they have more short-term assets compared to short-term liabilities.

5.4 Financial position

5.4.1 Equity ratio

After the liquidity analysis, of which we evaluated the company's historical short-term financial risk, the solvency analysis determines how well the company can withstand long-term debt and financial obligations. The solvency of a company tells us the "financial health" of the business as it gives an idea of how well the company can manage financial obligations and thereby maintain operations into the future. Solvent companies are when the company's underlying values are net positive, meaning the assets are more valuable than the debt (Kristoffersen, 2016).

$$\text{Equity ratio} = \frac{Total\ shareholders\ Equity}{Total\ Equity\ \&\ Liabilities}$$

Formula 15 Equity ratio

The equity ratio can be used to understand the solvency of Kongsberg. The equity ratio is the shareholder's equity as a share of the total assets. The lower the equity ratio gets, the more financially leveraged the company is. In other words, we measure the portion of the assets financed by the shareholder's equity (Kristoffersen, 2016).

Equity Ratio	Average	2018	2019	2020	2021	2022
Total shareholder equity	13219	12626	12810	13299	13616	13742
Total equity & liabilities	37769	27658	39422	39230	39311	43225
Kongsbergs Equity Ratio	0.35	0.46	0.32	0.34	0.35	0.32

Table 25 Historical equity ratio & average

From the equity ratio analysis output, we see how Kongsberg Gruppen ASA generally operates with a rather low equity ratio, a healthy ratio is considered 0.5. The average equity ratio of 0,35 tells us that KOG has been approximately 35% financed by its shareholders over the last couple of years. KOG has generally been more financially leveraged - Kongsberg takes more of the financial risk compared to its shareholders.

5.4.2 Debt to Equity ratio

The debt-to-equity ratio (D/E) is a significant metric used to assess the financial stability of a company. It is valuable to examine the D/E ratio in conjunction with the equity ratio as they are closely related. By dividing the total shareholder's equity over total shareholders liabilities, we can determine the extent to which the company's capital is financed by owners or debtholders.

$$\text{Debt to Equity ratio} = \frac{Total\ shareholders\ Equity}{Total\ shareholder\ Liabilities}$$

Formula 16 Debt to Equity ratio

Higher D/E ratio indicates increased risk, while a lower ratio suggests greater financial strength. When corporations anticipate returns that exceed the cost of debt, they often employ higher financial leverage. However, this approach carries inherent risks because if the cost of debt surpasses the returns, it can lead to a decrease in the company's value (Fernando, 2023).

Debt to Equity ratio	Average	2018	2019	2020	2021	2022
Total sharholders equity	13219	12626	12810	13299	13616	13742
Total shareholder liability	24550	15032	26612	25929	25693	29482
Kongsberg Debt to equity ratio	0.54	0.84	0.48	0.51	0.53	0.47

Table 26 Historical equity ratio & average

D/E-ratio confirms what we saw in the analysis of the equity ratio; Kongsberg Gruppen ASA (KOG) has generally been quite equally financially leveraged by both shareholders and owners with the exception of 2018. This indicates equally distributed financial risk amongst investors and owners.

5.4.3 Financial ratio 1

Financial ratio 1 is a variable that aims to determine the ratio between the use of long-term debt and fixed assets. Fixed assets are assets in the balance sheet that the company in question plans to use over a long period of time to generate income. In this case, fixed assets are covered in the balance sheet found in *Table 18* above in chapter 5.2.1, as property, plant and equipment.
If the value of this ratio is above 1, then the company is mainly financing fixed assets through use of short-term debt. In the long term, this is not ideal according to (Hoff and Pedersen, 2019). As presented in *Table 27* below, the financial ratio 1 values for Kongsberg Gruppen ASA (KOG) have remained below 1 in the past five years, indicating rationality when it comes to the financing of the company's fixed assets.

$$\textbf{Financial ratio 1} = \frac{\textbf{Fixed assets}_t}{(\textbf{Longterm debt} + \textbf{Equity})_t}$$

Formula 17 Financial ratio 1

MNOK	2018	2019	2020	2021	2022
Fixed assets	2531	3924	3665	3901	4107
Long-term debt + Equity	16646	18129	17025	17568	17272
Financial ratio 1	0,15	0,22	0,22	0,22	0,24

Table 27 Historical equity ratio & average

5.5 Summary of financial statement analysis

Analysis of historical financial statements and key metrics have provided sufficient information when regarding estimating future cash flows for Kongsberg Gruppen ASA (KOG). Mainly due to the positive values in annual profits, but also growth in each business segment that KOG possesses. From the analysis, we determine that KOG is a mature company that continues to deliver better results and operating margins each year. That said, due to Kongsberg Digital's (KD) negative EBIT values and limited information regarding each division's balance sheets values, its necessary to conduct estimation for the group, and not for each segment separately. This is due to the importance of estimating future values in working capital and capital expenditure. Variables that are crucial when estimating cash flows. However, information from each division such as operating revenue and operating expenses might still be useful when estimating future cash flows, as each division yields different growth potentials. Subsequent chapters will estimate future cash flows for KOG.

6. Future cash flows

In this chapter, information gathered from the previous chapters will be used to conduct the estimation of future cash flows for Kongsberg Gruppen ASA (KOG). This includes information from macroeconomic environment, strategic analysis, historical financial statements and more. When it comes to calculating future cash flows, Damodaran advocates to not use to large a timespan in the future. This is due to the uncertainty the future holds. He recommends using a timespan less than seven years in the future. With this in mind, we have decided to move forward with using a time span of six years, resulting in an estimation of future cash flows from year 2023 to 2028. Additionally, we will be using the total capital method mentioned in chapter 3.1.2. Using this method and subtracting long-term debt will estimate the value of equity of KOG. Dividing this value by the total amount of stocks in the company as of present day, will yield the present-day market value of the company per stock.

In these next chapters, we will estimate important variables when estimating future cash flows. This includes operating revenues, operating expenses by each of KOG's business segments, as well as other important variables, such as capital expenditure and working capital. All values presented in these chapters are based on information gathered from previous chapters.

6.1 Future financial statements

Below in *Table 28* is our forecast of Kongsberg Gruppen ASA's (KOG) income statements from year 2023 to 2028. The values presented in this table is calculated from various estimations presented in the next chapters 6.1.1 through 6.1.4.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Operating revenues	37085	43506	51412	58178	64642	70639
Total revenue	**37085**	**43506**	**51412**	**58178**	**64642**	**70639**
Operating expenses	-31696	-37219	-43488	-48747	-53314	-56895
EBITDA	**5390**	**6288**	**7924**	**9431**	**11329**	**13744**
Depreciation & Amortisation	1917	2249	2657	3007	3341	3651
EBIT	**3473**	**4039**	**5267**	**6424**	**7987**	**10092**
Financial income/expense	88	102	133	162	201	255
EBT	**3560**	**4141**	**5399**	**6586**	**8189**	**10347**
Income tax expense	676	786	1025	1250	1555	1964
Annual profit	**2885**	**3355**	**4374**	**5336**	**6634**	**8383**

Table 28 Future income statements of Kongsberg Gruppen ASA

Furthermore, the values estimated above in *Table 28* above, yields the estimate of operating margins for the same six-year period. The growth in operating margins presented down in *Table 29*, yields similar results in terms of growth the past six years, as presented in chapter 5.3.1.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
EBIT	3473	4039	5267	6424	7987	10092
Operating revenue	37085	43506	51412	58178	64642	70639
Operating margin	9,36 %	9,28 %	10,24 %	11,04 %	12,36 %	14,29 %

Table 29 Future operating margins of Kongsberg Gruppen

6.1.1 Operating revenue & operating expenses by segment

We will in this chapter estimate future operating revenue and operating expenses for each of Kongsberg Gruppen ASA's (KOG) business segments. As mentioned earlier in chapter 5.5, each business segments warrants different growth potentials and values. Therefore, we deem it necessary to estimate key variables for each segment and adding it up to the whole group. All our value estimates in these next chapters derive from the expectation that the worldwide rearmament due to the war between Russia and Ukraine, will slow down by year 2025.

6.1.1.1 Operating revenue and expenses of Kongsberg Maritime

When we previously in chapter 5.1.2 analysed Kongsberg Maritime's (KM) financial statement and key figures, we discovered that on average, KM in the past six years has seen an increase in operating revenue of 26,40 percent. This much due to the 112,56 percent increase between year 2018 and 2019. Removing this extraordinary value, results in an average increase in operating revenue of 4,86 percent for the same period. That said, between year 2021 and 2022, KM saw an increase in operating revenues of 14,97 percent. From the strategic analysis, we discovered that KM is one of the world's largest equipment suppliers to all segments in the shipping industry (Kongsberg, 2023). This together with the increasing order- intake and backlog presented in chapter 5.1.2, we see no reason that the growth in operating revenue will slow down in the foreseeable future. Our analysis suggests that the growth in operating revenue will continue to grow at 15 percent for the next three years. Due to the decline in rearmament by year 2025, we estimate a slow decline in growth of operating revenue for the next three years. Therefore, in the following years of 2026, 2027 and 2028, we estimate a growth in operating revenue to be 10 percent, 7 percent and 4 percent respectively. *Table 30* and *Figure 1 17* below presents our estimates of operating revenue for KM in the next six years.

MNOK	2023	2024	2025	2026	2027	2028
Growth	15,00 %	15,00 %	15,00 %	10,00 %	7,00 %	4,00 %
Operating revenue	21825	25098	28863	31749	33972	35331

Table 30 Future estimates of operating revenue for Kongsberg Maritime

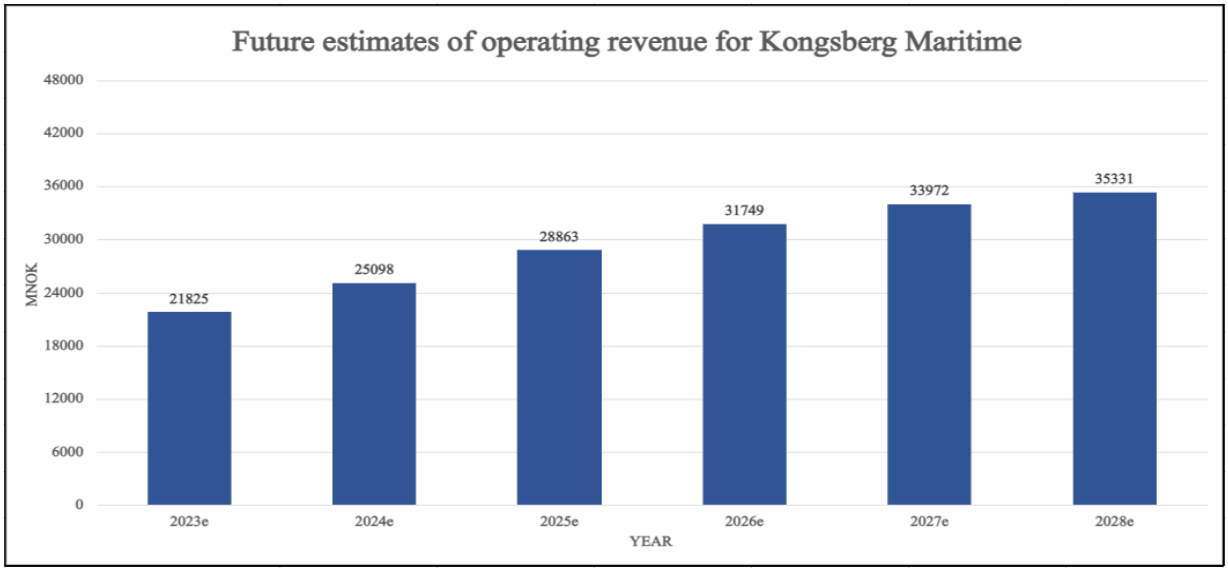

Figure 1 17 Future estimates of operating revenue for Kongsberg Maritime

Furthermore, we discovered in the same analysis in chapter 5.1.2 that the average value of operating expenses for KM is at 25,97 percent. Similarly, this value is also inflated due to the extraordinary increase of 118,43 percent in operating expenses between year 2018 and 2019. Removing this from the calculation results in an average increase of 2,86 percent from year 2017 to 2022. Likewise with operating revenue as mentioned above, the timespan between year 2021 to 2022 saw similar increase of 14,16 percent. This match with Kongsberg Gruppen ASA's (KOG) plans to expand, which is additionally confirmed by the increase in KM's order-intake and backlog, which is presented earlier in *Table 8* in chapter 5.1.2. Comparing the averages of KM's operating revenue and operating expenses during a period of six years, and excluding extraordinary values in year 2018 to 2019, yield an operating margin of 2 percent.

Need for expansion could yield a lesser operating margin, as the value between year 2021 and 2022 has presented. To not inflate the operating margins, resulting in inflated EBITDA values, we want to use an operating margin close to the value presented between year 2021 and 2022, which was close to 1 percent, as can be viewed in *Table 8* in chapter 5.1.2. Therefore, we will

use this as the operating margin when estimating operating expenses for KM in the future. Using *Table 30* above, we conclude with the resulting estimation of growth in KM's operating expenses for the next six years, which is presented in *Table 31* and *Figure 1 18* down below.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Growth	14,00 %	14,00 %	14,00 %	9,00 %	6,00 %	3,00 %
Operating expenses	18910	21558	24576	26788	28395	29247

Table 31 Future estimates of operating expenses for Kongsberg Maritime

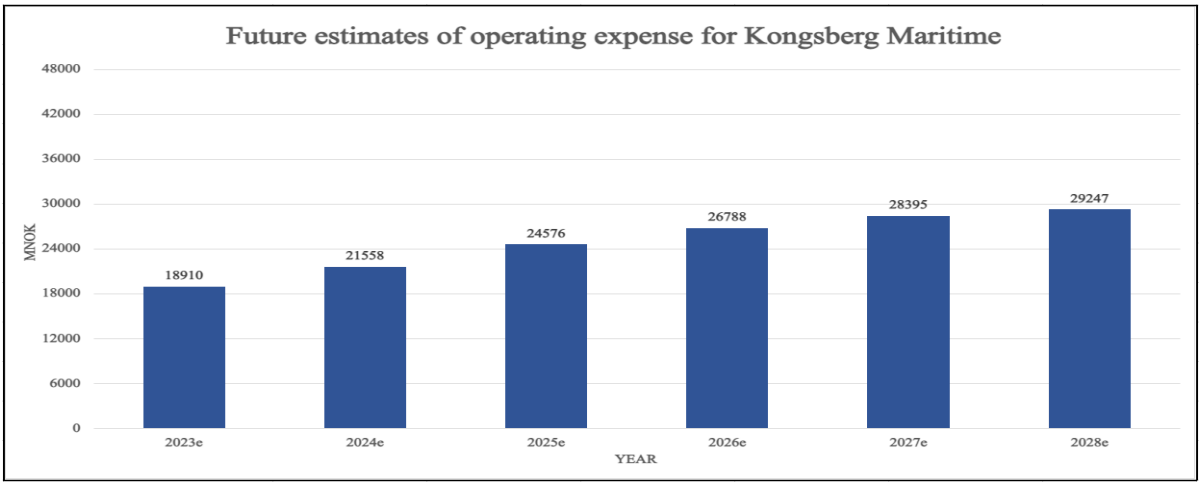

Figure 1 18 Future estimates of operating expenses for Kongsberg Maritime

6.1.1.2 Operating and expenses of Kongsberg Defence & Aerospace

Next, we will look at our estimation of future operating revenue and operating expenses for Kongsberg Defence & Aerospace (KDA) business segment. Likewise with Kongsberg Maritime (KM), we analysed KDA's financial statements and key figures in chapter 5.1.3. From the key figures presented in *Table 10* in that same chapter, we found that operating revenues in a period of the last six years, has averagely increased by 13,73 percent.

In contrast to KM no values in KDA's operating revenue during this period contains any extraordinary values. All values of growth in operating revenue have been between 17- and 19 percent. That said, the greatly increased order-intake and backlog presented earlier in *Table 11* suggests that a consideration regarding future expansion is warranted.

However, even though order- intake and backlog have increased greatly during this period, the growth in operating revenue have stayed relatively the same. This provides a dilemma regarding

whether Kongsberg Gruppen ASA (KOG) will expand this business segment and therefore increase the growth in operating revenue, or if they will continue increasing the order backlog and increasing the delivery time for projects. From the strategic analysis, we discovered that due to the increasing customer defense needs, KOG opt for increasing capacity, building new factories and growing the workforce. In our opinion, this justifies that KOG want to expand KDA, and increase its operating revenue, resolving the dilemma.

