The State Ownership Dilemma
- A valuation of Kongsberg Gruppen ASA

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Executive Summary

When the current Norwegian government was elected they had increased privatization high on the agenda, and one of their goals was to reduce their ownership in Kongsberg Gruppen KOG from 50.01 percent to 34 percent. KOG is a high-technology group that is involved in both maritime and defense operations. The company's defense technology is seen as highly sensitive with regards to national security and it is therefore important for the Norwegian government that the company stays on Norwegian territory. Currently, there are no Norwegian regulations that can prevent the company from leaving the country if the government reduces its ownership share. Hence the government decided to not take any action on the issue until the right regulations are in order. The authors found both the discussion regarding state-ownership effectiveness and the ongoing debate about the government's ownership reduction in KOG very interesting. Therefore, the overall objective of this thesis has been to combine a thorough analysis of state-ownership and its impact on KOG with a 'sum-of-the-parts' valuation in order to assess whether KOG's stock is trading at a state ownership discount. A hypothesis that the marginal investor could benefit from a divestment of the maritime segment was also established.

Before investigating whether the discount could be attributed to the prevailing ownership situation, it was essential to investigate if there exist such a phenomenon as a 'state-ownership discount'. Through an extensive empirical review the overall impression was that private ownership was superior to state ownership. Several theories explaining this was presented ranging from stronger incentives, increased competition and the reduction of agency costs. Furthermore, our own regression analysis pointed towards a negative effect of state-ownership on firm valuation and the interviews with analysts indicated that a divesture of the maritime division was something that had been discussed by investors for a long time.

In order to assess how the Norwegian Government' majority ownership in KOG affects the company, it was necessary to split KOG's divisions into two segments; KOG Defense and KOG Maritime. Further, a strategic and financial analysis was conducted in order to analyze the prospects of the individual business units. Both divisions were then valued using a fundamental analysis and a discounted cash flow (DCF approach). The analysis yielded a theoretical stock price of NOK 204.17 as of April 14th 2015. Compared to the market price of NOK 165.00, the valuation indicates a discount of 24.04%. Through a historical analysis it became evident that both divisions were trading at a discount relative to peers and that the discount is larger for the Maritime segment. Hence, it was concluded that a state-ownership discount exist in terms of the company's equity value. Lastly, a scenario analysis revealed that there are strong reasons to believe that the discount of KOG Maritime can be explained by the negative effects of state ownership and that the most attractive scenario for the marginal investor is for the Government to divest the division

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1. Introduction

1.1. Context and Motivation

The Norwegian Government has since the country declared its independence in 1814 been largely involved in the ownership of important Norwegian companies. The rationale behind this development has been a focus on building the Norwegian industry to secure employment of the population, economic development and important national resources. One of the companies that were established in this regard was Kongsberg Våbenfabrikk (today known as Kongsberg Gruppen), where security and defense were the important resources. However, as the world has become more globalized and the access to capital has become easily available through the world's capital markets, the discussion regarding the effectiveness of state ownership is more relevant than ever in the Norwegian society.). The development of privatization in Norway has been very low compared to the rest of Europe, and today 34% of the equity on Oslo Stock Exchange is owned by the Norwegian government.

When the current government was elected in 2013, increased privatization was on the agenda. The overall goal is still to reduce the ownership in total and one of the proposed initiatives is to reduce the Norwegian Government's equity stake in Kongsberg Gruppen ASA (KOG) from 50.01% to 34%. KOG is today a high-technology group that is involved in both maritime and defense industries. The defense technology is seen as sensitive and strategic in terms of national security and it is therefore important for the government that control of the company does not end up in the wrong hands. Today there is no regulation or legislation preventing a non-desired investor to take control over the company if full control (over 50% of the shares/votes) of the company is not maintained. Consequently, it was recently voted by the Norwegian parliament that no action to reduce state ownership in KOG could be taken before proper legislation was in order.

KOG' stock has historically been traded at a discount compared to valuation of the stock performed by financial analysts (Westby, 2015). Because the Norwegian Government is a majority owner, the discount is in harmony with the findings of scholars such as Megginson et al. (2001), who suggests that states are unfavorable owners. One of the consequences of this has been that many investors have promoted a spin-off of the Maritime and Oil & Gas Technology units as they believe that a separate company would receive a higher valuation. The authors view the aspects of this particular case very interesting, and are determined to investigate the effect of Norwegian state ownership at Oslo Stock Exchange and KOG in terms of valuation. Furthermore, the authors will address whether a spin-off could benefit the marginal investor of the company and at the same time help the government reduce their overall equity stake at Oslo Stock Exchange. This would also make sure that the Norwegian government maintains the control of the sensitive technology in terms of the defense operations.

1.2. Problem Statement

Due to the presented situation, the comprehensive motive of this thesis is to address the current ownership structures' impact on valuation to see if there currently exists a 'state ownership discount' in KOG's stock price. Additionally, the authors have had a hard time finding obvious benefits of state ownership for the maritime segments of KOG. Consequently, a hypothesis that the marginal investor could benefit from a divestment of the maritime segment has therefore been established.

Valuing KOG is not a straightforward task. The company is constructed as one unit, but consists of four different segments; Protech Systems, Defense Systems, Maritime and Oil & Gas Technology. The authors have therefore decided to split KOG into two respective parts; KOG Defense and KOG Maritime, due to the fact that the two first segments relate to the defense industry and the latter two relate to maritime industries. Moreover, this thesis will perform a sum-of-the-parts (SOTP) valuation based on a fundamental analysis in order to bring forth a more comprehensive approximation of the true value of the equity associated with each of the operational segments.