This in turn warrants a greater increase in operating revenue, especially during the period of global rearmament, which we estimated slowing down by year 2025. Taking both information from financial statements and the strategic analysis, we believe that the expansion will cause an increased growth in operating revenue for year 2023, 2024 and 2025 to be 19-, 21-, and 23 percent respectively. Likewise with KM, this growth slows down as the world enters a stage of decreasing the rearmament growth, resulting in decreasing growth rate of operating revenue during the next three years. This means a 17-, 15- and 13 percent growth rate in 2026, 2027 and 2028 respectively. Growth rates and resulting values are presented in *Table 32* and *Figure 1 19*.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Growth	19,00 %	21,00 %	23,00 %	17,00 %	15,00 %	13,00 %
Operating revenue	14113	17077	21005	24576	28262	31936

Table 32 Future estimates of operating revenue of Kongsberg Defence & Aerospace

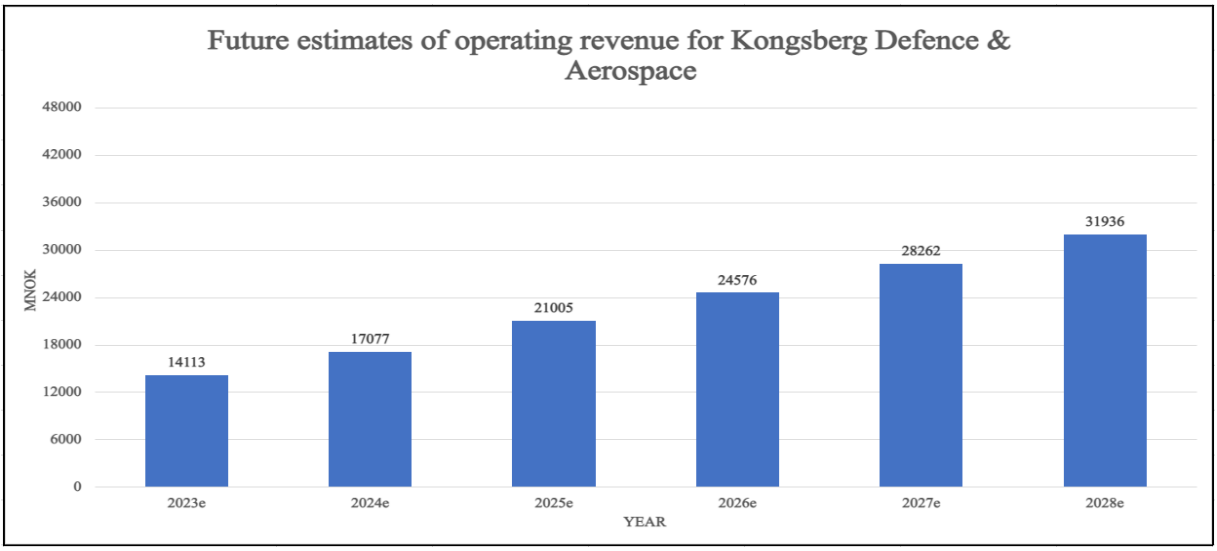

Figure 1 19 Future estimates of operating revenue for Kongsberg Defence & Aerospace

With operating revenue for Kongsberg Defence and Aerospace in the future estimated, we want to estimate operating expenses for the same period. Analysis of Kongsberg Defence & Aerospace's key figures in *Table 10* presented an average increase in operating expenses of 10,81 percent. In contrast to operating revenue for the same period, operating expenses have had a varying growth rate in the past six years. This is significant from year 2018 to 2020 with close to a 10 percent decrease in the growth rate of KDA's operating expenses. We deem this decrease not as extraordinary as what we presented in KM's operating revenue and operating expenses and therefore have decided to include this in the average. Furthermore, KDA's operating expenses had higher growth rate than operating revenue between 2021 to 2022. However, this difference is not significant, yielding a value of 0,2 percent illustrated *Table 10*.

That said, it represents that expansion does create an increase in operating expenses. With reports suggesting new factory and facilities being finished by summer 2024 (Kongsberg, 2023), we deem it necessary to not undervalue the amount of operating expense for the first two years in the future. To remove any undervaluation, we deem it necessary for operating expenses in year 2023 and 2024 to be 1 percent above operating revenue in the same period. This results in a growth of operating expenses equalling 20 and 22 percent in 2023 and 2024 respectively. Even though KOG could continue the expansion by creating new factories and facilities after 2024, we assume that they will not. With this in mind, we assume that the growth in operating expenses for the following four years will equal the past six year's operating margin. Rounded up, this difference is three percent. This in turn yields that operating expenses for 2025, 2026, 2027 and 2028 will be three percent below operating revenue for the same years. This results in the values presented in *Table 33* and *Figure 1 20* below.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Growth	20,00 %	22,00 %	20,00 %	14,00 %	12,00 %	10,00 %
Operating expenses	11213	13680	16416	18714	20959	23055

Table 33 Future estimates of operating expenses of Kongsberg Defence & Aerospace

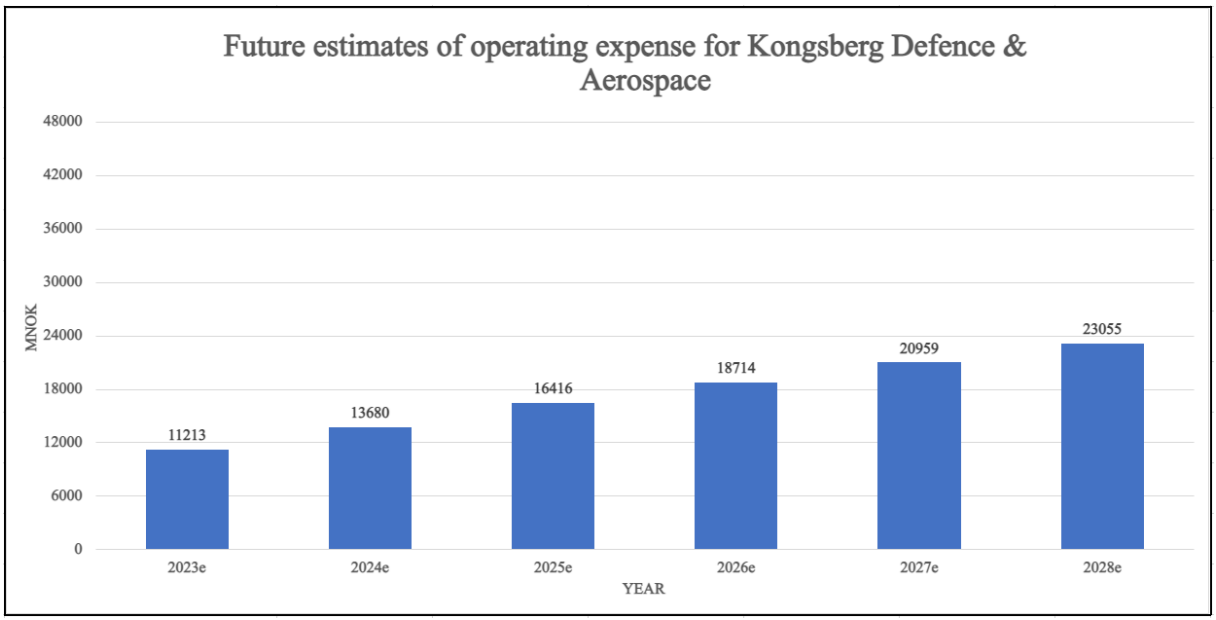

Figure 1 20 Future estimates of operating expenses for Kongsberg Defence & Aerospace

6.1.1.3 Operating revenue and expenses of Kongsberg Digital

Lastly, we want to estimate the future operating revenue and expenses for Kongsberg Digital (KD). Although the smaller segment of the three that Kongsberg Gruppen ASA possesses, it might be the segment that is located in the greatest market in the world. This was mentioned in chapter 2.4, as the technology market has an estimated global value of $5,2 trillion. That said, analysis of KD's financial statements, as mentioned in chapter 5.1.4, is a business segment in a growth phase. The operating revenue during the last four years of reporting, has had an average increase of 7,57%, as presented in *Table 13* in chapter 5.1.4. This together with the fact that KD only contributes with 3 percent in operating revenue towards the whole group, which is presented in *Table 15*, makes it difficult to measure the impact of this segment in the future.

That said, year 2021 to 2022 saw an increase in operating revenue of 17,04 percent, which is nearly 10 percent above the average for the period, meaning there is potential for further growth. Because of macroeconomic environment in the world as of present day, Kongsberg Gruppen ASA (KOG) will more than likely invest resources in the expansion of the other two business segments. This is especially the case when time moves toward year 2025, due to the demand in KOG's other business segments. However, KOG will slowly increase its resources to develop this business segment for the following three years, as demand for the other business segments starts to slow down. With this information taken into account, we believe that the estimates of the growth of Kongsberg Digital's operating revenue, should reflect the last period growth of

17 percent, with a 1 percent margin of error when estimating for the next three years. Next three years of our estimation period, will yield an increase of growth in operating revenue which is bigger than previous years. Growth rates- and operating revenue estimations for KD in the future is presented in *Table 34* and *Figure 1 21* down below. Note that the growth values reminisce the 3- to 4 percent that Kongsberg Digital as of present day, contribute of operating revenue to the whole company.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Growth	16,00 %	16,00 %	16,00 %	20,00 %	30,00 %	40,00 %
Operating revenue	1147	1331	1544	1852	2408	3371

Table 34 Future estimates of operating revenue of Kongsberg Digital

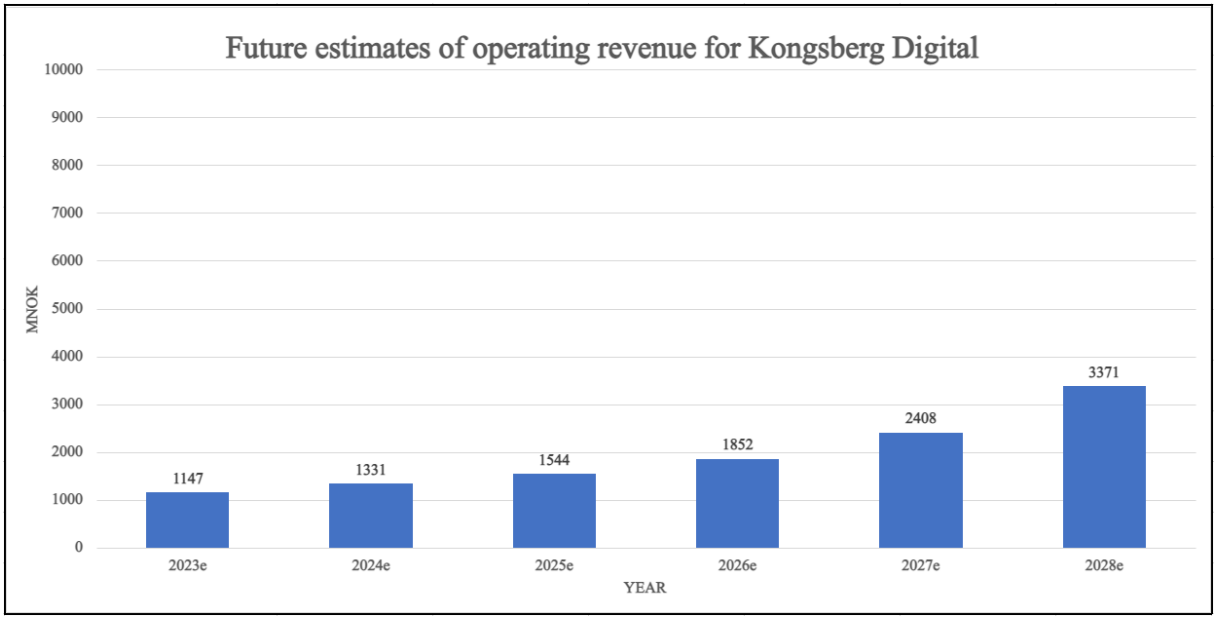

Figure 1 21 Future estimates of operating revenue for Kongsberg Digital

Next topic for estimation is Kongsberg Digital's future operating expenses. From *Table 13* in chapter 5.1.4, we analysed that in the past four years, KD have had an increase of operating expenses equal to 17,90 percent, 10 percent more than the average increase in operating revenue. This is significant in the past period between year 2021 and 2022, where the increase was 23 percent higher than that of operating revenue. This makes the operating margin negative, leaving with negative annual profits for this business segment, as can be viewed in *Table 12* in chapter 5.1.4. It is uncertain whether KD will become EBIT positive during the next six years in the future. However, we cannot rule it out. Reminiscing of the estimations of KD's operating

revenue, we have decided to follow a similar estimation for KD's operating expenses. We will use the average operating margin of 10 percent during the period between year 2023 and 2026. For the following two years, our estimation will include a decline in operating expenses when comparing to operating revenue. This is due to the possibility of increased efficiency, as more resources are relocated from the other business segments to Kongsberg Digital. *Table 35* and *Figure 1 22* below presents these values. Note, the growth rates, similar with the values estimated in operating revenue above, reminisce the 4- to 5 percent that KD today contribute to KOG operating expenses.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Growth	26,00 %	26,00 %	26,00 %	30,00 %	22,00 %	16,00 %
Operating expenses	1572	1981	2496	3245	3959	4593

Table 35 Future estimates of operating expenses of Kongsberg Digital

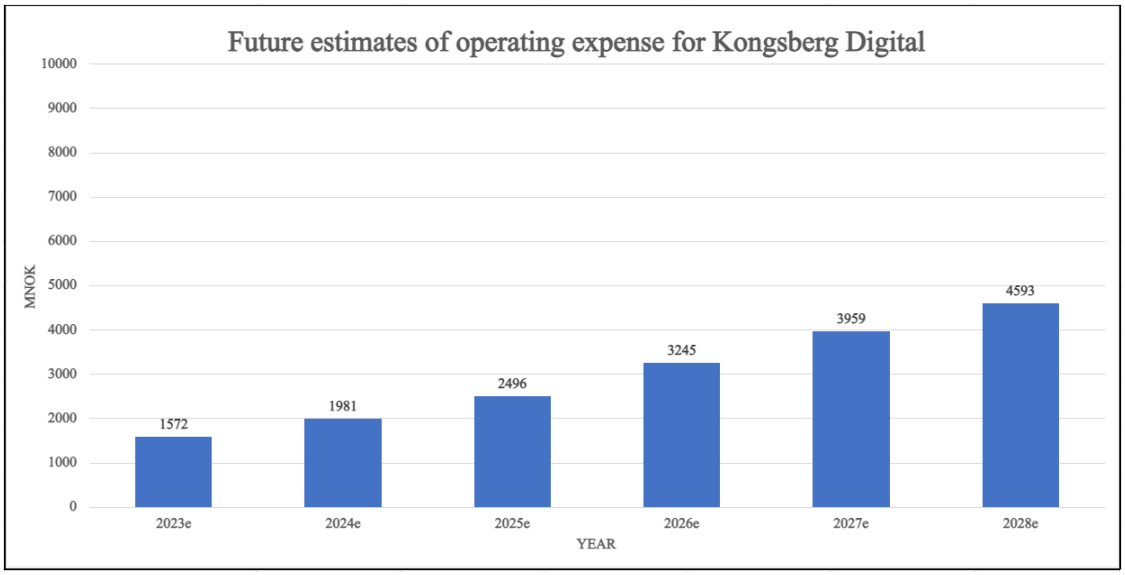

Figure 1 22 Future estimates of operating expenses for Kongsberg Digital

6.1.2 Depreciation & Amortisation

Depreciation and amortisation are the next metric to estimate in our estimation of Kongsberg Gruppen ASA's (KOG) income statement. As there are limited to no information regarding each business segments contribution, we have decided to use values from the whole group's historic income statement to estimate the future values of KOG's depreciation and amortisation. Using *Table 4* in chapter 5.1.1 as the benchmark, we have decided to calculate this variable as a percentage of operating revenue for the same historic year. Additionally, since we in many

chapters have estimated that expansion in several business segments is likely, we estimate an increase in depreciation and amortisation over the next six years.

Down in *Table 36* below are the presented values in which depreciation and amortisation in the past six years have been in comparison to operating revenue. We have added a margin of error of 1 percentage point to the average, as we deem it necessary in order not to underestimate the future's depreciation and amortisation due to estimated expansion of KOG's business segments.

% of revenue	2017	2018	2019	2020	2021	2022	Average (+1%)
Depreciation & Amortisation	3,50 %	3,08 %	4,66 %	5,25 %	4,46 %	4,07 %	5,17 %

Table 36 Historic average (+1%) depreciation & amortisation as percentage of operating revenue

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Depreciation & Amortisation	1917	2249	2657	3007	3341	3651

Table 37 Future estimates of Kongsberg Gruppen ASA's depreciation and amortisation

6.1.3 Financial income/expenses

When estimating the future financial income/expenses, we utilized the same strategy we used when estimating future depreciation and amortisation for Kongsberg Gruppen ASA (KOG). That said, with financial income/expense, we used this metrics value relative to EBIT instead of operating revenue. From *Table 4* in chapter 5.1.1, we estimated an average financial income/expense variable of 1,52 percent.

Evidence from KOG's historical balance sheets presented in chapter 5.2, we believe that the expansion of several business segments requires an increase in liabilities. Therefore, we include a 1 percent margin of error on this average. *Table 38* and *Table 39* presents the historical average, as well as future estimates of KOG's financial income/expenses.

% of EBIT	2017	2018	2019	2020	2021	2022	Average (+1%)
Financial income/expense	11,79 %	11,27 %	-19,05 %	-2,62 %	2,06 %	5,68 %	2,52 %

Table 38 Historical average (+1%) of financial income/expense as a percentage of EBIT

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Financial income/expense	88	102	133	162	201	255

Table 39 Future estimates of Kongsberg Gruppen ASA's financial income/expense

6.1.4 Income tax expense

Next, we want to estimate Kongsberg Gruppen ASA's (KOG) future income tax expense. We use historical values provided from *Table 4* in chapter 5.1.1 to calculate the estimates. Historically, in the past six years, KOG has had an average income tax expense close to 18 percent. This is less than the average income tax expense of 22 percent, which is reported from the Norwegian government (Finansdepartementet, 2022).

We have decided to use the historical average income tax expense that KOG have had in the past six years, but including a 1 percent margin of error, resulting the average value becoming close to 19 percent. *Table 40* and *Table 41* below presents both historical income tax average of KOG, as well as future estimates. Note, in 2018, KOG paid near 9 percent tax. This decreases the average quite significantly. We deem the value of 2018 to be extraordinary and have decided not to include this in the average, hence the missing number in *Table 40*.

% of EBT	2017	2018	2019	2020	2021	2022	Average (+1%)
Income tax expense	14,53 %	-	13,93 %	20,16 %	21,63 %	19,67 %	18,98 %

Table 40 Historical average (+1%) of income tax expense as a percentage of EBT

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Income tax expense	676	786	1025	1250	1555	1964

Table 41 Future estimates of Kongsberg Gruppen ASA's income tax expense

6.2 Future cash flows

We will in this chapter present the variable calculations necessary in order to estimate the future cash flows for Kongsberg Gruppen ASA (KOG). These variables are capital expenditure, corporate tax and working capital. It is these cash flows that will make the foundation of our fundamental valuation with the use of the total capital method mentioned earlier in chapter 3.1.2.

6.2.1 Capital expenditure

In this chapter, we want to analyse and estimate Kongsberg Gruppen ASA's (KOG) capital expenditure. Capital expenditure is a metric that presents the day-to-day costs of a company's property, plant and equipment and is a cost that needs to be subtracted to calculate the free cash flows of a firm properly. This metric is calculated through the addition of property, plant and equipment with depreciation, as presented in *Formula 19* down below. We find the value of property, plant and equipment in a company's balance sheet, of which we have presented earlier in *Table 18* earlier in chapter 5.2.1.

$$CAPEX_t = PP\&E_t + Depreciation_t$$

Formula 18 Capital expenditure formula

First, before we can estimate capital expenditure for KOG in the future, we need to look at the historic capital expenditure values. Using information from KOG's income statement in chapter 5.1 and the balance sheet in chapter 5.2, we can calculate capital expenditure values of the past. These values are presented in *Table 42* below.

MNOK	2018	2019	2020	2021	2022
Property, plant and equipment	2531	3924	3665	3901	4107
Depreciaton	356	806	944	881	936
CAPEX	2887	4730	4609	4782	5043

Table 42 Kongsberg Gruppen ASA's capital expenditure values in the past five years

Now that we have the past values of KOG's capital expenditure, we can estimate the future capital expenditure values for the company. Two ways can be used in order to estimate these values. The first method, and the method we have chosen, is to estimate the values of property, plant and equipment in the future and then add these values with the depreciation for that same year. Another method is to calculate the average capital expenditure values of the previous years as a percentage of operating revenue. Similar to the calculations performed in chapter 6.1.2 to 6.1.4. Performing the calculation using the first method yielded the results presented in *Table 43* down below.

Growth (%)	2018-2019	2019-2020	2020-2021	2021-2022	Average	Average (exc 2018-2019)
Property, plant and equipment	27,52 %	-6,60 %	6,44 %	5,28 %	8,16 %	1,71 %
Depreciation	63,20 %	17,12 %	-6,67 %	6,24 %	19,97 %	5,56 %

Table 43 Kongsberg Gruppen ASA's historic growth in property, plant, equipment and depreciation

Finally, this average value found above can be utilized to calculate an estimation of capital expenditure values. These values are presented in *Table 44* below. The increasing capital expenditure values of KOG are in line with our estimation that the company will expand their business segments. Expansion yields an increase in property, plant and equipment. This with the increased depreciation as more equipment and properties depreciate, yields an increase in capital expenditure. Mentioned in chapter 6.1 that we believe this expansion will continue as we reach year 2025. That said, we estimate that the main growth in capital expenditure will happen in the first year. Therefore, capital expenditure in *Table 44* below will have a higher value and growth in the first year. Next, we use the average growth increase from *Table 43* for the following five years.

MNOK (Exc AVG%)	2023e	2024e	2025e	2026e	2027e	2028e
Average property, plant and equipment	27,52 %	1,71 %	1,71 %	1,71 %	1,71 %	1,71 %
Property, plant and equipment	5237	5327	5417	5510	5604	5700
Average depreciation	63,20 %	5,56 %	5,56 %	5,56 %	5,56 %	5,56 %
Depreciaton	1528	1613	1702	1797	1897	2003
Capital expenditure	6765	6939	7120	7307	7501	7702

Table 44 Kongsberg Gruppen ASA's capital expenditure value estimates

6.2.2 Working capital

Working capital is an important metric that measures a company's short-term financial health. This metric consists of the difference in a company's current assets and current liabilities, which is presented in *Formula 19* below. If working capital is positive, then it indicates that the company at the time of calculation, can cover any short-term liabilities with short-term assets. In theory, a negative working capital value is an issue, as this indicates that a company cannot cover its short-term liabilities.

Similar with capital expenditure, two methods can be used to calculate an estimation of future working capital. Through our analysis, we have decided to include them both, as to argument for our choice of method. Note, all values presented in this chapter is calculated through the use of values found in Kongsberg Gruppen ASA's (KOG) historical balance sheet, presented in chapter 5.2 and KOG's estimated future income statement, presented in chapter 6.1.

$$Working\ capital = Current\ assets - Current\ liabilities$$

Formula 19 Working capital formula

Firstly, we will describe the first method in calculating an estimate for future working capital of KOG. As working capital is equal to the difference in current assets and current liabilities, one method is to estimate these two variables. This can be done by calculating the historical average growth in both these variables and use this average to estimate the future values. Our growth calculation of these variables is presented in *Table 45* below. We have decided not to include the values between year 2018 and 2019, due to this value being extraordinary. With this precaution, the average historical growth of KOG's current assets is equal to 5,05 percent, meanwhile the average growth in current liabilities is equal to 9,25%.

Growth (%)	2018-2019	2019-2020	2020-2021	2021-2022	Average
Current assets	-	5,07 %	0,83 %	9,26 %	**5,05 %**
Current liabilities	-	4,70 %	-2,70 %	25,74 %	**9,25 %**

Table 45 Kongsberg Gruppen ASA's historical current assets- and current liabilities growth

Next, with these average values, we can estimate the future working capital values of KOG. We use year 2022 in the balance sheet, presented in chapter 5.2, as a baseline for growth in current assets and current liabilities in the future. With these two variables calculated for each year, we can use the difference to estimate the future working capital for the company. The results are presented in *Table 46* below. Interestingly, this table indicate that KOG's current liabilities will overtake the company's current liabilities in year 2025. This results in a negative working capital, which in turn, can potentially yield a liquidity issue if not fixed.

This is further strengthened by the analysis presented in chapter 5.3.3, which covers liquidity ratio in the past six years, which is declining. Furthermore, in chapter 5.2, in the past five years, current liabilities have closed the difference significantly when comparing this value to current assets. This is much due to the increase in customer liabilities, as presented in *Table 20* in chapter 5.2. It is uncertain whether KOG will continue to increase its current liabilities, instead of its non-current liabilities. To solve this potential issue, KOG should finance their current assets through use of non-current liabilities. Since the first method resulted in negative working capital estimates for the future not financially viable long-term. Opting to exclude these values, Resulting in the use of other methods to estimate KOG's future working capital values.

MNOK (Exc AVG%)	2023e	2024e	2025e	2026e	2027e	2028e
Average current assets	5,05 %	5,05 %	5,05 %	5,05 %	5,05 %	5,05 %
Current assets	28265	29693	31194	32771	34427	36167
Average current liabilities	9,25 %	9,25 %	9,25 %	9,25 %	9,25 %	9,25 %
Current liabilities	26327	28762	31422	34329	37504	40973
Working capital	**1938**	**931**	**-228**	**-1558**	**-3077**	**-4806**

Table 46 Kongsberg Gruppen ASA's future working capital estimates

Using the results in the second method to estimate the working capital values of KOG in the future. The method estimates these values through comparing working capital with operating revenue. First, we need to calculate historical working capital values presented in *Table 47*.

MNOK	2018	2019	2020	2021	2022
Current assets	18650	23243	24422	24625	26905
Current liabilities	9042	18811	19696	19165	24098
Working capital	**9608**	**4432**	**4726**	**5460**	**2807**

Table 47 Kongsberg Gruppen ASA's working capital values in the past five years

With resulting working capital now presented and with operating revenue as comparable variable, we can calculate the margin. As presented in *Table 48* down below, results showcase an average working capital margin of 16,56 percent during the past four years. Note, year 2018 is removed from this calculation, as we deemed it as an extraordinary value, which with its 70 percent margin would increase the average by 10 percent.

MNOK	2018	2019	2020	2021	2022	Average
Operating revenue	13807	23245	25612	27449	31803	-
Working capital	9608	4432	4726	5460	2807	-
Working capital (% of revenue)	-	**19,07 %**	**18,45 %**	**19,89 %**	**8,83 %**	**16,56 %**

Table 48 Kongsberg Gruppen ASA's working capital past values as operating revenue percentage

Lastly, we compare the working capital average of the past, with estimates of operating revenue in the future. These values are presented in *Table 49* below. In comparison to the working capital estimates found earlier in *Table 46* above with the selection of first method, we present a different picture. Instead of following the declining trend in value, which the five past years have yielded, this second method provide an opposite result, increasing the working capital value year by year in the future.

Previously mentioned, it is financially viable to have a positive working capital, and it is not unlikely that Kongsberg Gruppen ASA will take action to adjust its current trajectory. Although this is speculative, with the other arguments mentioned in this chapter, we have decided to use the estimates resulted from the usage of the second method.

MNOK (Exc AVG%)	2023e	2024	2025e	2026e	2027e	2028e
Operating revenue	37085	43506	51412	58178	64642	70639
Average working capital (2018-2022)	16,56 %	16,56 %	16,56 %	16,56 %	16,56 %	16,56 %
Working capital	**6141**	**7204**	**8513**	**9634**	**10704**	**11697**

Table 49 Kongsberg Gruppen ASA's future working capital estimates (% of revenue)

6.2.3 Free cash flow to firm

With estimates and calculations provided in the previous chapters, we have estimated the future cash flows for Kongsberg Gruppen ASA (KOG). These results from our estimates provided in *Table 50* down below, suggests that even though KOG increase its EBITDA and EBIT throughout the period, the company will have a negative free cash flow value in year 2024 This is mainly the results of the increase in capital expenditure due to the investments in property, plant and equipment needed to expand the company's business segments, and also the decline value in change in working capital.

Historically, KOG have presented, in events of heavy investments and expansion, negative cash flows. Thus, making our estimates not abnormal, as the company is expected to expand. In historical years of negative cash flows, KOG have covered it with cash and cash equivalents. As previous as last year, KOG reduced their cash and cash equivalent from MNOK 8118 to MNOK 3932, due to a negative cash flow of MNOK 4238, as can be viewed in *Table 18* in chapter 5.2. This cash position is mostly composed of prepayments of contracts, which reduces the need in present time for financing from other sources, such as increasing debt from loans. Kongsberg Digital's negative operating margins also contributes to these results. Even though capital expenditure continues to increase its value over the next six years, the increase in EBITDA and net profits will be greater, resulting in a continuous increase in estimated future cash flows values from year 2024 to 2028.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
EBITDA	5390	6288	7924	9431	11329	13744
Depreciation & amortisation	1917	2249	2657	3007	3341	3651
Financial income/expense	88	102	133	162	201	255
Income tax	676	786	1025	1250	1555	1964
Net profit	2885	3355	4374	5336	6634	8383
Depreciation & amortisation (+)	1917	2249	2657	3007	3341	3651
Change in working capital	3334	1063	1309	1120	1070	993
Capital expenditure	6765	6939	7120	7307	7501	7702
Free cash flow	1371	-272	1221	2156	3545	5325

Table 50 Kongsberg Gruppen ASA's estimates of free cash flows in the future

7. Required rate of return

In this chapter we will calculate the required rate of return to the total capital. We will use the valuation theory we covered in chapter 3 to achieve this. As the total capital method is our chosen method for fundamental analysis, we need to calculate the weighted average cost of capital. Covering each variable the WACC formula consists of, then presenting our findings.

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

Formula 20 Working capital

7.1 Market value of Equity

The first variable we need to calculate to find the required rate of return to total capital is the market value of equity. This metric is what the market at any given time value Kongsberg Gruppen ASA's (KOG) equity.

The value is calculated by multiplying KOG's total shares with the current stock price of the company. As of 30th of May 2023, the stock price is valued at NOK 448,80. This together with the total amount of shares the company currently have in the market equal to 177 313 072, yields a market value on KOG's equity equal to NOK 79,57 billion. *Table 51* present the values down below.

Total shares	177 313 072
Stock price (NOK)	448,80
Market value equity	79 578 106 714

Table 51 Market value equity

7.2 Market value and cost of debt

The next variable we need to calculate is the market value of Kongsberg Gruppen ASA's (KOG) debt. In general, market value of debt refers to the amount investors are willing to buy a company's debt for. There are multiple methods to choose from when calculating a company's market value of debt. We have decided to use the method that involves the calculation of cost of debt, since we also need this variable when calculating cost of capital. First, we need to analyse what current interest-bearing debt that KOG possesses as of present day. From the company's bond overview (Kongsberg, n.d.), we conclude with KOG currently possesses four corporate bonds as the company's interest-bearing debt. The total value of the debt is NOK 2,45 billion. With years to maturity, base interest rate and interest margins, as well as weights taking into account in the calculation, we calculate KOG's cost of debt equal to 3,84 percent. Loans and their respective variables are presented in *Table 52* below. Base interest from (Tradingeconomics, 2023).

Loans	Maturity	Years left	Base interest	Base rate	Interest margin	Rate	Carrying amount (NOK)	Weight	Cost of debt	Years to maturity
NO0010779788	2023	0	0	0	2,90	2,90 %	450 000 000	18,37 %	0,53 %	0,00
NO0010837602	2024	1	3m NIBOR	3,88	1,20	5,08 %	500 000 000	20,41 %	1,04 %	0,20
NO0010766512	2026	3	3m NIBOR	3,88	0,86	4,74 %	500 000 000	20,41 %	0,97 %	0,61
NO0010940422	2026	3	0	0	3,20	3,20 %	1 000 000 000	40,82 %	1,31 %	1,22
						Total	2 450 000 000	100,00 %	3,84 %	2,04

Table 52 Cost of debt calculation

Now with KOG's cost of debt, as well as the value of the company's interest-bearing debt, we can calculate the market value of KOG's debt. *Formula 22* below presents the calculation of the market value of a company's debt.

$$MV\ Debt = I * \left(\frac{1 - \frac{1}{(1 + C_d)^t}}{C_d}\right) + \left(\frac{FV}{(1 + C_d)^t}\right)$$

Formula 21 Market value of debt formula

Variable explanation

I = Interest expense

Cd = Cost of debt

FV = Face value of debt to maturity

Presented by this formula, we need both KOG's interest expense and the company's face value of debt. The company's recent updates of 2022 values from their yearly reports suggest an interest expense of NOK 50 million. Additionally, with the removal of current long-term debt and capital leases from total carrying amount of debt, results in a face value of KOG's debt equal to NOK 2322 million. Using the formula presented above and with these variables now presented, yields KOG's market value of debt equal to rounded NOK 2152 million. The values of these variables are presented in *Table 53* down below.

Weighted average YTM	2,04
Interest expense	50 000 000
Cost of debt	3,84 %
Total carrying amount	**2 450 000 000**
Current LT debt/capital leases	128 000 000
Face value	2 322 000 000
Market value debt (NOK)	**2 151 824 925**

Table 53 Market value debt

7.3 Corporate tax

Taxes are included in the WACC formula because when a firm have debt and pay interest, these costs are classified as tax-deductible. In Norway, the corporate tax level for 2022 is set at 22% (Finansdepartementet, 2022). From previous chapters we estimated that the average income tax of Kongsberg Gruppen ASA (KOG) in the past six years was equal to 17,98 percent when excluding the error margin. That said, the discount rate is applied to all future cash flows. As to not undervalue the income tax in the future and with KOG's main operations are in Norway, we will use the Norwegian tax level of 22 percent when calculating cost of capital.

7.4 Cost of Equity

As mentioned in chapter 3, cost of equity is investors required rate of return on a company's equity. To calculate Kongsberg Gruppen ASA's (KOG) cost of equity, we need the value of three different variables. The risk-free rate, the market risk premium and the company's beta. Represented by *Formula 22* below:

$$ER_i = R_f + \beta_i (ER_m - R_f)$$

Formula 22 Cost of equity

7.4.1 Risk free rate

As Kongsberg Gruppen ASA's (KOG) main operations are located in Norway and all their bonds are listed on the Oslo exchange, we decide to use the 10-year rate of Norwegian government bonds as our risk-free rate. As of 30th of May 2023, this rate is equal to 3,32 percent (Norges-bank, 2023). Even though this interest rate has increased significantly in the past years, as presented in *Figure 1 23* below, as our valuation is as of 30th of May 2023, we will as of this present date, use the value of 3,32 precent.