The following problem statement has been put together:

> *What is the 'sum-of-the-parts' valuation of KOG as of April 14 2015, and is there evidence of the stock being traded at a state ownership discount? If, so could a divestment of the maritime division benefit the marginal investor?*

A set of sub-questions is required to answer the stated problem statement above. Hence, questions for every chapter are provided in the list below, in which they will seek to answer to provide a thorough understanding of KOG's operations, as well as the characteristics of state ownership and its impact on the valuation of KOG.

State-ownership

Before moving on to the valuation, it is essential to establish whether there exists such a phenomenon as a 'state ownership discount'. This section will review the rationale for state ownership by examining research conducted on this field. Furthermore, a regression analysis of its effect will be performed together with an investigation of what approaches financial analysts take in order to account for a potential discount.

- To what degree do ownership characteristics affect company performance and valuation?
- Does prior research show any significant effects of state ownership?
- What effect has Norwegian state-ownership on companies listed at Oslo Stock Exchange?
- What is the approach used by financial analysts in terms of KOG and state-ownership?

Introduction to Kongsberg Gruppen and its strategic industries

To answer the problem statement a detailed understanding of KOG and the industries it operates in are required.

- What are the essential attributes of KOG?
- How are the Defense and Maritime industries structured?

Strategic analysis

To assess the market prospects for each division, a thorough analysis of the strategic drivers of the industries are required. Hence, this chapter will address external and internal elements impacting KOG Defense and KOG Maritime and the potential for value creation. This part of the thesis is also vital in terms of forecasting the future earnings of the strategic units.

- What are the main macroeconomic elements affecting the defense and maritime sector, and what are their current and future prospects?
- How does the level of competition within the defense and maritime industry impact the profit potential?
- Do KOG Defense and KOG Maritime possess resources or capabilities on an individual or consolidated level, which can be classified as sustainable competitive advantages?

Financial analysis

The financial analysis will seek to evaluate KOG Defense and Maritime's financial situation by analyzing each unit's profitability, growth and liquidity position. This is done through benchmarking of selected peers, which will also help to determine sensible valuation multiples for the each division.

- Which companies could be seen as relevant peers for KOG Defense and KOG Maritime?
- How are relevant peers priced on multiples compared KOG's business segments?
- What is the financial situation of KOG Defense and KOG Maritime, and what are the implication for future performance
- What is the historical liquidity risk associated with KOG?

Forecasting

This section will combine the outlook in main value drivers analyzed in the two previous sections in order to establish sensible forecasts for future profitability of KOG Defense and KOG Maritime.

- How do the industry- and firm-specific factors impact the central financial value drivers and what does this indicate about the projected free cash flow of KOG's business segments?

Valuation and discount test regarding KOG

The valuation and discount test will address the fair value of KOG Defense and KOG Maritime. It is beneficial to apply more multiple models to triangulate results and achieve robustness. The authors will therefore therefore value each segment using a present value approach (DCF/EVA) and a relative multiple analysis approach. There will also be conducted a sensitivity test.

- What is a sensible estimation of each segment's weighted average cost of capital (WACC)?
- What is the estimated enterprise value of KOG Defense and KOG Maritime?
- What is the calculated (sum-of-the-parts) equity value of KOG and what does this value indicate about the actuality of an ownership discount in the stock price of KOG at the cut-off date?
- How sensitive is the calculated stock price to changes in central value drivers and assumptions?

Outcome scenarios

This section will address our hypothesis based on an overall assessment.

- A: Keep the current structure of the company
- B: Spin-off by sale of Maritime segment

Figure 1.1: Thesis structure and connection between different elements

Introduction

State-ownership

About KOG and the industries

Strategic Analysis
- PESTEL
- Porter's 5 Forces
- VRIO

Financial Analysis
- DuPont Pyramid
- Benchmarking
- Risk Analysis

SWOT

Forecasting

WACC

DCF/EVA   Relative Valuation

Sensitivity analysis

Scenario I   Scenario II

Conclusion

Thesis in perspective
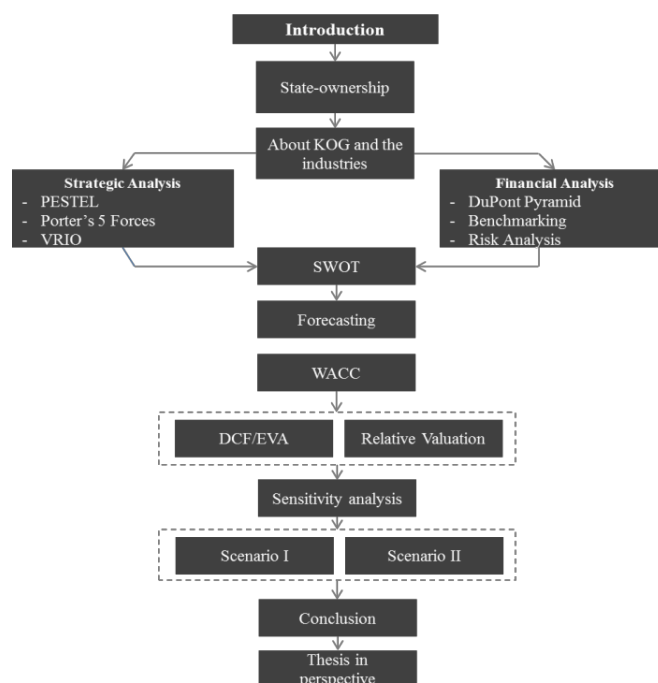
Source: Compiled by authors

1.3. Methodology

Numerous different theories, sources and models have been used in the SOTP-valuation of KOG. Consequently, this section will try to justify the methods and choices made throughout the thesis. The authors have had a "post-positivistic" mindset, and the thesis search for causal answers and evidence of a state ownership discount (Tracy, 2013). Moreover, the authors are aware that former research could contain bias and weaknesses and are therefore determined to minimize and correct these problems throughout the thesis. This will be done through the use of multiple data sources in order to find out what the empirical evidence suggest about state ownership, and also how professionals evaluate and incorporate state ownership to their valuation methods.