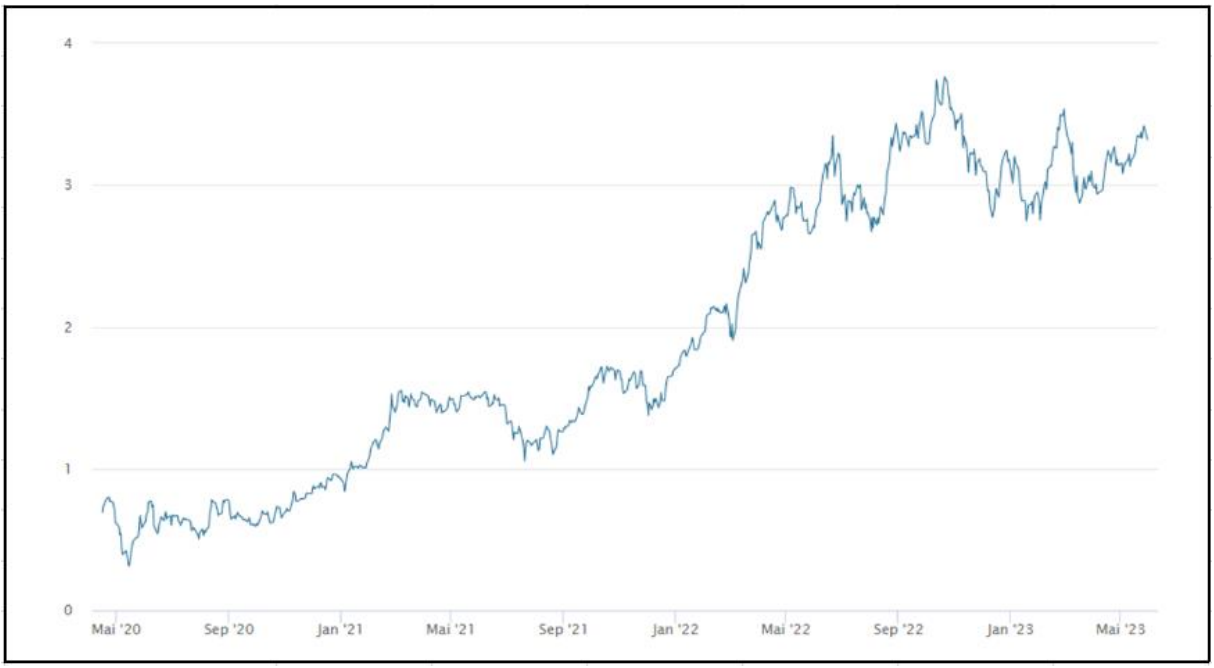

Figure 1 23 10-year rate on Norwegian government bonds. (Norges-bank, 2023)

7.4.2 Beta (β)

We utilize historical numbers to calculate a company's beta, which is a measurement of a company's risk. A regression analysis is performed to calculate the beta, which will yield the same result as using *Formula 23* presented down below. Since Kongsberg Gruppen ASA (KOG) is listed on the Oslo exchange, we will use this index's historical numbers and compare these with KOG's historical numbers. Through use of RStudio and Excel, we calculate the day-to-day returns for both these subjects in a period of six years in the past, from 30.05.2017 to 30.05.2023. Data is provided from Yahoo finance (Yahoo Finance, 2023). These calculations provided a result that values the beta of KOG is equal to 0,714. A beta below 1 is considered to have less volatility, meaning that KOG have less volatility compared to the stock exchange.

$$\beta_i = \frac{Cov\,(R_i, R_m)}{Var(R_m)}$$

Formula 23 Beta

To argument for this beta value, we will compare it to what the market suggests what the beta should be in the range of. E24, a Norwegian economist webpage, suggests that the beta of KOG is equal to 0,613 (E24, 2023). Same result is provided from Dagens Næringsliv, another Norwegian economist webpage that provides analysis (Dagensnæringsliv, 2023). Since these values do not deviate far from our calculated beta, we decide to use our beta value of 0,714 when calculating Kongsberg Gruppen ASA's cost of equity.

7.4.3 Market risk premium

In its simplest form, the market risk premium can be described as the difference between the risk-free interest rate and the expected return in the market (Brealey et. al, 2019). Despite being widely acknowledged as a pivotal variable in finance, the calculation methodology for the market risk premium still needs a consensus among academics and professionals. Besides various approach methods, practitioners have resorted to utilizing survey data to ascertain a suitable market risk premium. Surveys hold appeal due to their ability to capture investors' prospective outlook on the market and estimate corporate executives' cost of capital. Notable example of such a survey is the report published by PwC, which indicates a median market risk premium of 5.0% for 2022. This figure serves as the market premium that we will adopt in our thesis (PricewaterhouseCoopers, 2022).

7.5 Weighted Cost of Capital (WACC)

The WACC represents a company's average cost of capital from both common stock, preferred stock, bonds and other forms of debt (Hargrave, 2022). This average expresses the required rate of return for both the shareholders and debtholders. WACC uses the cost of capital, described in *Formula 20.* Included in this formula is the market value of the firm's equity, the market value of their debt, the firm's cost of debt and the corporate tax rate.

7.6 Summarize required rate of return

We have in this chapter calculated all variables necessary to calculate Kongsberg Gruppen ASA's (KOG) weighted average cost of capital (WACC). As presented in this chapter, we can confirm that the WACC of this company is near equal to the company's cost of equity. This is due to the 97,37 percent equity weight in the analysis. Most of KOG's liabilities, as presented in chapter 5.2, are from customer contracts and not debt, hence the significant difference between debt and equity weights in the cost of capital analysis. A financial strategy for KOG could be decreasing their cost of capital by increasing its interest-bearing debt, as this will reduce the overall value of this variable. Reduced debt weight in the cost of capital formula also minimizes the amount of tax advantage the company receives. Conclusively, KOG's weighted average cost of capital is equal to 6,79 percent.

Required Rate of Return	
Risk-Free interest rate	3.32%
Market risk permium	5.00%
Beta of Kongsberg	0.714
CAPM (R_e)	6.89%
Corporate tax	22%
Cost of debt (R_d)	3.84%
Market value debt	2.63%
Market value equity	97.37%
WACC	6.79%

Table 54 Weighted Average Cost of Capital

8. Fundamental analysis

In this chapter we will use information gathered from fundamental valuation theory, financial statements, cash flow estimates and required rate of return in order to put a valuation on Kongsberg Gruppen ASA's (KOG) stock price. Firstly, we need to calculate a terminal value for the company.

8.1 Terminal Value

As we need to choose a terminal year, we have decided to use the year of 2028 as our foundation for our calculation of a terminal value for the company. This together with the required rate of return of 6,79 percent and a terminal growth rate, will yield the terminal value of Kongsberg Gruppen ASA (KOG). For this, as we presented in chapter 3.1.3, we will use *Formula 24*.

$$TV = \frac{FCF_n(1+g)}{(r-g)}$$

Formula 24 Terminal value formula

Terminal value is applied in a effort to calculate the value of all future cash flow the company produces in its lifetime, we need a realistic growth rate. In general, when accounting for infinity, the growth rate of a company cannot be bigger than the growth rate in the general economy. This would make a company eventually be more valued than the economy the company is placed within. In the past 25 years, the average growth rate in Norwegian GDP have been 1,75 percent (Tradingeconomics, 2023). This value will be used as the growth rate variable in the calculation of KOG's terminal value. *Table 55 (1)* and *Table 55 (2)* presents both terminal value and discounted terminal value.

Free cash flow 2028e (MNOK)	5325
Required rate of return	6.79%
Terminal growth rate	1.75%
Terminal value (MNOK)	**107546**

Table 55 Terminal value (1)

Terminal value	107546
Required rate of return	6,79 %
Number of years (t)	6
Present value TV (MNOK)	72521

Table 56 Terminal value (2)

8.2 Net Present value

The last calculation to conduct before we can calculate a stock price for Kongsberg Gruppen ASA (KOG), is to discount the current estimated free cash flows from the period of 2023e to 2028e. Values used are provided from chapter 6.2.

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Free cash flow	1371	-272	1221	2156	3545	5325
Discount rate	6,79 %	6,79 %	6,79 %	6,79 %	6,79 %	6,79 %
Net prersent value FCF	1284	-239	1003	1658	2553	3591

Table 57 Net present value FCF

As presented in *Table 57* above, when adding up all the net present values of KOG's free cash flows in the estimated period between year 2023 and 2028, we get a value of MNOK 9849. We add this value to the net present value of terminal value and get a total value of MNOK 82370. We then subtract the current net debt of KOG's bonds, which returns an equity value of the company equal to MNOK 79920. Lastly, we divide this value with the total amount of shares KOG's have issued to the market, yielding a stock price equal to NOK 450,73.

Net present value FCF (MNOK)	9849
Net present value terminal value (MNOK)	72521
Total value (MNOK)	82370
Net debt (MNOK)	2450
Equity value (MNOK)	79920
Total shares	177 313 072
Stock price	**450,73**

Table 58 Stock price calculation

8.3 Sensitivity analysis

A sensitivity analysis is an analytic tool that is used to conclude how sensitive the fundamental valuation is with a marginal value change in the valuation's input variables. We want to analyse the sensitivity of our valuation of Kongsberg Gruppen ASA (KOG) by including changes in important variables such as operating revenue, required return on capital, terminal growth, capital expenditure and terminal value.

Firstly, we want to analyse our KOG's valuation by looking at its sensitivity to WACC and terminal growth. Since both of these variables are connected to the terminal value, which we have mentioned is advocating for the forecasting of all cash flows for a company in its lifetime, a change in these variables is likely to change the present stock price of a company significantly. In *Table 59* down below, we present the results. With a marginal change in each of the variables covered, we identify a significant change in stock price value. In the extreme ends, with WACC equal to 5,5 percent and terminal growth rate equal to 2,5 percent, the results advocate for a 75 percent difference in stock price. Oppositely, with WACC equal to 8 percent and growth rate equal to 1 percent, the results commend a stock price value decrease of close to 30 percent in our valuation. We can conclude with these results that our fundamental valuation of KOG is sensitive to changes in WACC and terminal growth rate.

		WACC						
Terminal Growth	Stock price (NOK)	5,5 %	6,0 %	6,5 %	6,79 %	7,0 %	7,5 %	8,0 %
	1,00 %	530,56	469,37	419,67	394,93	378,58	344,09	314,78
	1,25 %	560,60	492,99	438,65	411,78	394,09	356,96	325,6
	1,50 %	594,39	519,24	459,52	430,23	411,02	370,91	337,24
	1,75 %	632,68	548,57	482,60	**450,73**	429,56	386,06	349,82
	2,00 %	676,45	581,58	508,23	473,14	449,95	402,6	363,44
	2,25 %	726,95	618,98	536,89	498,03	472,49	420,71	378,26
	2,50 %	785,87	661,72	569,12	525,81	497,53	440,63	394,41

Table 59 Sensitivity analysis WACC and Terminal growth

Next, we want to analyse our valuation's sensitivity regarding changes in operating revenue. Since operating revenue is the largest variable in our forecasted income statement presented in chapter 6.1, we expect a significant change in stock price with a marginal change in this variable. It is important to note that no other variables are affected by this change. This change reduces the forecasted operating margin, which additionally reduces the forecasted cash flows.

As *Table 60* presents below, a marginal change in operating revenue have a significant effect on our KOG's valuation. This in turn, means that our valuation is sensitive to a change in forecasted operating revenue for KOG.

% Change in operating revenue	-3 %	-2 %	-1 %	0 %	1 %	2 %	3 %
Stock price (NOK)	274,04	332,94	391,83	450,73	509,63	568,52	627,42

Table 60 Sensitivity analysis change in operating revenue

Another variable we want to conduct a sensitivity analysis of is capital expenditure. This has to do with capital expenditure being a major variable when calculating free cash flow to the company. That said, as *Table 61* presents below, a marginal change in this variable does not have a significant change in stock price, when compared to the other sensitivity analysis we have performed.

% Change in CAPEX	-3 %	-2 %	-1 %	0 %	1 %	2 %	3 %
Stock price (NOK)	474,31	466,45	458,59	450,73	442,87	435,01	427,15

Table 61 Sensitivity analysis change in capital expenditure

Lastly, we want to perform a sensitivity analysis of our valuation's sensitivity towards changes in terminal value. Even though terminal value is a value that includes all future cash flows in a company's lifetime, the variable is more prone to changes in terminal growth rate and cost of capital. This is due to the terminal value formula and these variables relation to each other in the denominator. Therefore, a direct change to this value should in theory not yield a significant difference in stock price. As expected, the results presented in *Table 62* below, concludes with that our valuation of KOG is not significantly sensitive towards marginal changes in terminal value.

% Change in TV	-3 %	-2 %	-1 %	0 %	1 %	2 %	3 %
Stock price (NOK)	438,46	442,55	446,64	450,73	454,82	458,91	463,00

Table 62 Sensitivity analysis change in terminal value

9. Residual valuation

From the theory provided in chapter 3.1.5, we included a section describing residual earnings valuation models. We want to include this valuation model in order to compare the results to the result presented from our fundamental valuation of Kongsberg Gruppen ASA (KOG). We will use information gathered from previous chapters, as well as new information regarding historical variables from KOG's quarterly- and yearly reports. Before we can estimate residual earnings, we need to estimate future values regarding KOG's earnings-, dividend- and book values per share. Note, estimations of earnings- and book value per share can be calculated from previous information from chapter 6. However, historical values regarding earnings per share suggest a difference in growth rates. Therefore, we have decided to not use values from chapter 6 and instead use, as mentioned, historical values of these variables provided from quarterly- and yearly reports.

9.1 Earnings per share (EPS)

Firstly, we need to analyse the historical values regarding Kongsberg Gruppen ASA's (KOG) earnings per share. Due to the extraordinary growth increase between year 2019 to 2020, we decided to include ten years instead of six used in the fundamental valuation from chapter 6 through chapter 8. *Table 63* below presents these historical values, all collected from KOG's historical yearly reports.

NOK	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Earnings per share (EPS)	10,24	7,28	6,23	5,44	4,62	5,58	3,89	16,08	12,06	15,64

Table 63 Historical earnings per share values

From *Table 64* below we identify that the average growth in earnings per share in the past ten years is equal to 26,38 percent. If we exclude the extraordinary value provided from year 2019 to 2020, we get a resulting average equal to negative 5,5 percent.

NOK	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Average	Average (excl 2019-2020)
Historical growth	-28,91 %	-14,42 %	-12,68 %	-15,07 %	20,78 %	-30,29 %	313,37 %	-25,00 %	29,68 %	26,38 %	-5,50 %

Table 64 Historical growth in earnings per share

In line with information provided from the strategic analysis from chapter 4 and with our assumption of the Russian-Ukrainian war ending by year 2025, we estimate a growth in earnings per share equal to the historical average growth in year 2023 and 2024. By year 2025, a decrease in demand will reduce the growth rate down to 10 percent. As demand continues to decrease from year 2026, we estimate a decline in earnings per share equal to the historical average when excluding the value provided from year 2019 to 2020. Lastly, as demand continues to decline, we expect that KOG's earnings per share will start to decline towards its values from the last three years. Therefore, we have doubled the average decline rate in year 2027 and 2028. That said, estimated value for earnings per share for year 2028 will still be above the historical value from 2020.

NOK (exc %)	2023e	2024e	2025e	2026e	2027e	2028e
Growth	26,38 %	26,38 %	10,00 %	-5,50 %	-11,00 %	-11,00 %
Earnings per share (EPS)	19,77	24,98	27,48	25,97	23,11	20,57

Table 65 Earnings per share estimates

9.2 Dividend per share (DPS)

The second variable needed for the residual earnings valuation model is dividend per share. We will similarly when calculating the average growth in earnings per share above, use ten years into the past to calculate the average growth in dividend per share. *Table 66* presents Kongsberg Gruppen ASA's (KOG) dividend per share values from the past ten years.

NOK	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Dividend per share (DPS)	5,25	9,25	4,25	3,75	3,75	2,50	12,50	8,00	15,30	12,00

Table 66 Historical dividend per share values

Likewise with our calculation of historical earnings per share growth, historical dividend per share growth contains an extraordinary value of 400 percent from year 2018 to 2019. The dividend from year 2019 exceeded the earnings per share for the same year. The reason for this is that the value is adjusted for discontinued operations. Furthermore, the historical average growth in dividend per share, including this extraordinary value, is equal to 45,64 percent. With excluding this value, the average drops down to 1,34%

NOK	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Average	Average (excl 2018-2019)
Dividend per share (DPS)	76,19 %	-54,05 %	-11,76 %	0,00 %	-33,33 %	400,00 %	-36,00 %	91,25 %	-21,57 %	45,64 %	1,34 %

Table 67 Historical growth in dividend per share

In line with the increase in earnings per share for year 2023 and 2024 due to increased demand, we also estimate an increase in dividend issued to owners. However, we believe due to the increasing investments into increasing efficiency and building facilities, the growth in dividend per share will be less than the average from the past ten years. For this reason, we have included a 20 percent increase in dividend per share for year 2023 and 2024. For the next two years, we estimate a slower growth equal to the historical average growth when excluding extraordinary values, resulting in an estimated growth of 1,34 percent for year 2025 and 2026. Next, in line with the decrease in earnings per share we presented in chapter 9.1, we have included a decline in dividend per share for year 2027 and 2028 equal to 10- and 20 percent respectively. Values are presented in *Table 68* below.

NOK (exc %)	2023e	2024e	2025e	2026e	2027e	2028e
Growth	20,00 %	20,00 %	1,34 %	1,34 %	-10,00 %	-20,00 %
Dividend per share (DPS)	14,40	17,28	17,51	17,75	15,97	12,78

Table 68 Dividend per share estimates

9.3 Book value per share (BPS)

Now that we have estimates for earnings per share and dividend per share, we can calculate the estimates for book value per share. In the residual earnings model, earnings per share add value to book value, meanwhile dividend per share removes value from book value. Since our estimates includes a greater earnings per share value than dividend per share for the next six years into the future, the book value per share will increase. Estimated book value per share's is presented in *Table 69* down below.

NOK	2022	2023e	2024e	2025e	2026e	2027e	2028e
Book value per share (BPS)	76,62	81,99	89,69	99,66	107,88	115,02	122,81

Table 69 Estimates book value per share

9.4 Return on common equity (ROCE)

With previous calculations and estimates provided, we can now focus on the calculation of return on common equity estimates for Kongsberg Gruppen ASA (KOG) for the next six years. As mentioned in chapter 3.1.5, return on common equity is a variable that showcase how much a common shareholder receives from a company, compared to how much the shareholders have invested in the company. This variable is calculated through dividing earnings from next year into the future, with present book value. With this calculation performed, we present the results in *Table 70* below.

Ratio	2023e	2024e	2025e	2026e	2027e	2028e
Return on common equity (ROCE)	0,26	0,30	0,31	0,26	0,21	0,18

Table 70 Estimates return on common equity

9.5 Residual Earnings (RE)

Next, we need to estimate residual earnings for Kongsberg Gruppen ASA (KOG). Residual earnings are the remaining value that a company have after paying for all its financial obligations. The variable estimates are calculated by multiplying present day book value with the value remaining from the subtraction of next year's required rate of return with return on common equity. As these estimates are part of the final calculation of the stock price estimate, we need to discount these to present value.