1.3.1 Theory

Theories and models applied will be presented consecutively throughout the thesis in order to make it easy for the reader to understand the purpose of each section. Reasoning for the choice of a specific model will therefore be provided in helping the reader understand the approach. When the result of a specific section depend on the choice of framework this will be particularly important. However, the authors assume that the reader is accustomed with common economic terminology. For the purpose of referencing sources, APA 5th Edition has been used in this thesis.

1.3.1 Data Sources and criticism

Only publicly available information is applied with regards to the valuation, as the thesis has been put in writing from the perspective of an investor. That being said, the authors have conducted interviews with professional financial analysts covering KOG. Quantitative data and information is used, and it is therefore important to explain how the information is obtained. Furthermore, when qualitative data is applied it should be questioned if the authors have the wrong incentives. Therefore, all information, whether quantitative or qualitative, has been carefully evaluated before it is included. (Rienecker & Jørgensen, 2011). Furthermore, authentic sources have been used where possible, and independently for each section to prevent bias in the results.

The authors have used some information reported by KOG itself. This information is mostly related to annual reports, investor presentations and press releases. It is assumed that the level of exploitation in this published information is limited, but to prevent bias in the thesis the authors have remained critical to this information (Rienecker & Jørgensen, 2011). The interviews with analysts from investment banks are conducted in a semi-structured form. This was done to ensure that the objects were not framed by the questions or constrained in any other ways by the way the questions were presented by the authors (Tracy, 2013). Additionally, the authors have aimed to stay cautious to the answers provided by the interview objects and to be objective towards their

answers. A list of the questions asked, a detailed characterization of the methodology, and a transcribed version of the interviews is provided in Appendix 8.

The stock exchanges' web pages and Bloomberg have been used when gathering data for the regression analysis with regards to the Norwegian Government ownership's effect on Oslo Stock Exchange. The data bases allow the authors to find specific information related to company financials and ownership structure. DataStream has been the main source when collecting data about peers in order to establish comparable figures with regards to the companies' financial information. To control the quality of the provided estimates form this source the figures collected has been compared to financial statements of the respective companies. When collecting information about the respective industries that KOG operates in, industry reports published by several different multinational analysis-agencies has been our main source.

Delamination and Assumptions

- As KOG is a publicly listed company. The authors have therefore only used publicly available information in the valuation of the company. Nevertheless, interviews with research analysts have been performed in order to complement the evaluation of the Norwegian state ownership in KOG.

- KOG published its Annual Report 2014 on April 14th 2015. This date is therefore set as the cut-off date for information used in this thesis.

- The regression analysis is only used to support the previously found empirical evidence regarding state ownership, and is not meant as a proof for the general effect of this ownership characteristic in the Norwegian equity market.

- It is assumed that IFRS and GAAP are comparable when constructing a peer groups. The authors acknowledge that there might be differences in these accounting policies that may bias our findings.

- KOG has communicated that it will continue its ongoing strategy of organic growth, and thus no future acquisitions is assumed.

- As KOG does not completely segment financial information with regards to their strategic industries, some line items in the income statements and balance sheets has been estimated. These estimations will be elaborated on.

- KOG is a complex organization with operations in several markets and product categories. The fundamental analysis will therefore mostly focus on the company's major markets and product categories that represent that majority of profit generation within the firm. As KOG Oil & Gas Technology's contribution is relatively marginal this segment is considered as being part of KOG Maritime's sub-segment; Offshore.

2. State Ownership and its Implications for Company Valuation

This section of the thesis will consider the rationale behind the Norwegian state ownership model and examine the empirical evidence of the effect of state ownership on firm performance. By performing a regression analysis on the Norwegian listed equity market, and examining the techniques used by analysts, the authors wish to determine if Norwegian state ownership has an impact on firm performance or valuation. The section will help to determine if there are reasons to consider a state ownership discount in the valuation of KOGs share price at all.

2.1. Ownership and its Influence

According to economic theory, the owner's main goal is to maximize their return on investment in relation to their risk-appetite. However, the management may have incentives and goals of its own that do not necessarily correspond to those of the owners. In agency theory, this is commonly referred to as a Type I agency problem (Thomsen & Conyon, 2012, p.20). The relationship between majority and minority shareholders is another potential principal-agent conflict, commonly referred to as type II agency problems (Jensen, M. C. and Mecklings, W. H., 1976). The owners are usually not able to control or observe the management directly due to regulations and large costs of monitoring. This implies that the management holds an information advantage over the owners, which they can use to increase their own utility (Thomsen & Conyon, 2012, p.21). It is therefore important with active and professional owners to ensure proper monitoring of the management.