We decide to use the previous calculated required rate of return of 6,79 percent from previous chapters as our discount rate in this calculation. The resulting values are presented in *Table 71* down below.

Ratio	2023e	2024e	2025e	2026e	2027e	2028e
Residual earnings (RE)	14,57	19,42	21,39	19,20	15,79	12,76
Discount rate (6,79%)	93,64 %	87,69 %	82,12 %	76,90 %	72,01 %	67,43 %
Discounted RE	13,64	17,03	17,57	14,77	11,37	8,60

Table 71 Residual earnings estimates

9.6 Continuing value

The last variable we need to establish a stock price estimate of Kongsberg Gruppen ASA (KOG) using the residual earnings model is the continuing value. Continuing value, similar to terminal value, is a value that is added to advocate for all future residual earnings in a company's lifetime. In our residual earnings model, we use the residual earning estimated in year 2028 as our foundation for the continuing value calculation. Furthermore, we multiply this value with the terminal growth, of which we have decided to use the terminal growth from previous chapters of 1,75 percent. Next, we divide this value by the difference between the discount rate and the terminal growth rate, resulting in the continuing value. Adding this value to the present-day estimate of the stock price, then we discount this value with our required rate of return, resulting in a discounted continuing value. Variables and calculations provided in *Table 72*.

Ratio	2028e
RE (Terminal year)	12,76
Discount rate	6,79 %
Terminal growth rate	1,75 %
Continuing value (CV)	**257,71**

Table 72 Continuing value estimates (1)

Ratio	2028e
Discount rate (2028e)	67.43%
Discounted CV	**173.78**

Table 73 Continuing value estimates (2)

9.7 Stock price & summary from residual earnings

Conclusively, with all previous calculations performed and all variables presented, we can calculate an estimate for Kongsberg Gruppen ASA's (KOG) stock price. Residual earnings model states the value of one share in a company is equal to the book value of present day, with the addition of all discounted residual earnings in the future. In our calculation, this equals to the addition of both the sum of all discounted residual earnings values, as well as the discounted continuing value. Through addition of these three variables, we are provided with the stock price estimate presented in *Table 74* down below.

Metrics	NOK
BPS (present day)	76,62
Present value RE	82,97
Present value CV	173,78
Stock price	**333,37**

Table 74 Stock price residual earnings model

10. Relative Valuation

The last valuation method we want to analyse in this thesis is relative valuation. Relative valuation, as mentioned earlier in the theory located in chapter 3, is a valuation model that values assets based on how similar these assets are as of present day in the market. It is a widespread valuation method, as it can be performed quickly, is simple to understand and is more likely to reflect the current status in the market.

10.1 Kongsberg Gruppen ASA and comparative companies

The first step to perform a relative valuation of Kongsberg Gruppen ASA (KOG) is that we need to identify a couple of companies that is similar in metrics such as market value, equity to debt ratio and what their income stream consists off. Since KOG is an industrial company with main focus on maritime components and defence & aerospace products, we need to identify similar companies in this type of market. For the sake of significance, we have decided to include four other companies that in our opinion, fulfill these requirements. Before we can calculate comparative multiples, we need some information regarding each company's financial performance in the trailing twelve months (TTM).

10.1.1 Kongsberg Gruppen ASA

Before we start analysing the other companies, we want to analyse Kongsberg Gruppen ASA's (KOG) financial performance in the last four reportable quarterly reports. All values presented in *Table 75* below are collected from KOG's quarterly reports. There are three important variables from these income statements that needs to be calculated to progress the relative valuation. These are EBITDA, net income and earnings per share (EPS). All variables, together with other variables presented further down this chapter, will be used to calculate the different multiples required to perform a relative valuation of KOG.

KOG (NOK)	Q1	Q2	Q3	Q4	TTM
Total income	7 046 000 000,00	7 567 000 000,00	7 745 000 000,00	9 444 000 000,00	
Total expenses	6 217 000 000,00	6 555 000 000,00	6 385 000 000,00	8 043 000 000,00	
EBITDA	**829 000 000,00**	**1 012 000 000,00**	**1 360 000 000,00**	**1 401 000 000,00**	**4 602 000 000,00**
Depreciaton/Am	307 000 000,00	329 000 000,00	325 000 000,00	333 000 000,00	
EBIT	522 000 000,00	683 000 000,00	1 035 000 000,00	1 068 000 000,00	
Net financial items	11 000 000,00	7 000 000,00	-79 000 000,00	-127 000 000,00	
Tax expense	112 000 000,00	140 000 000,00	221 000 000,00	214 000 000,00	
Profit after tax	399 000 000,00	536 000 000,00	893 000 000,00	981 000 000,00	
Net income	**399 000 000,00**	**536 000 000,00**	**893 000 000,00**	**981 000 000,00**	**2 809 000 000,00**
Earnings per share	2,13	2,98	4,97	5,54	15,62

Table 75 Trailing twelve months variables from Kongsberg Gruppen ASA

10.1.2 Aerojet Rocketdyne Holdings, Inc.

Aerojet Rocketdyne Holdings, Inc (AJRD) is an American company that that delivers solutions to customers in the aerospace and defence sector, as well as the real estate sector. The company have business segments in both the United States and in Europe (Aerojetrocketdyne, 2023). Due to the company's similarity to Kongsberg Gruppen ASA (KOG) in providing solutions to the defence and aerospace sector, as well as the market value of the company, we have decided to use this company as one of the comparable companies (Aerojetrocketdyne, 2023a).

The company have its financial information presented in USD as presented in *Table 76* below, we need to convert it to Norwegian kroner, in order to compare the company to KOG. We have used the 10-year average conversion rate between NOK and USD in order to convert the values into NOK. This calculated conversion rate is equal to 8,36 NOK to 1 USD. Data is provided from Norges bank (Norges-bank, 2023).

AJRD (NOK, excl "USD")	Q1	Q2	Q3	Q4	TTM
Total income (USD)	511 100 000,00	528 500 000,00	549 800 000,00	648 200 000,00	
Total income	4 272 796 000,00	4 418 260 000,00	4 596 328 000,00	5 418 952 000,00	
Total expenses (USD)	454 000 000,00	486 500 000,00	482 700 000,00	611 800 000,00	
Total expenses	3 795 440 000,00	4 067 140 000,00	4 035 372 000,00	5 114 648 000,00	
EBITDA (USD)	57 100 000,00	42 000 000,00	67 100 000,00	36 400 000,00	
EBITDA	477 356 000,00	351 120 000,00	560 956 000,00	304 304 000,00	**1 693 736 000,00**
EBIT (USD)	42 700 000,00	28 200 000,00	53 300 000,00	21 100 000,00	
EBIT	356 972 000,00	235 752 000,00	445 588 000,00	176 396 000,00	
Net financial items (USD)	4 400 000,00	4 500 000,00	25 900 000,00	2 200 000,00	
Net financial items	36 784 000,00	37 620 000,00	216 524 000,00	18 392 000,00	
Tax expense (USD)	10 500 000,00	7 300 000,00	13 700 000,00	2 800 000,00	
Tax expense	87 780 000,00	61 028 000,00	114 532 000,00	23 408 000,00	
Profit after tax (USD)	27 800 000,00	16 400 000,00	13 700 000,00	16 100 000,00	
Profit after tax	232 408 000,00	137 104 000,00	114 532 000,00	134 596 000,00	
Net income (USD)	27 800 000,00	16 400 000,00	13 700 000,00	16 100 000,00	
Net income	**232 408 000,00**	**137 104 000,00**	**114 532 000,00**	**134 596 000,00**	**618 640 000,00**
Earnings per share (USD)	0,33	0,20	0,17	0,20	
Earnings per share	**2,76**	**1,67**	**1,42**	**1,67**	**7,52**

Table 76 Trailing twelve months variables from Aerojet Rocketdyne Holdings, Inc.

Earnings per share trailing over twelve-month period is equal to 7.52 NOK after conversion. Notable information from the calculations shows steady increase in the company's total income throughout each quarter. However, total earnings per share in Q1 make up approximately 37 percent of total earnings per share for the year. Traditionally, these trends are more typical for businesses who have seasonal based operations. Although the aerospace industry is generally characterized by a high degree of stability, it's important to highlight that most businesses generally have more versatile quarters throughout a year.

10.1.3 Curtis-Wright Corporation

Curtis-Wright Corporation (CW) is an American company that is similar to Kongsberg Gruppen ASA (KOG), providing solutions in business segments such as naval, defence and aerospace, industrial and more (Curtisswright, 2023). The company delivers these solutions to the global market. That said, main operations are located in the United States (Curtisswright, 2023). Likewise with Aerojet Rocketdyne (AJRD) presented in the previous subchapter, CW have their financial information disclosed in USD, meaning that we need to convert this into Norwegian kroner. Utilising same currency conversion previously used with data provided from Norges Bank (Norges-bank, 2023). Again, this conversion rate is equal to 8,36 NOK to 1 USD. The last four quarterly results are presented in *Table 77* below.

CW (NOK, excl "USD")	Q1	Q2	Q3	Q4	TTM
Total income (USD)	559 461 000,00	609 357 000,00	630 542 000,00	757 665 000,00	
Total income	4 677 093 960,00	5 094 224 520,00	5 271 331 120,00	6 334 079 400,00	
Total expenses (USD)	494 300 000,00	511 252 000,00	522 959 000,00	600 420 000,00	
Total expenses	4 132 348 000,00	4 274 066 720,00	4 371 937 240,00	5 019 511 200,00	
EBITDA (USD)	65 161 000,00	98 105 000,00	107 583 000,00	157 245 000,00	
EBITDA	**544 745 960,00**	**820 157 800,00**	**899 393 880,00**	**1 314 568 200,00**	**3 578 865 840,00**
EBIT (USD)	63 507 000,00	102 660 000,00	111 329 000,00	158 679 000,00	
EBIT	530 918 520,00	858 237 600,00	930 710 440,00	1 326 556 440,00	
Net financial items (USD)	9 530 000,00	9 788 000,00	13 997 000,00	13 665 000,00	
Net financial items	79 670 800,00	81 827 680,00	117 014 920,00	114 239 400,00	
Tax expense (USD)	13 292 000,00	22 000 000,00	23 564 000,00	35 991 000,00	
Tax expense	111 121 120,00	183 920 000,00	196 995 040,00	300 884 760,00	
Profit after tax (USD)	40 685 000,00	70 872 000,00	73 768 000,00	109 023 000,00	
Profit after tax	340 126 600,00	592 489 920,00	616 700 480,00	911 432 280,00	
Net income (USD)	40 685 000,00	70 872 000,00	73 768 000,00	109 023 000,00	
Net income	**340 126 600,00**	**592 489 920,00**	**616 700 480,00**	**911 432 280,00**	**2 460 749 280,00**
Earnings per share (USD)	1,05	1,83	1,91	2,82	
Earnings per share	**8,78**	**15,30**	**15,97**	**23,58**	**63,62**

Table 77 Trailing twelve months variables from Curtis-Wright Corporation

Earnings per share trailing over twelve-month period is equal to 63.62 NOK after conversion. Indicating significant difference in financial capabilities compared to Aerojet Rocketdyne Holdings inc. While their total income and earnings per share increases through each quarter, total percentage increase in earnings per share is significantly larger than the increase in total income.

Higher earnings per share is generally indicates a growing company, paying out more profits to shareholders than keeping it in the company. Stating that investments and operations are profitable, since increase in earnings per share is larger than increase in total income, providing confidence their corporation.

10.1.4 Saab AB

Saab AB is a Swedish company that delivers products, services and solutions from segments such as military defence and civil security to the global market (Saab, n.d.). Since Saab provides solutions from the neighbouring country of where Kongsberg Gruppen ASA (KOG) is located, we determined that Saab AB is a good comparable company to KOG. This also include the similarity in financial information and performance. Since Saab AB discloses their financial statements in Swedish kronor (Saab, n.d.), we need to convert them to Norwegian kroner. With the 10-year average conversion rate provided from Norges Bank and with calculations performed, we present the resulting values in *Table 78* down below. This conversion rate is equal to 96,24 NOK for 100 SEK.

SAAB B (NOK, excl "SEK")	Q1	Q2	Q3	Q4	TTM
Total income (SEK)	9 218 000 000,00	10 171 000 000,00	8 751 000 000,00	13 866 000 000,00	
Total income	8 871 403 200,00	9 788 570 400,00	8 421 962 400,00	13 344 638 400,00	
Total expenses (SEK)	8 070 000 000,00	8 916 000 000,00	7 636 000 000,00	12 000 000 000,00	
Total expenses	7 766 568 000,00	8 580 758 400,00	7 348 886 400,00	11 548 800 000,00	
EBITDA (SEK)	1 148 000 000,00	1 255 000 000,00	1 115 000 000,00	1 866 000 000,00	
EBITDA	**1 104 835 200,00**	**1 207 812 000,00**	**1 073 076 000,00**	**1 795 838 400,00**	**5 181 561 600,00**
EBIT (SEK)	654 000 000,00	738 000 000,00	568 000 000,00	1 314 000 000,00	
EBIT	629 409 600,00	710 251 200,00	546 643 200,00	1 264 593 600,00	
Net financial items (SEK)	169 000 000,00	188 000 000,00	133 000 000,00	-35 000 000,00	
Net financial items	162 645 600,00	180 931 200,00	127 999 200,00	-33 684 000,00	
Tax expense (SEK)	113 000 000,00	117 000 000,00	111 000 000,00	195 000 000,00	
Tax expense	108 751 200,00	112 600 800,00	106 826 400,00	187 668 000,00	
Profit after tax (SEK)	372 000 000,00	433 000 000,00	324 000 000,00	1 154 000 000,00	
Profit after tax	358 012 800,00	416 719 200,00	311 817 600,00	1 110 609 600,00	
Net income (SEK)	372 000 000,00	433 000 000,00	324 000 000,00	1 154 000 000,00	
Net income	**358 012 800,00**	**416 719 200,00**	**311 817 600,00**	**1 110 609 600,00**	**2 197 159 200,00**
Earnings per share (SEK)	2,66	3,15	2,28	8,32	
Earnings per share	**2,56**	**3,03**	**2,19**	**8,01**	**15,79**

Table 78 Trailing twelve months variables from Saab AB

Earnings per share trailing over twelve-month period is equal to 15.79 NOK after conversion for Saab. Remaining rather stable throughout the year until the last quarter. Initially while they have a marginal difference in total income from the previous quarters, total expenses increased almost proportional to the income. The larger result in earnings per share is from net financial items, providing a cash-back effect.

Compared to the other businesses, Saab generates sufficient income and earnings per share return on investment. Trends from their results could indicate risk averse investments. Stable payoff and minimal risk. Making Saab a good comparative company on this basis.

10.1.5 Serco Group PLC

The last company we want to include in our relative valuation of Kongsberg Gruppen ASA (KOG) is a British company called Serco Group PLC (SRP.L). This company provides solutions to multiple segments, such as defence, transport, healthcare and more (Sereco, n.d.). SRP.L's main operations are located in the UK and Europe. However, the company also provides its services to North America, Asia Pacific and Middle East.

The company does not provide their financial statements quarterly, only half-year and full year reports are disclosed. Therefore, we have decided to use the full year financials from the company, provided from yahoo finance (Yahoo Finance, 2023), as well as from SRP.L's homepage (Sereco, 2023). As can be viewed in *Table 79* below, we have only disclosed the variables we need in order to compare the company to KOG, and for further calculations. The company presents their financial statements in Great British Pounds, of which again needs to be converted to Norwegian kroner. Using the 10-year average conversion rate equal to 11,36 NOK for 1 GBP provided from Norges Bank (Norges-bank, 2023).

SRP.L (NOK, excl "GBP")	TTM
EBITDA (GBP)	391 500 000,00
EBITDA	**4 447 440 000,00**
Net income (GBP)	155 400 000,00
Net income	**1 765 344 000,00**
Earnings per share (GPB)	0,13
Earnings per share	**1,48**

Table 79 Trailing twelve months variables from Serco Group PLC

Earnings per share trailing over twelve-month period is equal to 1.48 NOK after conversion. Serco Group is notably lowest in earnings per share out of the comparable companies, despite having strong EBIDTA numbers. Serco Group is difficult to provide an in-depth analysis for due to limited information. Nevertheless, based on the numbers provided from Yahoo finance (Yahoo Finance, 2023), Serco Group seems more considerate towards keeping their earnings within the company. Implying that they could be planning either large investments or operations in the future.

10.2 Relative valuation variables

In this chapter, we will calculate the necessary variables from information provided in previous chapter, as well as information disclosed in the market, in order to perform the relative valuation of Kongsberg Gruppen ASA.

10.2.1 Stock price, equity and market value

First, we need to calculate the stock price regarding each of our selected companies in this relative valuation. As some of our selected companies have their stock price presented in a different currency, we need to first convert these stock prices into Norwegian kroner. Using the same conversion rates provided in previous chapters, we present these stock prices, as of 30th of May 2023, in *Table 80* down below. In this same table, we present the equity in each company for both year 2021 and 2022. Market value for each company is also presented in the same table of which the values are calculated from multiplying the stock price of each company in NOK with the company's respective total amount of stocks issued in the market. These values will be used in further calculations in the next chapters. That said, market value is a reflective measurement of how big a company is in the market. All of the market values presented, with the exception of Serco Group PLC (SRP.L), is close to each other. This in turn makes the companies ideal to use in a comparison to Kongsberg Gruppen ASA (KOG). Same can be said for equity, with a sole exception of Aerojet Rocketdyne Holdings, Inc (AJRD).