The Norwegian Government's investment in domestic companies usually exceeds 34%, which at least provides negative control i.e. more than one third of the shares (Bøhren, 2013). Bøhren (2013) discusses how shareholder structure might affect the quality of ownership. A higher concentration of control usually makes the shareholders' ability to make sure that the management follows their guidelines stronger than if the shareholder structure is more fragmented. A more concentrated ownership structure could therefore reduce type I agency costs. However, a more concentrated ownership structure may lead to type II agency problems as well as lower free float in the company's stock. The state may expropriate minority shareholders, or promote their own political objectives over those of minority shareholders through their strong position as the majority owner. This may occur through so-called tunneling or other rent extraction strategies (Thomsen & Conyon, 2012, p.276). Furthermore, a large owner will lead to price data of lower quality due to less liquidity in the stock. Reliable price data could contribute as an instrument in management monitoring, and thus reduce the agency cost. The FTSE 100 index demands a minimum of 25% free float and it is an ongoing discussion of increasing this. The profitability of companies with concentrated shareholder structure at Oslo Stock Exchange seems lower than of those with more fragmented ownership structure (Bøhren, 2013). It is therefore not precisely clear whether a concentrated or fragmented shareholder structure is preferred.

High quality ownership is central for the firm's own value creation, and different firms have different needs which may shift as they pass through the lifecycle (Filatotchev et al., 2006). The key competences of shareholders vary depending on the owners' identity. It is therefore of great importance that there is a match between the company's situation given their stage in the life cycle, and the characteristics of their owners (Det Kongelige Nærings- og Fiskeridepartementet, 2014). Furthermore, the pace of change within industries is increasing as new technology replaces old and markets become more global. This raises the importance of companies' ability to act innovative and restructure to prevent being forced out of the market (Det Kongelige Nærings- og Fiskeridepartementet, 2014). Figure 2.1 illustrates a trend; average lifetime for listed companies has decreased rapidly over time. This again increases their dependence on good owners and their competences when strategic decisions must be made. For instance when executing mergers & acquisitions or divestments of strategic business units.

Figure 2.1: Development of average company life time for listed companies' world wide
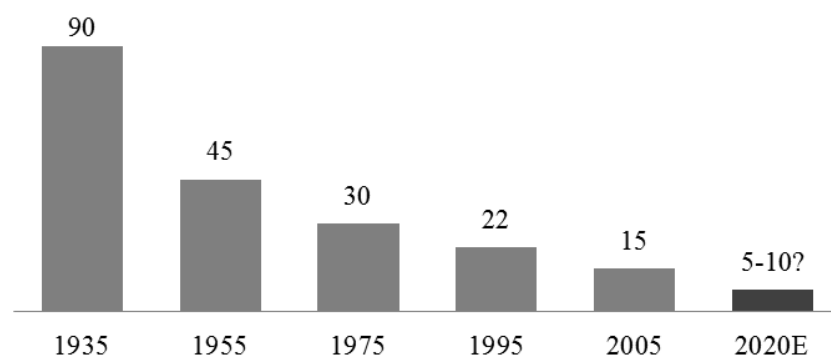
Source: Compiled by Authors, McKinsey & Company (2013)

The shareholder characteristics could be divided into passive and active owners. Passive owners will make sure that the company follows principles for good operational management to secure their own interests. Active owners on the other hand will typically increase the value of their own investment through support and follow-up. These owners could use their professional network or industry knowledge to complement the company's management. They are also likely to monitor management closer and have higher demands. Private Equity (PE) funds are good examples of active owners. Analysis indicates that PE funds experience higher return on their investments than the rest of the market. PE funds have since 1995 preformed 3% better than the S&P 500 (Harris, R.S., Jenkinson, T. & Kapland, S. N., 2013). The previous strategy of these owners was to identify the right industries and companies for investments, "Buying Well". However, lately their strategy has shifted towards more effective ownership, "Owning Well", as active ownership is perceived to generate more value

(Ghai, S., Kehoe, C. & Pinkus, G., 2014). This further supports the hypothesis that active and close ownership is important to firm performance and value creation in the economy.

Analysis regarding activist investors further illustrates that active ownership is preferred over passive ownership when it comes to creating value for the firm. Both Bebchuk et al. (2013), Brav et al. (2008), and Becht et al. (2013) states that activist investors have a positive effect on company performance.

2.2. Perspectives and Theories regarding State- vs Private Ownership

There is also a difference between state ownership and private ownership. By private ownership the authors refer to all types of ownership except that of states and governments. Vast differences in international trade balances have led to significant wealth for some states. Through large governmental investment funds, especially from China and the Middle East, a significant portion of the world's equity is owned by states. National ownership has also grown through government takeovers in relation to the financial crisis (Det Kongelige Nærings- og Fiskeridepartementet, 2014). This is illustrated in Figure 2.2, which shows how state ownership is growing on a global basis. It should be noted that the global equity markets have grown during this period as well, meaning that the presented growth rate is affected by the funds' return on investments.

Figure 2.2: Development in state ownership globally (USDbn)
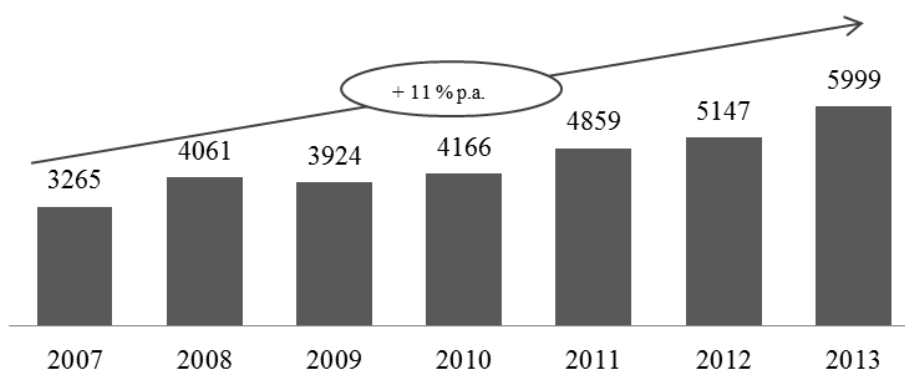
Source: Compiled by Authors, Sovereign Wealth Fund Institute (2014)

State versus private ownership has been discussed by scholars for more than half a century. In earlier times, price concerns were the center of attention. In fear of market imperfections such as monopoly power Arthur Lewis (1949) promoted state ownership of land, mineral deposits, telephone services, insurance and the motor car industry. For many of the comparable reasons, James Meade (1948) favored nationalization of the iron, steel and chemical industries. This was a part of the broader discussion of socialism versus capitalism, which was on top of the political agenda during the 30s and 40s. The views of well-known economists ranged from promotion of socialism (Lerner, 1944), to strong resistance (Hayek, 1944). Samuelson (1948) points out why some were resistant and sums up the general consensus today (p.604):

"It is only too easy to gloss over the tremendous dynamic vitality of our mixed free enterprise system, which, with all its faults, has given the world a century of progress such as an actual socialized order might find it impossible to equal."

As there was a lack of aversion towards state ownership after World War 2, many of the states played a massive role in production of goods and services throughout the world. In states like Japan, the United States, and Germany, government ownership was limited, while in Italy, France, and Austria the states were significant producers through their ownership. As time passed, state ownership proved to be inefficient in many instances, and theories regarding contracting and ownership identity reopened the discussion of state- versus private- ownership.

The contracting perspective distinguishes between if the government enters a contract with a private firm to execute a social good, such as distribution of electricity, or providing it themselves. It is then argued that through contracting, social goals will be achieved in addition to maintaining private ownership's nature of rising incentives of innovation and efficiency to increase profitability (Shleifer, A., 1998, p. 5).

Quality of a service or good and fear of monopoly prices have been the strongest arguments for state ownership. Quality could refer to how clean utilities keep the water, how long it takes for a letter to get to a remote area, or how innovative car makers are (Hart et al., 1997). The delivery of a social service such as the postal system is often brought up as a service that should be provided by the government, as it is likely that delivery in remote areas would be unprofitable (Tierney, 1988). However, the government could form a contract that forces the private firm to make delivery in these areas and the argument for state ownership is no longer valid. Another important argument is monopoly power and the need for pricing restraints. If the government can describe the products that the monopoly delivers, it can always regulate a private monopoly, and often has done so in the cases of utilities or telecommunications (Shleifer, A., 1998).

Hart and Moore (1990) and Hart (1995) focus on that there is a bargaining power in owning the asset of question when a contract is not able to specify how operations should be performed. This leads to strong incentives in terms of innovation and cost efficiency to increase profitability for the owner. In general, when an asset is publicly owned the state manager has weak incentives to both innovate and improve efficiency because he is not the ultimate owner and only receives a portion of the gains. In contrast, if the asset is privately owned the contractors have much stronger incentives as they will receive most of the returns of the investment. The opposition of this theory points out that incentives of efficiency by private companies will reduce the non-contractible quality. They use examples such as private prisons might abuse prisoners by hiring cheaper guards and fail to train them. However, even in these situations the private ownership will be superior as long as there is

some competition between the suppliers which leaves the government or the consumer with a choice (Shleifer A., 1998). Reputation building among competitors will strengthen this competitive mechanism. If suppliers want to retain their state contracts, they will not reduce cost and quality if this is significantly inefficient. Private firms invest heavily in their reputation to win additional governmental contracts (Logan, 1990). According to Shleifer (1998), all of the following criteria must be fulfilled for state ownership to be more efficient than private; 1) opportunities for cost reductions that lead to non-contractible deterioration of quality are significant; 2) innovation is relatively unimportant; 3) competition is weak and consumer choice is ineffective; and 4) reputational mechanisms are weak.

The arguments made in the above discussion assume an efficient state that always maximizes the social welfare of its population. This is an unlikely assumption and must be taken into consideration. Governments rely on their supporters to keep their power. It is therefore clear that politicians have incentives to use policies to transfer resources to their supporters (Bennedsen, 1998). In practice, corruption strengthens the case of private ownership because it is easier to design a corruption-free privatization program than to fight corruption within state firms and agencies (Kaufmann, 1997).

These theories clearly illustrates that the current views by scholars are that private ownership is more efficient than state ownership. It is also important to recognize that the quality of contracting and regulation has improved, competition is more effective today, the dangers of politicization have been revealed, and the importance of innovation is greater than ever in today's globalized economy. Furthermore, communism is erased almost everywhere in the world, formerly socialist governments have performed privatization programs, and developing countries have turned to private ownership.

2.3. Empirical Review of State versus Private Ownership

Several articles and surveys have been written about state ownership and privatization. The authors have chosen those we believe are most applicable to the Norwegian Government's sales proposition of KOG. The authors have studied three categories of research, empirical studies on public versus private, case studies in terms of privatization, and performance changes for firms privatized via public offerings. For a complete list of research evaluated in this section see Appendix 5.