Ticker	Company	Stock price (30.05.2023)		10Y Avg currency exchange	Stock price NOK (30.05.2023)
KOG	Kongsberg Gruppen ASA	NOK	448.80	1.00	448.80
AJRD	Aerojet Rocketdyne Holdings, Inc.	USD	54.66	8.36	456.96
CW	Curtis-Wright Corporation	USD	158.71	8.36	1,326.82
SAAB B	Saab AB	SEK	587.80	0.96	564.29
SRP.L	Serco Group PLC	GBP	1.44	11.36	16.40

Table 80 Stock price, equity, and market value variables

Ticker	Total stocks	Market value (NOK)	Equity (NOK, 2021)	Equity (NOK, 2022)
KOG	177,313,072.00	79,578,106,713.60	13,618,000,000.00	13,744,000,000.00
AJRD	80,758,891.00	36,903,389,010.02	4,374,788,000.00	4,525,268,000.00
CW	38,342,932.00	50,874,000,327.34	15,269,456,400.00	16,654,114,840.00
SAAB B	133,461,944.00	75,310,973,455.87	22,319,040,000.00	28,680,960,000.00
SRP.L	1,104,593,134.00	18,119,569,035.23	11,455,424,000.00	11,697,392,000.00

Table 81 Stock price, equity, and market value variables

10.2.2 EBITDA and enterprise value

Next, we need to calculate and present variables such as EBITDA and enterprise value. As we have all EBITDA values from our calculations in chapter 10.1.1-10.1.5, we will use these values in this chapter. As enterprise value of a company is a measurement of the company's total value (Fernando, 2023), its value is calculated by adding market value and liabilities, then subtracting cash and cash equivalents. All of these values, in addition to assets regarding each of our selected companies in this valuation, are located in *Table 82* below.

Ticker	Company	Assets 31.12.2022	Liabilities 31.12.2022	Market value (NOK)	Cash and cash equivalents	EBITDA TTM	Enterprise value
KOG	Kongsberg Gruppen ASA	43 225 000 000,00	29 481 000 000,00	79 578 106 713,60	3 932 000 000,00	4 602 000 000,00	105 127 106 713,60
AJRD	Aerojet Rocketdyne Holdings, Inc.	19 828 248 000,00	15 302 980 000,00	36 903 389 010,02	2 692 756 000,00	1 693 736 000,00	49 513 613 010,02
CW	Curtis-Wright Corporation	37 198 672 720,00	20 544 557 880,00	50 874 000 327,34	2 148 302 640,00	3 578 865 840,00	69 270 255 567,34
SAAB B	Saab AB	69 470 400 000,00	40 789 440 000,00	75 310 973 455,87	2 754 240 000,00	5 181 561 600,00	113 346 173 455,87
SRP.L	Serco Group PLC	31 242 272 000,00	19 544 880 000,00	18 119 569 035,23	649 792 000,00	4 447 440 000,00	37 014 657 035,23

Table 82 EBITDA and enterprise value values

10.2.3 Book value and book value per stock

In *Table 83* down below, we present the book value and book value per stock from our selected companies in this valuation. In similarity to previous calculated variables, these variables will be used in the next chapters in calculation of different multiples. As book value is the net value of a company, we need to subtract each company's total liabilities with the respective company's assets. With this value now calculated, we can calculate book value per stock by dividing each company's book value with the respective total amount of stock issued by each company.

Ticker	Company	Total stocks	Assets 31.12.2022	Liabilities 31.12.2022	Book value	Book value/stock
KOG	Kongsberg Gruppen ASA	177 313 072,00	43 225 000 000,00	29 481 000 000,00	13 744 000 000,00	77,51
AJRD	Aerojet Rocketdyne Holdings, Inc.	80 758 891,00	19 828 248 000,00	15 302 980 000,00	4 525 268 000,00	56,03
CW	Curtis-Wright Corporation	38 342 932,00	37 198 672 720,00	20 544 557 880,00	16 654 114 840,00	434,35
SAAB B	Saab AB	133 461 944,00	69 470 400 000,00	40 789 440 000,00	28 680 960 000,00	214,90
SRP.L	Serco Group PLC	1 104 593 134,00	31 242 272 000,00	19 544 880 000,00	11 697 392 000,00	10,59

Table 83 Book value and book value per stock

10.2.4 Earnings per share

Second to last variable we need to have values for, is earnings per share. In general, earnings per share is equal to the amount of net income presented in a period divided by the total amount of shares in a company. As we have each company respective earnings per share values in the chapters 10.1.1 to 10.1.5, we can use them to calculate an average. As presented in *Table 84* below, we have calculated average earnings per share value of 20,81 when using values from our selected companies. Curtis-Wright Corporation (CW) and Serco Group PLC (SRP.L) have both extraordinary values in each direction. Therefore, we decide to include both of these companies in our average calculation. Similarly, average earnings per share for TTM can be calculated by dividing each value by 4, resulting in average earnings per share each quarter.

Ticker	Company	EPS TTM	EPS Average TTM
KOG	Kongsberg Gruppen ASA	15,62	3,91
AJRD	Aerojet Rocketdyne Holdings, Inc.	7,52	1,88
CW	Curtis-Wright Corporation	63,62	15,90
SAAB B	Saab AB	15,79	3,95
SRP.L	Serco Group PLC	1,48	0,37
Average	**-**	**20,81**	**5,20**

Table 84 Earnings per share

10.2.5 Return on equity

Last variable to include before moving forward with multiple calculation is return on equity. As return on equity can indicate how efficient the company's profits are generated through the use of a company's assets, we have decided to include this variable in this chapter. Calculated by dividing a company's equity with net income from a certain period. This calculation using information from previous chapters, yields the presented values in *Table 85* Kongsberg Gruppen ASA (KOG) have the highest return on equity in the last four reported quarters.

Ticker	Company	ROE TTM
KOG	Kongsberg Gruppen ASA	20,44 %
AJRD	Aerojet Rocketdyne Holdings, Inc.	13,67 %
CW	Curtis-Wright Corporation	14,78 %

Table 85 Return on equity TTM (1)

Ticker	Company	ROE TTM
SAAB B	Saab AB	7.66%
SRP.L	Serco Group PLC	15.09%
Average	-	14.33%

Table 86 Return on equity TTM (2)

10.3 Price Multiples

Now that we have all necessary variables presented in order to perform relative valuation of Kongsberg Gruppen ASA (KOG), we can start to calculate the different multiples and measure KOG's multiples with that of the average in the market.

10.3.1 Price/earnings

First multiple to compare Kongsberg Gruppen ASA (KOG) to our calculated market estimate is the price/earnings ratio. As mentioned in chapter 3.2.1, P/E ratio is calculated by using the market value of a company and divide this with a company's annual return/net income. As we have both stock price, which is an estimate of the market value of a company, and earnings per share, we can use these values to calculate the price/earnings ratios of our selected companies. These values are presented in *Table 87* below.

Ticker	Company	P/E TTM
KOG	Kongsberg Gruppen ASA	28,73
AJRD	Aerojet Rocketdyne Holdings, Inc.	60,73
CW	Curtis-Wright Corporation	20,86

Table 87 Price/earnings ratio (2)

Ticker	Company	P/E TTM
SAAB B	Saab AB	35.73
SRP.L	Serco Group PLC	11.11
Average (excl "KOG")	-	31.43

Table 88 Price/earnings ratio (1)

Now that we have our market average estimate for P/E ratio, we can exchange this value with the P/E ratio of KOG, in order to estimate a comparable stock price of KOG, in relation to similar companies in the same market. As of present day (30.05.2023), using the TTM P/E ratio of KOG will yield a stock price value equal to present day trading price of NOK 448,80. Using our estimated market average from our selected comparable companies, the stock price of KOG becomes equal to NOK 501,51. Values are presented in the *Table 89* below.

P/E TTM	NOK
Kongsberg Gruppen ASA P/E	28,73
Kongsberg Gruppen ASA EPS	15,62
Stock price	448,80
Average P/E	32,11
Stock price	501,51

Table 89 Stock price using comparable P/E ratio

10.3.2 Price/book

In chapter 3.2.4 we presented that Price/book ratio is equal to dividing the market value of a company with its book value. Similarly with P/E ratio, we can also use the stock price, as this is a function of the market value of each stock and book value per stock, in order to calculate the P/B ratio of our selected companies. As we have information regarding these values from previous subchapters in chapter 10, we have used these values to calculate the P/B ratio of our selected companies. These values are presented in *Table 90* below.

Ticker	Company	P/B TTM
KOG	Kongsberg Gruppen ASA	5,79
AJRD	Aerojet Rocketdyne Holdings, Inc.	8,15
CW	Curtis-Wright Corporation	3,05
SAAB B	Saab AB	2,63
SRP.L	Serco Group PLC	1,55
Average (Excl "KOG")	-	**3,85**

Table 90 Price/book ratio

With P/B ratios of our selected companies presented, we similarly can use the method used in chapter 10.3.1, to estimate the stock price of Kongsberg Gruppen ASA (KOG) by exchanging KOG's P/B ratio with that of our estimated market average P/B ratio. This results in a stock price that is significantly lower than that of the present-day stock price. These values are presented in *Table 91* below.

P/B TTM	NOK
Kongsberg Gruppen ASA P/B	5,79
Kongsberg Gruppen ASA BPS	77,51
Stock price	448,80
Average P/B	3,85
Stock price	298,12

Table 91 Stock price using comparable average P/B value

10.3.3 EV/EBITDA

From chapter 3.2.2, we introduced the EV/EBITDA multiple as a ratio that compares a company's enterprise value to that of its EBITDA value in a given period of time. As we have previously in chapter 10.2.2 calculated both enterprise value and EBITDA values regarding all of our selected companies, we present each company's EV/EBITDA ratios in *Table 92*.

Ticker	Company	EV/EBITDA TTM
KOG	Kongsberg Gruppen ASA	22,84
AJRD	Aerojet Rocketdyne Holdings, Inc.	29,23
CW	Curtis-Wright Corporation	19,36
SAAB B	Saab AB	21,87
SRP.L	Serco Group PLC	8,32
Average (Excl "KOG")	-	19,70

Table 92 EV/EBITDA ratio

Using the same technique used in previous subchapter, we can estimate a stock price for Kongsberg Gruppen ASA (KOG) by exchanging KOG's EV/EBITDA ratio with that of the market average. Since KOG's present day stock price is NOK 448,80 as of 30.05.2023, we find a relative value for Kongsberg Gruppen ASA equal to 19,65. When multiplying this value with our estimated market average, we estimate a stock price for KOG equal to NOK 387,97. Note that this ratio does not account for capital expenditure, which is a significant value in our fundamental valuation. Values are presented in *Table 93* down below.

EV/EBITDA TTM	NOK
Kongsberg Gruppen ASA EV/EBITDA	22,84
Kongsberg Gruppen ASA relative value	19,65
Stock price	448,80
Average EV/EBITDA	19,70
Stock price	386,97

Table 93 Stock price using comparable EV/EBITDA ratio

10.3.4 Price/sales

The last multiple we will want to calculate is the price/sales ratio. As mentioned in chapter 3.2.3, the P/S ratio is equal to a company's market capitalization divided by the company's sales for a period of time. The equation, likewise, with the P/E and P/B ratio, also advocate for using the stock price of a company and dividing this value by sales per stock. Using information from previous subchapters in chapter 10, we present the calculated P/S ratios of our selected companies in the *Table 94*. Note that the P/S ratio of Serco Group PLC (SRP.L) is excluded in this calculation, deeming this value to be extraordinary when estimating the market average.

Ticker	Company	P/S TTM
KOG	Kongsberg Gruppen ASA	2,50
AJRD	Aerojet Rocketdyne Holdings, Inc.	1,97
CW	Curtis-Wright Corporation	2,38
SAAB B	Saab AB	1,86
SRP.L	Serco Group PLC	-
Average (Excl "KOG")	-	2,07

Table 94 Price/sales ratio

As we now have the price/sales values of our selected companies, we can, similarly to the other ratios, estimate a stock price using our estimated market average. By exchanging KOG's P/S ratio with that of the market average, we estimate a stock price equal to NOK 371,60, as described in *Table 95* below.

P/S TTM	NOK
Kongsberg Gruppen ASA P/S	2,50
Kongsberg Gruppen ASA sales per share	179,36
Stock price	448,80
Average P/S	2,07
Stock price	371,60

Table 95 Stock price using comparable price/sales ratio

10.4 Summary of relative valuation

We have used four multiples in order to conduct stock price estimates of Kongsberg Gruppen ASA (KOG) relative to the market. All of these calculations have yielded different results, with the majority of the estimates yielding a value that is below of the stock price value we estimated in our fundamental valuation in chapter 8. *Table 96* below presents the average of all of our estimated stock prices using these multiples. This value of NOK 389,55 in relation to present day (30.05.2023) stock price of NOK 448,80 suggests a sell recommendation of KOG. Although we selected the companies that in our opinion was most comparable to KOG, a greater selection of companies could yield different market averages in terms of multiples. This together with the varying differences in stock price estimates presented by our calculations, we have decided to not include these results from our relative valuation as part of our final answer to this thesis.

Multiples	Stock price
P/E	501,51
P/B	298,12
EV/EBITDA	386,97
P/S	371,60
Average	389,55

Table 96 Summary of relative valuation of Kongsberg Gruppen ASA.

11. Conclusion & recommendation

The main purpose of this thesis was to solve the following question: ‘’What is the fair value of Kongsberg Gruppen ASA as per 30.05.2023’’. Throughout this thesis, a variety of valuation methods have been conducted and analysed. Main method being fundamental valuation, discounting future cash flows of the company. Traditionally, a valuation is highly dependent on historical financial statements provided by the company, proved of great significance. This includes the fact that Kongsberg’s Defence & Aerospace segment have the better operating margin in comparison to the company’s other segments, which in turn warrants a continuation in the effort to expand this business segment.

The numbers presented in our fundamental valuation using the total capital method yielded a required rate of return equal 6,79 percent. Through the subtraction of net debt from the estimated total value of KOG yielded an equity value of the company equal to NOK 79,92 billion. Dividing this value by the total amount of KOG stocks issued currently in the market, resulted in a stock price of the company being equal to NOK 450,73. An investigation of the different sensitivity metrics in this fundamental valuation yielded that this estimated stock price is rather sensitive to marginal changes in WACC, terminal growth and operating revenue. Furthermore, a residual valuation conducted of KOG, which its main purpose was to increase the significance and to use in comparison to our current estimated stock price. Calculated present-day book value per share of the company became equal to NOK 76,62. This together with the discounted residual earnings and current value of 82,97 and 173,78 NOK respectively, yielded estimated stock price equal to NOK 333,37, less than previous estimated value.

Moreover, a relative valuation of KOG used four different multiples to perform this valuation. The multiples used provided different estimates of the company’s stock price, with some value estimates being higher and lower than that of the estimated stock price from the fundamental valuation. Weighting the estimates equally, the average estimated stock price from our relative valuation yielded a value equal to NOK 389,55. Lower than estimated stock price provided from fundamental valuation, but higher than estimated stock price in residual valuation.

With all information in this thesis taken into consideration, we determine that the Kongsberg Gruppen ASA’s stock price should be equal to NOK 450,73 as of 30.05.2023. With the current stock price in the market being equal to NOK 448,80, suggesting a hold recommendation.

Bibliography

Aerojetrocketdyne. 2023a. ‘About Us | Aerojet Rocketdyne Holdings, Inc.’ Retrieved 12 June 2023 (https://www.aerojetrocketdyne.com/about-us).

Aerojetrocketdyne. 2023b. ‘Quarterly Results | Aerojet Rocketdyne Holdings, Inc.’ Retrieved 12 June 2023 (https://ir.aerojetrocketdyne.com/financial-information/quarterly-results).

Allied Market Research. 2023. ‘Cargo Shipping Market Size, Share, Revenue, Analysis, Outlook’. *Allied Market Research*. Retrieved 12 June 2023 (https://www.alliedmarketresearch.com/cargo-shipping-market-A47214).

Barney, Jay B. 1995. ‘Looking inside for Competitive Advantage’. *The Academy of Management Executive (1993-2005)* 9(4):49–61. https://www.jstor.org/stable/4165288.

Brealey, Richard A., Stewart C. Myers, and Alan Marcus J. 2022. *Fundamentals of Corporate Finance*. Eleventh edition. New York, NY: McGraw Hill LLC.

CFAinstitute. 2023. ‘Residual Income Valuation’. https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/residual-income-valuation.

Curtisswright. 2023a. ‘Curtiss-Wright Corporation - Company - History’. Retrieved 12 June 2023 (https://www.curtisswright.com/company/history/).

Curtisswright. 2023b. ‘Curtiss-Wright Corporation - Organization’. Retrieved 12 June 2023 (https://curtisswright.com/organization/default.aspx).

Dagensnæringsliv. 2023. ‘KONGSBERG GRUPPEN (KOG)’. *DN Investor*. Retrieved 12 June 2023 (https://investor.dn.no/#!/Aksje/S143/KOG/KONGSBERGGRUPPEN).

Damodaran, Aswath. 2012. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. Vol. 666. 3. Aufl. New York: Wiley.

Dhanraj, Christopher. 2018. ‘Sticking With Technology Stocks: Quality Behind The Momentum | Seeking Alpha’. Retrieved 13 June 2023 (https://www.ishares.com/us/insights/sticking-with-technology).

E24. 2023. ‘KONGSBERG GRUPPEN’. *Børs - E24*. Retrieved 12 June 2023 (https://e24.no/bors/instrument/KOG.OSE).

E24, and Erlend Aas. 2018. ‘Kongsberg Gruppen kjøper Rolls-Royce Marine for 5,3 milliarder kroner’. Retrieved 13 June 2023 (https://e24.no/i/RxMw9a).