Boardman and Vining (1989) conducted one of the first empirical investigations regarding state ownership. They concluded after studying the 500 largest non-US firms in 1983 that state owned enterprises (SOEs) and mixed owned enterprises (MEs) are significantly less profitable than private firms. The same authors reached the same conclusion when they conducted comparable research for the largest Canadian firms (Vining and Boardman,

1992). These findings support that private ownership is superior to state ownership. However, the research was criticized as there is a likelihood of a selection bias when conducting cross-country statistical tests. Data availability tends to be greater in the more developed countries, so developed countries (and better performing firms) are overrepresented in the empirical analysis (Meggison and Netter 2001). Tian (2000) conducted a single country empirical study. When investigating the performance relationship between 413 state-owned and 312 privately owned Chinese companies in 1998 he arrived at the same conclusion that private firms outperformed those with state ownership. The same did Cornette et al. (2005) when they examined differences in performance for state-owned and privately owned banks in Far East countries from 1989 through 1998. Hence, tt seems to be conclusive that private ownership is superior to state ownership if direct comparison is applied.

As described in the previous section, the late 20th century was dominated by privatization and regulation in the political economy. Time-series analysis of SOEs which recently have been privatized is another method used by researchers to investigate whether private ownership is preferable to state ownership. Megginson, Nash and van Randenbourgh (1994) compare 3-year average post-privatization performance ratios to 3-year pre-privatization ratios for 61 firms from 18 countries and 32 industries from 1961 to 1989. They document economic and statistical post-privatization increases in output, operating efficiency profitability capital investment spending and dividend payments. They also find significant decreases in the degree of leverage. By using similar methods, Boubakri and Cosset (1999), D'Souza and Megginson (2000) and Dwenter and Malatesa (2001) arrive at similar conclusions that former SOE's improve their performance after being privatized. After reviewing 11 studies, 10 of the studies document improved profitability, 8 of the studies find increased investments, higher output and decreased leverage and 5 of the 11 studies find that the companies pay higher dividends post-privatization.

This provides additional support to the hypothesis that private ownership is more value creating than state ownership. However, the empirically reviewed papers have been criticized as they fail to address the potential negative effects on social welfare. Improvements could be due to greater exploitation of monopoly power, which has harmful effects on social welfare, but can generate firm-specific abnormal returns.

To widen the understanding of the issue, case studies of privatization are taken into consideration. Boles de Boer and Evans (1996) estimate the impact of the 1987 deregulation and the 1990 privatization of Telecom New Zealand in terms of price and quality of telephone services and examines whether the investors benefited from it. They document significant declines in the price of phone services, mostly due to productivity growth that cut costs at a 5.6% annual rate, and significant improvements on service levels. Shareholders also benefited significantly. Newberry and Pollitt (1997) performed a cost benefit analysis of the 1990 restructuring and privatization of the Central Electricity Generating Board (CEGB). Restructuring and privatization of CEGB

resulted in a permanent cost reduction of 5% per year, but the firm and its shareholders captured all the economic gains. The consumers and government lost, which shows that alternative fuel purchases involve unnecessarily high costs and wealth flows out of the country.

Ramamurti (1996) surveys studies of 4 telecom, airline and 1 toll-road privatization program in Latin America from 1987 to 1991. He discusses political economic issues and methods used to overcome bureaucratic/ideological opposition to privatization. The survey documents that privatization is very positive for telecom. This is partly due to the scope of technology, capital investments, and the attractiveness of offer terms. Additionally, there is much less room for productivity improvements for airlines and roads. It is hard to determine if there is any consensus between scholars when it comes to the social welfare effect of privatization and private ownership. Based on the cases studies investigated by the authors of this thesis it seems like the effects are industry specific. Privatization of companies in technological intensive industries like telecommunication, transportation and financial services benefited the society, while privatization of utilities companies made the community worse off. This supports the theories presented by Hart (1995) regarding managers' incentives for innovation.

A newly promoted theory is the difference between hard- and soft budget constraints in terms of owner identity, where an organization with a soft budget constraint (SBC) can always count on a supporting organization (such as the government) to bail it out when its budget constraint is persistently breached (Boubakri et al. 2011).

2.3.1. Empirical Summary

After reviewing a broad sample of the empirical literature of state ownership, the overall impression is that the value creation is strongest when ownership is held by the private sector, both in terms of each respective firm, but also for the society as a whole. Several theories explaining this have been presented ranging from stronger incentives, increased competition and reduction of agency costs.

With all this evidence at hand it is hard to understand why a developed economy like Norway still has such a high density of state-ownership, even after privatization efforts. KOG was a SOE that was privatized, but the government still holds residual ownership. Evidence suggests that performance is negatively related to government's continued role in firms (Boubakri and Cosset 1998). Boubakri et al. (2011) has conducted a study on residual state ownership in former privatized firms. They find that political systems and political constraints are important determinants for residual state ownership in privatized firms. When political constraints and veto power is high the residual state ownership is higher due to limitation of privatization. Norway has a parliamentary political system which has a higher degree of veto power than for example a presidential political system.

2.3.2. The Norwegian State Ownership History

The reasoning and goals of the Norwegian state ownership has changed over time with specific considerations made for each instance. Situations where the Norwegian government has decided to invest or divest in companies have in common that the government wanted to secure social economic issues.

After World War II, the Norwegian Government focused on building the Norwegian industry to secure employment of the population and economic development. As foreign capital was of limited availability, due to restrictions and regulations, the state decided to make investments themselves. This led to establishment of Årdal og Sunndal Verk in 1947, Norsk Jern Verk in 1955 and Norsk Koksverk in 1960 (Det Kongelige Nærings- og Fiskeridepartementet, 2014). When oil and gas was discovered in the 1970s, the state wanted a strong ownership of the natural resources extracted from Norwegian territory. This led to majority ownership in Statoil ASA and Norsk Hydro ASA. These investments have secured the population great wealth. Security and defense was the motivation for the government's ownership in Nammo and Kongsberg Gruppen ASA (Det Kongelige Nærings- og Fiskeridepartementet, 2014). The Norwegian state took over the stocks in many of the Norwegian banks during the bank crisis of the 1990s; this was done to prevent a more serious crisis with serious social economic consequences. Most of these banks were privatized later, but the government still owns 34% of DNB, Norway's largest bank (Det Kongelige Nærings- og Fiskeridepartementet, 2014). During the 2000s the ownership politics have shifted towards a higher degree of centralization of the direct ownership. The government has made some companies fully private; Arcus (2001) and BaneTele (2006). In other companies they have reduced their ownership through IPOs; Telenor ASA (2000) and Statoil (2001) (Det Kongelige Nærings- og Fiskeridepartementet, 2014). However, some companies have been established through fissions or mergers to secure sector political goals. Examples of these are Petoro (2001), which was established to administer the states direct economical involvement in extraction of natural resources in Norwegian territory, and Eksportkreditt Norge AS (2012), which was formed to administer an export credit arrangement on behalf of the state (Det Kongelige Nærings- og Fiskeridepartementet, 2014).

2.4. The Norwegian Government's Strategy in terms of Current and Future Ownership

The Norwegian Government wants private ownership to be the rule of thumb in the Norwegian financial markets. In the report, *Et mangfoldig og verdiskapende eierskap* (2014), the current government explain their view on ownership. They state that private ownership rights are central for a well-functioning democracy and that this also applies to the ownership of companies. It is highlighted that private owners are more capable of enforcing a direct ownership than the state is. The state acts on behalf of the entire community, and they are therefore more suited to serve as a resource to the management. The government also addresses that private owners could monitor the management to a higher extent, which reduces the agency cost of information

asymmetry. Furthermore, they discuss why they believe that it is not beneficial for the state to hold ownership in most cases. Firstly, it is argued that conflicts could rise between the state's ownership and its other roles as a state. This could reduce the perception of the state's legitimacy, as both the owner and regulator, or owner and customer. Secondly, it is discussed that the concentration of power is taken away from the private sector. As the owner of 34% of the equity at Oslo stock exchange, the state additionally serves as a policy formulator and administrative authority. It is therefore argued that the government holds great power at the expense of the citizens. Thirdly, limitations in industry knowledge and the implied reduction of efficiency is mentioned as there is a significant proliferation in the industries of the companies where the state holds an owner stake. However, there are issues where it is argued that state ownership is more beneficial on a social economic level. The current Norwegian government has identified four arguments that are used to legitimate their presence as owners in some of the Norwegian companies. These characteristics are described in Appendix 6.

2.5. Testing for the Effect of State Ownership in the Norwegian Market – Regression Analysis

The empirical literature indicates that state ownership is negatively correlated with firm performance, company valuation and most likely overall social welfare. Numerous studies have been investigating the impacts of state ownership, but the authors have not been able to find any thorough research in terms of the Norwegian market. In the following section the authors will therefore try to figure out whether state ownership affects the relative valuation of companies in the Norwegian market.

The authors have performed a regression analysis where the focus is on how the comparable firm value, calculated by Tobin's Q, is affected by whether a firm is purely owned by private investors or if the company is partly owned by the Norwegian government. Tobin's q was introduced by James Tobin (1969) and measures the relation between market value and the replacement value of the company in question's assets. Instead of measuring stock and accounting profits, Tobin's q is applicable across firms and sectors (Lang and Stulz, 1994). There are several ways to calculate the ratio, but Lindberg and Ross (1981) calculate it in the following way:

Eq. 2.1 $$\text{Tobin's q} = \frac{PS+MVE+LTDEBT+STDEBT-ADJ}{TOT\,ASST-BKCAP-NETCAP}$$

Where PS is the liquidation value of a company's preferred stock, MVE is the market capitalization at year-end, LTDEBT is the value of the firm's long-term debt, STDEBT is the book value of the firm's current liabilities, ADJ is the book value of the firm's net short-term assets, TOTASST is the book value of the company's total assets, BKCAP is the book value of the firm's net capital stock, and NET CAP is the firms inflation adjusted net capital stock (Chung and Pruitt, 1994).

However, this method of calculating the ratio both requires a lot of data and computational efforts. The authors of this thesis have therefore used Bloomberg to extract the Tobin's q for our regression. The Bloomberg Tobin's q is calculated the following way:

Eq. 2.2 $\quad \text{Bloomberg Tobin's q} = \dfrac{\text{Market CAP} + \text{Total Liabilitis} + \text{Preferred Equity} + \text{Minority Interest}}{\text{Total Assets}}$

The regression analysis could yield biased results and the authors are aware of this risk. Endogeneity issues or omitted variable bias might decrease the significant of the results and there is also a risk of hetroskedadicity (Villelonga, 2004). Nevertheless, the authors' regression is conducted as an implication of whether Norwegian state ownership affects the valuation of the stocks listed at Oslo Stock Exchange. Moreover, it is not meant as sole evidence of existing state ownership valuation discount.

The data used in the regression analysis is collected form Oslo Stock Exchange, company annual reports 2013 and Bloomberg. When screening company stocks for the sample the authors used the following principles; the equity had to be traded at the Oslo Stock Exchange and had to currently be in operation. The authors further adjusted the sample as duplicates were removed and companies where Bloomberg had no data for Tobin's q was eliminated. Three companies with unrealistically high values of q were eliminated. This resulted in a sample size of 157 companies.