Fernando, Jason. 2023a. ‘Current Ratio Explained With Formula and Examples’. *Investopedia*. Retrieved 12 June 2023 (https://www.investopedia.com/terms/c/currentratio.asp).

Fernando, Jason. 2023b. ‘Debt-to-Equity (D/E) Ratio Formula and How to Interpret It’. *Investopedia*. Retrieved 12 June 2023 (https://www.investopedia.com/terms/d/debtequityratio.asp).

Fernando, Jason. 2023c. ‘Enterprise Value (EV) Formula and What It Means’. *Investopedia*. Retrieved 12 June 2023 (https://www.investopedia.com/terms/e/enterprisevalue.asp).

Finansdepartementet. 2022. ‘Skattesatser 2023’. *Regjeringen.no*. Retrieved 12 June 2023 (https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/skattesatser-2023/id2929581/).

fiskeridepartementet, Nærings-og. 2022. ‘Kongsberg Gruppen ASA’. *Regjeringen.no*. Retrieved 12 June 2023 (https://www.regjeringen.no/no/dep/nfd/org/etater-og-virksomheter-under-narings--og-fiskeridepartementet/selskaper/kongsberg-gruppen-asa/id2951804/).

Forbes. 2023. ‘Best Tech Stocks Of June 2023 – Forbes Advisor’. Retrieved 12 June 2023 (https://www.forbes.com/advisor/investing/best-tech-stocks/).

Forsvarsdepartementet. 2022. ‘Styrker Forsvaret og prioriterer daglig beredskap og operasjoner’. *Regjeringen.no*. Retrieved 12 June 2023 (https://www.regjeringen.no/no/aktuelt/styrker-forsvaret-og-prioriterer-daglig-beredskap-og-operasjoner/id2931444/).

Globaljustice. 2021. ‘Exposing Corruption in the Global Arms Trade | Global Justice Program’. Retrieved 12 June 2023 (https://globaljustice.yale.edu/news/exposing-corruption-global-arms-trade).

Hayes, Adam. 2022. ‘Operating Margin: What It Is and the Formula for Calculating It, With Examples’. *Investopedia*. Retrieved 12 June 2023 (https://www.investopedia.com/terms/o/operatingmargin.asp).

Hoff, Kjell Gunnar, and Asbjørn Pedersen. 2019. *Grunnleggende regnskap 2 : analyse av finansregnskapet*. 3. utgave. Oslo: Universitetsforlaget.

Hovland, Kjetil Malkenes, and Hagmansen, Jonas. 2023. ‘Equinor leverer tidenes største norske årsresultat’. Retrieved 12 June 2023 (https://e24.no/i/BWbKxg).

IFRS. 2023. ‘IFRS - IFRS 16 Leases’. Retrieved 12 June 2023 (https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/).

Kaldestad, Yngve, and Bjarne Møller. 2016. ‘Option Pricing Applications in Equity Valuation’. *NYU*. Retrieved 12 June 2023 (https://pages.stern.nyu.edu/~adamodar/New_Home_Page/lectures/opt.html).

Kardaś, Szymon. 2023. ‘Conscious Uncoupling: Europeans’ Russian Gas Challenge in 2023’. *ECFR*. Retrieved 12 June 2023 (https://ecfr.eu/article/conscious-uncoupling-europeans-russian-gas-challenge-in-2023/).

Knudsen, Harald, and Bjørn-Tore Flåten. 2018. *Strategisk ledelse*. Oslo: Cappelen Damm akademisk.

Koller, Tim, Marc Goedhart, and David Wessels. 2010. *Valuation: Measuring and Managing the Value of Companies*. Vol. 497. 5. Aufl. Hoboken: Wiley.

Kongsberg. 2019. *Anual Report and Sustainability Report 2019*. https://www.kongsberg.com/globalassets/corporate/document-downloads/ir/annual-report/1739-kog-rapport-2019-gb-final.pdf.

Kongsberg. 2022. ‘Code of Ethics’. Retrieved (https://www.kongsberg.com/contentassets/49062dfe976842a28426da0c39239a03/codeofethics-no-web-250219.pdf).

Kongsberg. 2023a. ‘All Anual and quarterly Reports & Presentations’. Retrieved 13 June 2023 (https://www.kongsberg.com/ru/investor-relations/reports-and-presentations/).

Kongsberg. 2023b. ‘Kongsberg Digital’. *Kongsberg Digital*. Retrieved 13 June 2023 (https://kongsbergdigital.com/).

Kongsberg. 2023c. ‘Kongsberg Gruppen ASA’s Annual Report for 2022’. Retrieved 12 June 2023 (https://www.kongsberg.com/ru/newsandmedia/news-archive/2023/kongsberg-gruppen-asas-annual-report-for-2022/).

Kongsberg. n.d.-a. ‘Areas of Operations’. Retrieved 13 June 2023 (https://www.kongsberg.com/kda/what-we-do/).

Kongsberg. n.d.-b. ‘Autonomous Underwater Vehicle - AUV - HUGIN Superior’. Retrieved 13 June 2023 (https://www.kongsberg.com/maritime/products/marine-robotics/autonomous-underwater-vehicles/AUV-hugin-superior/).

Kongsberg. n.d.-c. ‘Debt Financing’. Retrieved 12 June 2023 (https://www.kongsberg.com/investor-relations/debt-financing/).

Kongsberg. n.d.-d. ‘KONGSBERG 200 Years of Excellence’. Retrieved 13 June 2023 (https://www.kongsberg.com/who-we-are/200-years-of-excellence/).

Kongsberg. n.d.-e. ‘Kongsberg Careers Digital’. *Kongsberg Digital*. Retrieved 13 June 2023 (https://kongsbergdigital.com/career/).

Kongsberg. n.d.-f. ‘Major Shareholders’. Retrieved 13 June 2023 (https://www.kongsberg.com/investor-relations/major-shareholders/).

Kongsberg. n.d.-g. ‘Maritime Products’. Retrieved 13 June 2023 (https://www.kongsberg.com/maritime/products/).

Kongsberg. n.d.-h. ‘Who we are’. Retrieved 13 June 2023 (https://www.kongsberg.com/no/who-we-are/).

Kristoffersen, Trond. 2016. *Årsregnskapet: En Grunnleggende Innføring*. Trondheim: Fagbokforlaget.

Lorentzen, Marius. 2021. ‘E24’. Retrieved 12 June 2023 (https://e24.no/i/qR6l4o).

McKinsey. 2022. ‘Energy Reference Case 2022 – Desktop’. Retrieved 12 June 2023 (http://ceros.mckinsey.com/energy-reference-case-2022-a-desktop).

Norges-bank. 2023a. ‘Generiske statsrenter’. Retrieved 12 June 2023 (https://www.norges-bank.no/tema/Statistikk/statsrenter/generiske-statsrenter/).

Norges-bank. 2023b. ‘Valutakurser’. Retrieved 12 June 2023 (https://www.norges-bank.no/tema/Statistikk/Valutakurser/).

Påsche, Eirik Sørenmo. 2023. ‘Satellitten «Juice» på vei til Jupiter med deler fra Kongsberg Gruppen’. *NRK*. Retrieved 12 June 2023 (https://www.nrk.no/osloogviken/satellitten-_juice_-pa-vei-til-jupiter-med-deler-fra-kongsberg-gruppen-1.16372841).

Peng, Mike W., and Klaus Meyer. 2019. *International Business*. Third edition. Australia Brazil Mexico Singapore United Kingdom United States: Cengage Learning.

Penman, Stephen H. 2010. ‘Financial Statement Analysis and Security Valuation’.

Persen, Kjell. 2023. ‘TV2’. Retrieved 12 June 2023 (https://www.tv2.no/nyheter/innenriks/over-pa-a-beskytte-oslo-med-norskutviklet-luftvern/15561094/).

Porter, Michael E. 1979. ‘How Competitive Forces Shape Strategy’. *Harvard Business Review*, March 1. https://hbr.org/1979/03/how-competitive-forces-shape-strategy.

PricewaterhouseCoopers. 2022. ‘Risikopremien 2022’. *PwC*. Retrieved 12 June 2023 (https://www.pwc.no/no/publikasjoner/risikopremien.html).

PricewaterhouseCoopers. 2023. ‘Global Aerospace and Defense: Annual Performance and Outlook’. *PwC*. Retrieved 12 June 2023 (https://www.pwc.com/us/en/industries/industrial-products/library/aerospace-defense-review-and-forecast.html).

Rastogi, Nitank, and Dr M. K. Trivedi. 2016. ‘PESTLE TECHNIQUE – A TOOL TO IDENTIFY EXTERNAL RISKS IN CONSTRUCTION PROJECTS’. 03(01). https://www.irjet.net/archives/V3/i1/IRJET-V3I165.pdf.

Regjeringen. 2022. ‘NOU 2022: 20’. *Regjeringen.no*. Retrieved 12 June 2023 (https://www.regjeringen.no/no/dokumenter/nou-2022-20/id2951826/).

Saab. n.d.-a. ‘About | Saab’. *Start*. Retrieved 12 June 2023 (https://www.saab.com/about).

Saab. n.d.-b. ‘Reports and Presentations | Investor Relations | Saab’. *Start*. Retrieved 12 June 2023 (https://www.saab.com/investors/reports-and-presentations).

Sereco. 2023. ‘Investor Relations - Serco Group’. *Serco*. Retrieved 13 June 2023 (https://www.serco.com/investors).

Sereco. n.d. ‘About the Serco Group | About Us’. *Serco*. Retrieved 13 June 2023 (https://www.serco.com/about).

Sipiri. 2022. ‘World Military Expenditure Passes $2 Trillion for First Time | SIPRI’. Retrieved 12 June 2023 (https://www.sipri.org/media/press-release/2022/world-military-expenditure-passes-2-trillion-first-time).

Straitsresearch. n.d. ‘Fish Farming Market Manufacturer, Demand, Report to 2030’. Retrieved 12 June 2023 (https://straitsresearch.com/report/fish-farming-market).

Sun, Makada Henry-Nickie, Kwadwo Frimpong, and Hao. 2019. ‘Trends in the Information Technology Sector’. *Brookings*. Retrieved 12 June 2023 (https://www.brookings.edu/research/trends-in-the-information-technology-sector/).

Tradingeconomics. 2023a. ‘Norway Full Year GDP Growth - 2022 Data - 2023 Forecast - 1971-2021 Historical - Chart’. Retrieved 12 June 2023 (https://tradingeconomics.com/norway/full-year-gdp-growth).

Tradingeconomics. 2023b. ‘Norway Three Month Interbank Rate - 2023 Data - 1986-2022 Historical - 2024 Forecast’. Retrieved 12 June 2023 (https://tradingeconomics.com/norway/interbank-rate).

Tradingeconomics, M. 2023. ‘Norway Corporate Tax Rate - 2022 Data - 2023 Forecast - 1981-2021 Historical - Chart’. Retrieved 13 June 2023 (https://tradingeconomics.com/norway/corporate-tax-rate).

Worldbank. n.d. ‘World Bank Open Data’. *World Bank Open Data*. Retrieved 12 June 2023 (https://data.worldbank.org).

Yahoo Finance. 2022. ‘The Maritime Information Market Size Was Valued at US$ 2,808.87 Million by 2028 from US$ 1,882.01 Million in 2021’. *Yahoo Finance*. Retrieved 12 June 2023 (https://finance.yahoo.com/news/maritime-information-market-size-valued-115700497.html).

Yahoo Finance. 2023a. ‘Kongsberg Gruppen ASA (KOG.OL) Stock Historical Prices & Data - Yahoo Finance’. Retrieved 12 June 2023 (https://finance.yahoo.com/quote/KOG.OL/history/).

Yahoo Finance. 2023b. ‘Serco Group Plc (SRP.L) Income Statement - Yahoo Finance’. Retrieved 13 June 2023 (https://finance.yahoo.com/quote/SRP.L/financials/).

Zippa. 2023. ‘25 Trending Tech Industry Statistics [2023]: Tech Industry Demographics, Worth And More’. *Zippia*. Retrieved 12 June 2023 (https://www.zippia.com/advice/tech-industry-statistics/).

Appendix

Appendix 1 - Formulas

$$ER_i = R_f + \beta_i\,(ER_m - R_f)$$

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

$$\text{P/E} = \frac{Market\ value_t}{Annual\ return_t} = \frac{Stock\ Price_t}{Annual\ return\ per\ stock_t}$$

$$\text{EV/EBITDA} = \frac{Market\ value\ equity + Market\ value\ debt - Cash\ equivalents}{EBITDA}$$

$$\text{P/S} = \frac{Market\ capitalization_t}{Sales_t} = \frac{Stock\ Price_t}{Sales\ per\ stock_t}$$

$$\text{P/B} = \frac{Market\ value_t}{Book\ value_t} = \frac{Stock\ Price_t}{Book\ value\ per\ stock_t}$$

$$Operating\ margin = \frac{EBIT_t}{Operating\ revenue_t} * 100\%$$

$$\textbf{Return on equity} = \frac{\textbf{Profit (before or after tax)}_t}{\textbf{Average equity}_t} * 100\%$$

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

$$\text{Equity ratio} = \frac{Total\ shareholders\ Equity}{Total\ Equity\ \&\ Liabilities}$$

$$\text{Debt to Equity ratio} = \frac{Total\ shareholders\ Equity}{Total\ shareholder\ Liabilities}$$

$$\textbf{Financial ratio 1} = \frac{\textbf{Fixed assets}_t}{(\textbf{Longterm debt} + \textbf{Equity})_t}$$

$$\textbf{CAPEX}_t = \textbf{PP\&E}_t + \textbf{Depreciation}_t$$

$$MV\ Debt = I\ * \left(\frac{1 - \frac{1}{(1 + C_d)^t}}{C_d} \right) + \left(\frac{FV}{(1 + C_d)^t} \right)$$

$$\text{Working capital} = \text{Current assets} - \text{Current liabilities}$$

$$V_0 = BV_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1+r)^t}$$

$$TV = \frac{FCF_n(1+g)}{(r-g)}$$

$$\beta_i = \frac{Cov\,(R_i, R_m)}{Var(R_m)}$$

$$\text{Earnings per share} = \frac{\text{Net Income}_t}{\text{Total shares outstanding}}$$

$$\text{Dividends per share} = \frac{\text{Total Dividend}_t}{\text{Total shares outstanding}}$$

$$\text{Book value per share} = \frac{\text{Shareholders Equity} - \text{Prefered Equity}}{\text{Average of common shares outstandng}}$$

$$\text{Return on common equity} = \frac{\text{Earnings per share}_{t+1}}{\text{Book value per share}_t}$$

$$\text{Residual earnings} = BPS * (ROCE_t - \text{Required return}_t)$$

$$\text{Continuing value} = \frac{ROCE_{terminal} * g}{r - g}$$

Appendix 2 - Key figures

MNOK	2017	2018	2019	2020	2021	2022
Operating revenues	14490	13807	23245	25612	27449	31803
Total revenue	14490	13807	23245	25612	27449	31803
Operating expenses	-13398	-12681	-21132	-22362	-23363	-27201
EBITDA	1092	1126	2113	3250	4086	4602
Depreciation & amortisation	-507	-425	-1084	-1345	-1223	-1293
EBIT	585	701	1029	1905	2863	3309
Financial income/expense	69	79	-196	-50	59	188
EBT	654	780	833	1855	2922	3497
Income tax expense	-95	-76	-116	-374	-632	-688
Annual profit	559	704	717	1481	2290	2809

Table 4: Kongsberg Gruppen ASA's historical income statements

MNOK	2018	2019	2020	2021	2022
Property, plant and equipment	2531	3924	3665	3901	4107
Leasing assets	-	2141	1965	1715	1743
Goodwill	2011	4272	3143	3139	3686
Other intangible assets	878	2215	2053	1900	2095
Deferred tax assets	-	167	306	248	235
Shares in joint arrangement and assosciated companies	3400	3247	3465	3609	3868
Other non-current assets	188	213	209	172	585
Total non-current assets	**9008**	**16179**	**14806**	**14684**	**16319**
Inventories	2174	3964	4132	4306	5493
Trade receivables	2802	6363	5542	4518	6957
Other short-term receivables	460	998	5784	6518	8031
Customer contracts, assets	2994	5888	964	545	1596
Derivatives	182	376	580	620	896
Cash and cash equivalents	10038	5654	7420	8118	3932
Total current assets	**18650**	**23243**	**24422**	**24625**	**26905**
Total assets	**27658**	**39422**	**39228**	**39309**	**43224**

Table 18: Historical view of Kongsberg Gruppen ASA's assets

MNOK	2018	2019	2020	2021	2022
Issued capital	5933	5933	5933	5932	5930
Other reserves	554	571	559	458	693
Retained earnings	6119	6249	6754	7079	6911
Equity attributable to owners of the parent	**12606**	**12753**	**13246**	**13469**	**13534**
non-controlling interest	20	57	55	149	209
Total equity	**12626**	**12810**	**13301**	**13618**	**13743**

Table 19: Historical view of Kongsberg Gruppen ASA's equity

MNOK	2018	2019	2020	2021	2022
Long-term interest-bearing loans	4020	3469	1971	2450	2003
Long-term leasing liabilities	-	1850	1753	1500	1526
Pension liabilities	538	974	1137	1104	553
Provisions	128	122	117	121	115
Deferred tax liability	1293	1350	1194	1281	1112
Other non-current liabilities	11	36	61	72	75
Total non-current liablilities	**5990**	**7801**	**6233**	**6528**	**5384**
Customer contracts, liabilities	5157	10481	11217	11787	14159
Derivatives	580	493	546	378	1559
Provisions	515	1513	1608	1596	1563
Short-term interest-bearing loans	312	620	1500	-	450
Current leasing liabilities	-	348	339	380	419
Other current liabilities	2478	5356	4486	5024	5948
Total current liabilities	**9042**	**18811**	**19696**	**19165**	**24098**
Total liabilities and provisions	**15032**	**26612**	**25929**	**25693**	**29482**
Total equity and liabilities	**27658**	**39422**	**39230**	**39311**	**43225**

Table 20: Historical view of Kongsberg Gruppen ASA's liabilities and provisions

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
Operating revenues	37085	43506	51412	58178	64642	70639
Total revenue	**37085**	**43506**	**51412**	**58178**	**64642**	**70639**
Operating expenses	-31696	-37219	-43488	-48747	-53314	-56895
EBITDA	**5390**	**6288**	**7924**	**9431**	**11329**	**13744**
Depreciation & Amortisation	1917	2249	2657	3007	3341	3651
EBIT	**3473**	**4039**	**5267**	**6424**	**7987**	**10092**
Financial income/expense	88	102	133	162	201	255
EBT	**3560**	**4141**	**5399**	**6586**	**8189**	**10347**
Income tax expense	676	786	1025	1250	1555	1964
Annual profit	**2885**	**3355**	**4374**	**5336**	**6634**	**8383**

Table 28 Future income statements of Kongsberg Gruppen ASA

MNOK	2023e	2024e	2025e	2026e	2027e	2028e
EBITDA	5390	6288	7924	9431	11329	13744
Depreciation & amortisation	1917	2249	2657	3007	3341	3651
Financial income/expense	88	102	133	162	201	255
Income tax	676	786	1025	1250	1555	1964
Net profit	**2885**	**3355**	**4374**	**5336**	**6634**	**8383**
Depreciation & amortisation (+)	1917	2249	2657	3007	3341	3651
Change in working capital	3334	1063	1309	1120	1070	993
Capital expenditure	6765	6939	7120	7307	7501	7702
Free cash flow	**1371**	**-272**	**1221**	**2156**	**3545**	**5325**

Table 50 Kongsberg Gruppen ASA's estimates of free cash flows in the future

Net present value FCF (MNOK)	9849
Net present value terminal value (MNOK)	72521
Total value (MNOK)	82370
Net debt (MNOK)	2450
Equity value (MNOK)	79920
Total shares	177 313 072
Stock price	**450,73**

Table 58: Stock price calculation

Metrics	NOK
BPS (present day)	76,62
Present value RE	82,97
Present value CV	173,78
Stock price	**333,37**

Table 74: Stock price residual earnings model

		WACC						
Terminal Growth	Stock price (NOK)	5,5 %	6,0 %	6,5 %	6,79 %	7,0 %	7,5 %	8,0 %
	1,00 %	530,56	469,37	419,67	394,93	378,58	344,09	314,78
	1,25 %	560,60	492,99	438,65	411,78	394,09	356,96	325,6
	1,50 %	594,39	519,24	459,52	430,23	411,02	370,91	337,24
	1,75 %	632,68	548,57	482,60	**450,73**	429,56	386,06	349,82
	2,00 %	676,45	581,58	508,23	473,14	449,95	402,6	363,44
	2,25 %	726,95	618,98	536,89	498,03	472,49	420,71	378,26
	2,50 %	785,87	661,72	569,12	525,81	497,53	440,63	394,41

Table 59: Sensitivity analysis WACC and Terminal growth

KOG (NOK)	Q1	Q2	Q3	Q4	TTM
Total income	7,046,000,000.00	7,567,000,000.00	7,745,000,000.00	9,444,000,000.00	
Total expenses	6,217,000,000.00	6,555,000,000.00	6,385,000,000.00	8,043,000,000.00	
EBITDA	**829,000,000.00**	**1,012,000,000.00**	**1,360,000,000.00**	**1,401,000,000.00**	**4,602,000,000.00**
Depreciaton/Am	307,000,000.00	329,000,000.00	325,000,000.00	333,000,000.00	
EBIT	522,000,000.00	683,000,000.00	1,035,000,000.00	1,068,000,000.00	
Net financial items	11,000,000.00	7,000,000.00	-79,000,000.00	-127,000,000.00	
Tax expense	112,000,000.00	140,000,000.00	221,000,000.00	214,000,000.00	
Profit after tax	399,000,000.00	536,000,000.00	893,000,000.00	981,000,000.00	
Net income	**399,000,000.00**	**536,000,000.00**	**893,000,000.00**	**981,000,000.00**	**2,809,000,000.00**
Earnings per share	**2.13**	**2.98**	**4.97**	**5.54**	**15.62**

Table 75: Trailing twelve months variables from Kongsberg Gruppen ASA

AJRD (NOK, excl "USD")	Q1	Q2	Q3	Q4	TTM
Total income (USD)	511,100,000.00	528,500,000.00	549,800,000.00	648,200,000.00	
Total income	4,272,796,000.00	4,418,260,000.00	4,596,328,000.00	5,418,952,000.00	
Total expenses (USD)	454,000,000.00	486,500,000.00	482,700,000.00	611,800,000.00	
Total expenses	3,795,440,000.00	4,067,140,000.00	4,035,372,000.00	5,114,648,000.00	
EBITDA (USD)	57,100,000.00	42,000,000.00	67,100,000.00	36,400,000.00	
EBITDA	477,356,000.00	351,120,000.00	560,956,000.00	304,304,000.00	**1,693,736,000.00**
EBIT (USD)	42,700,000.00	28,200,000.00	53,300,000.00	21,100,000.00	
EBIT	356,972,000.00	235,752,000.00	445,588,000.00	176,396,000.00	
Net financial items (USD)	4,400,000.00	4,500,000.00	25,900,000.00	2,200,000.00	
Net financial items	36,784,000.00	37,620,000.00	216,524,000.00	18,392,000.00	
Tax expense (USD)	10,500,000.00	7,300,000.00	13,700,000.00	2,800,000.00	
Tax expense	87,780,000.00	61,028,000.00	114,532,000.00	23,408,000.00	
Profit after tax (USD)	27,800,000.00	16,400,000.00	13,700,000.00	16,100,000.00	
Profit after tax	232,408,000.00	137,104,000.00	114,532,000.00	134,596,000.00	
Net income (USD)	27,800,000.00	16,400,000.00	13,700,000.00	16,100,000.00	
Net income	**232,408,000.00**	**137,104,000.00**	**114,532,000.00**	**134,596,000.00**	**618,640,000.00**
Earnings per share (USD)	0.33	0.20	0.17	0.20	
Earnings per share	**2.76**	**1.67**	**1.42**	**1.67**	**7.52**

Table 76: Trailing twelve months variables from Aerojet Rocketdyne Holdings, Inc

CW (NOK, excl "USD")	Q1	Q2	Q3	Q4	TTM
Total income (USD)	559,461,000.00	609,357,000.00	630,542,000.00	757,665,000.00	
Total income	4,677,093,960.00	5,094,224,520.00	5,271,331,120.00	6,334,079,400.00	
Total expenses (USD)	494,300,000.00	511,252,000.00	522,959,000.00	600,420,000.00	
Total expenses	4,132,348,000.00	4,274,066,720.00	4,371,937,240.00	5,019,511,200.00	
EBITDA (USD)	65,161,000.00	98,105,000.00	107,583,000.00	157,245,000.00	
EBITDA	**544,745,960.00**	**820,157,800.00**	**899,393,880.00**	**1,314,568,200.00**	**3,578,865,840.00**
EBIT (USD)	63,507,000.00	102,660,000.00	111,329,000.00	158,679,000.00	
EBIT	530,918,520.00	858,237,600.00	930,710,440.00	1,326,556,440.00	
Net financial items (USD)	9,530,000.00	9,788,000.00	13,997,000.00	13,665,000.00	
Net financial items	79,670,800.00	81,827,680.00	117,014,920.00	114,239,400.00	
Tax expense (USD)	13,292,000.00	22,000,000.00	23,564,000.00	35,991,000.00	
Tax expense	111,121,120.00	183,920,000.00	196,995,040.00	300,884,760.00	
Profit after tax (USD)	40,685,000.00	70,872,000.00	73,768,000.00	109,023,000.00	
Profit after tax	340,126,600.00	592,489,920.00	616,700,480.00	911,432,280.00	
Net income (USD)	40,685,000.00	70,872,000.00	73,768,000.00	109,023,000.00	
Net income	**340,126,600.00**	**592,489,920.00**	**616,700,480.00**	**911,432,280.00**	**2,460,749,280.00**
Earnings per share (USD)	1.05	1.83	1.91	2.82	
Earnings per share	**8.78**	**15.30**	**15.97**	**23.58**	**63.62**

Table 77: Trailing twelve months variables from Curtis-Wright Corporation

SAAB B (NOK, excl "SEK")	Q1	Q2	Q3	Q4	TTM
Total income (SEK)	9,218,000,000.00	10,171,000,000.00	8,751,000,000.00	13,866,000,000.00	
Total income	8,871,403,200.00	9,788,570,400.00	8,421,962,400.00	13,344,638,400.00	
Total expenses (SEK)	8,070,000,000.00	8,916,000,000.00	7,636,000,000.00	12,000,000,000.00	
Total expenses	7,766,568,000.00	8,580,758,400.00	7,348,886,400.00	11,548,800,000.00	
EBITDA (SEK)	1,148,000,000.00	1,255,000,000.00	1,115,000,000.00	1,866,000,000.00	
EBITDA	**1,104,835,200.00**	**1,207,812,000.00**	**1,073,076,000.00**	**1,795,838,400.00**	**5,181,561,600.00**
EBIT (SEK)	654,000,000.00	738,000,000.00	568,000,000.00	1,314,000,000.00	
EBIT	629,409,600.00	710,251,200.00	546,643,200.00	1,264,593,600.00	
Net financial items (SEK)	169,000,000.00	188,000,000.00	133,000,000.00	-35,000,000.00	
Net financial items	162,645,600.00	180,931,200.00	127,999,200.00	-33,684,000.00	
Tax expense (SEK)	113,000,000.00	117,000,000.00	111,000,000.00	195,000,000.00	
Tax expense	108,751,200.00	112,600,800.00	106,826,400.00	187,668,000.00	
Profit after tax (SEK)	372,000,000.00	433,000,000.00	324,000,000.00	1,154,000,000.00	
Profit after tax	358,012,800.00	416,719,200.00	311,817,600.00	1,110,609,600.00	
Net income (SEK)	372,000,000.00	433,000,000.00	324,000,000.00	1,154,000,000.00	
Net income	**358,012,800.00**	**416,719,200.00**	**311,817,600.00**	**1,110,609,600.00**	**2,197,159,200.00**
Earnings per share (SEK)	2.66	3.15	2.28	8.32	
Earnings per share	**2.56**	**3.03**	**2.19**	**8.01**	**15.79**

Table 78: Trailing twelve months variables from Saab AB

Ticker	Company	Stock price (30.05.2023)	10Y Avg currency exchange	Stock price NOK (30.05.2023)	Total stocks	Market value (NOK)	Equity (NOK, 2021)	Equity (NOK, 2022)
KOG	Kongsberg Gruppen ASA	NOK 448.80	1.00	448.80	177,313,072.00	79,578,106,713.60	13,618,000,000.00	13,744,000,000.00
AJRD	Aerojet Rocketdyne Holdings, Inc.	USD 54.66	8.36	456.96	80,758,891.00	36,903,389,010.02	4,374,788,000.00	4,525,268,000.00
CW	Curtis-Wright Corporation	USD 158.71	8.36	1,326.82	38,342,932.00	50,874,000,327.34	15,269,456,400.00	16,654,114,840.00
SAAB B	Saab AB	SEK 587.80	0.96	564.29	133,461,944.00	75,310,973,455.87	22,319,040,000.00	28,680,960,000.00
SRP.L	Serco Group PLC	GBP 1.44	11.36	16.40	1,104,593,134.00	18,119,569,035.23	11,455,424,000.00	11,697,392,000.00

Table 80 & 81: Stock price, equity and market value variables

Ticker	Company	Assets 31.12.2022	Liabilities 31.12.2022	Market value (NOK)	Cash and cash equivalents	EBITDA TTM	Enterprise value
KOG	Kongsberg Gruppen ASA	43 225 000 000,00	29 481 000 000,00	79 578 106 713,60	3 932 000 000,00	4 602 000 000,00	105 127 106 713,60
AJRD	Aerojet Rocketdyne Holdings, Inc.	19 828 248 000,00	15 302 980 000,00	36 903 389 010,02	2 692 756 000,00	1 693 736 000,00	49 513 613 010,02
CW	Curtis-Wright Corporation	37 198 672 720,00	20 544 557 880,00	50 874 000 327,34	2 148 302 640,00	3 578 865 840,00	69 270 255 567,34
SAAB B	Saab AB	69 470 400 000,00	40 789 440 000,00	75 310 973 455,87	2 754 240 000,00	5 181 561 600,00	113 346 173 455,87
SRP.L	Serco Group PLC	31 242 272 000,00	19 544 880 000,00	18 119 569 035,23	649 792 000,00	4 447 440 000,00	37 014 657 035,23

Table 82: EBITDA and enterprise value values

Ticker	Company	Total stocks	Assets 31.12.2022	Liabilities 31.12.2022	Book value	Book value/stock
KOG	Kongsberg Gruppen ASA	177 313 072,00	43 225 000 000,00	29 481 000 000,00	13 744 000 000,00	77,51
AJRD	Aerojet Rocketdyne Holdings, Inc.	80 758 891,00	19 828 248 000,00	15 302 980 000,00	4 525 268 000,00	56,03
CW	Curtis-Wright Corporation	38 342 932,00	37 198 672 720,00	20 544 557 880,00	16 654 114 840,00	434,35
SAAB B	Saab AB	133 461 944,00	69 470 400 000,00	40 789 440 000,00	28 680 960 000,00	214,90
SRP.L	Serco Group PLC	1 104 593 134,00	31 242 272 000,00	19 544 880 000,00	11 697 392 000,00	10,59

Table 83: Book value and book value per stock

P/E TTM	NOK
Kongsberg Gruppen ASA P/E	28.73
Kongsberg Gruppen ASA EPS	15.62
Stock price	448.80
Average P/E	32.11
Stock price	**501.51**

Table 89: Stock price comparable P/E ratio

P/B TTM	NOK
Kongsberg Gruppen ASA P/B	5,79
Kongsberg Gruppen ASA BPS	77,51
Stock price	448,80
Average P/B	3,85
Stock price	**298,12**

Table 91: Stock price comparable average P/B

EV/EBITDA TTM	NOK
Kongsberg Gruppen ASA EV/EBITDA	22,84
Kongsberg Gruppen ASA relative value	19,65
Stock price	448,80
Average EV/EBITDA	19,70
Stock price	**386,97**

93: Stock price compare EV/EBITDA ratio

P/S TTM	NOK
Kongsberg Gruppen ASA P/S	2.50
Kongsberg Gruppen ASA sales per share	179.36
Stock price	448.80
Average P/S	2.07
Stock price	**371.60**

95: Stock price comparable price/sales ratio

Multiples	Stock price
P/E	501.51
P/B	298.12
EV/EBITDA	386.97
P/S	371.60
Average	**389.55**

Table 96: Summary of relative valuation of Kongsberg Gruppen ASA.

Appendix 3 - Beta regression

Date	OSEBX	KGASA												
31.05.2017	710,340027	110,33165		Return OSEBX	Return KGASA									
01.06.2017	713,190002	110,33165		0,004004101	0	SUMMARY OUTPUT					Regression beta	0,714		
02.06.2017	712,080017	110,33165		-0,001557579	0									
06.06.2017	709,369995	109,89727		-0,003813043	-0,003944809	*Regression Statistics*								
07.06.2017	711,059998	109,462891		0,002379566	-0,003960423	Multiple R	0,406617048							
08.06.2017	704,950012	109,89727		-0,008629916	0,003960423	R Square	0,165337424							
09.06.2017	706,679993	110,766022		0,002451042	0,007874046	Adjusted R Square	0,164777248							
12.06.2017	711,909973	108,594139		0,007373524	-0,019802629	Standard Error	0,017871421							
13.06.2017	710,059998	109,028519		-0,00260199	0,003992053	Observations	1492							
14.06.2017	708,309998	111,200401		-0,002467623	0,019724498									
15.06.2017	696,789978	114,675415		-0,016397806	0,030771671	ANOVA								
16.06.2017	699,159973	108,594139		0,003395533	-0,054488222		*df*	*SS*	*MS*	*F*	*Significance F*			
19.06.2017	705,140015	111,200401		0,00851681	0,023716551	Regression	1	0,094268085	0,094268085	295,1525	1,70E-60			
20.06.2017	704,070007	112,503532		-0,001518593	0,011650629	Residual	1490	0,475887677	0,000319388					
21.06.2017	699,679993	114,675415		-0,006254715	0,019121043	Total	1491	0,570155761						
22.06.2017	693,73999	114,241035		-0,008525842	-0,003795101									
23.06.2017	693,320007	116,412918		-0,000605573	0,01883295		*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
26.06.2017	693,169983	117,716049		-0,000216408	0,011131852	Intercept	0,000685565	0,000462911	1,480985654	0,138822	-0,00022	0,001594	-0,00022	0,001594
27.06.2017	693,76001	115,978539		0,000850839	-0,014870195	X Variable 1	0,71406852	0,041563933	17,18000346	1,70E-60	0,632538	0,795599	0,632538	0,795599
28.06.2017	698,869995	115,544167		0,007338644	-0,00375231									
29.06.2017	695,01001	115,544167		-0,005538489	0									
30.06.2017	698,580017	115,544167		0,005123479	0									
03.07.2017	705,059998	115,109787		0,009233175	-0,003766513									
04.07.2017	707,52002	115,544167		0,003483023	0,003766513									