Furthermore, the authors split the sample into two categories depending on whether the Norwegian government is among the top 20 biggest shareholders. The following results were provided when calculating the mean, median and standard deviation in Bloomberg's q for each category:

Figure 2.3: Summary Statistics

	Private Ownership	**Partial State Ownership**
Mean (q)	1,42	1,20
Median (q)	1,12	1,20
STDEV (q)	0,91	0,35
# Firms	110	47

Source: Authors' own compilation based on data form Bloomberg (2015), Oslo Stock Exchange (2015x)

There seems to show a negative relationship between the Norwegian Government's ownership and Bloomberg's q, based on differences in mean between the two categories. However, the median displays that some observations are larger in magnitude, which distorts the result of the mean calculation. To address if the issue of state ownership in the Norwegian equity market affects value negatively, a regression is appropriate. The authors have therefore created a dummy variable which takes the value of 1 if the Norwegian government is among the top 20 shareholders and 0 if the company is privately owned. The regression results are shown in Figure 2.4.

Figure 2.4: Linear regression results – Bloomberg's q

	Observations	Ownership Dummy	Adj R-Sq
Bloomberg's q	157	-0,227 (-0,136)	0,011

Source: Authors' own compilation based on data form Bloomberg (2013), Oslo Stock Exchange (2013)

It can be seen from the regression that the ownership dummy on the Bloomberg's q shows a negative relationship, which is significant on the 10% level. Consequently, the authors accept the hypothesis that Bloomberg's q diminishes with the Norwegian Government's ownership. Furthermore, it is noted that the adjusted R^2 is rather low. This indicates that the variation in the dependent variable (Bloomberg's q) is only partly described by the variation in the explanatory variable (Ownership Dummy). Nevertheless, the relevance of the adjusted R^2 is dependent on whether the goal is to test what impacts Bloomberg's q, or whether the government's ownership impacts Bloomberg's q at all. Hence, the low adjusted R^2 does not make the results from the regression invalid for the purpose of this investigation.

2.6. Financial Analysts' Approaches to State Ownership and KOG

It has been indicated from both the empirical review and the regression analysis that state-ownership is negatively related to company performance. Consequently, it is in the authors' interest to investigate what approaches financial analysts' consider in their valuations of KOG and other Norwegian SOEs. In this regard, this section contains interviews with four professional analysts from leading investment banks in Norway. A detailed description and a transcript of the interviews are provided in Appendix 8.

2.6.1. Analysts' take on Norwegian State Ownership

Some of the analysts pointed towards many similar characteristics of the companies with Norwegian state-ownership. According to the analysts these companies often has less gearing and more cash on their balance sheet.

> *"It is relatively common among state-owned companies [in Norway] to have a careful capital structure. They cannot go out on the open market to raise capital in the same way as privately held companies when they want to make acquisitions"*
>
> *- Jon D. Gjertsen, KOG Analyst, Pareto Securities*

The reason why they cannot raise money in the equity market like companies with private ownership structures are able to is that the government represents the community. If they were to participate in a stock issue it would need to be approved by the parliament, and in consequence be an open and democratic process, which usually is

not compatible with an M&A transaction. These companies would therefore need cash to partly finance a potential transaction. This is why they often have excess cash on their balance sheets. Another discussed issue is that it would be very hard to acquire a company with state-ownership unless it is communicated that the company is for sale. This reduces the upside potential and removes the acquisition premium when investors value the company.

"In terms of valuation, partly state owned companies would be impossible to acquire, without an acquisition premium the upside potential is therefore reduced."

- Chr. Fredrik Lunde, Head of Research, Carnegie

2.6.2. Analysts' thoughts about the historical discount in KOGs share price

From a historical perspective the analysts point to KOG being traded at a discount. More specifically, the market price of the share traded within a discount range relative to the analysts' respective valuation estimates. This supports the evidence that was found reviewing in reviewing former research and regression analysis. The analysts point towards two issues that make the stock trade at a discount due to state ownership, lack of liquidity and suboptimal capital structure.

"...there are two discount factors here. The first is a liquidity discount, which could have been a lot better if the state had reduced their ownership.((Jon points to the fact that the Norwegian Government's high ownership stake results in fewer stocks available for sale on a daily basis)). Secondly, there is no doubt that their capital structure is suboptimal."

- Jon D. Gjertsen, KOG Analyst, Pareto Securities

The KOG stock has very little free float due to the government ownership, but also because there are several other large institutional investors that do not trade the stock frequently such as Arendal Fossekompani and Danske Bank Invest. For a list of top 10 shareholders and concentration see Appendix 4. Some analysts also point towards that the unified company is not efficient as it prevents the company to do strategic structural changes within a given segment.

"... It's a hinder in terms of doing structural changes within specific segments or restructure the entire company, which might be more value creating. The current ownership is viewed as a limitation. Investors want to excrete the Maritime segment from the defense segment as they believe this unit would trade at a higher price if it was not a part of the Group."

- Haakon Amundsen, KOG analyst, ABG Sundal Collier

Figure 2.5 illustrates the historical discount of KOG compared to its peers based on valuation multiples, the multiple applied is 12M forward EV/12 Forward EBITDA. There has been a significant discount over the last 8 years with the exception of Q2/07-Q309. During this period the financial crisis struck and most of the peers suffered from decreasing stock prices. However, KOG's stock price increased due to its capitalization of the substantial Protector contract with the US Armed Forces. The average discount for the full period is 9.8% and if the extraordinary quarters described are excluded the average is calculated to 20.4%.

Figure 2.5: Historical discount of KOG share price based on DataStream estimates and peer group
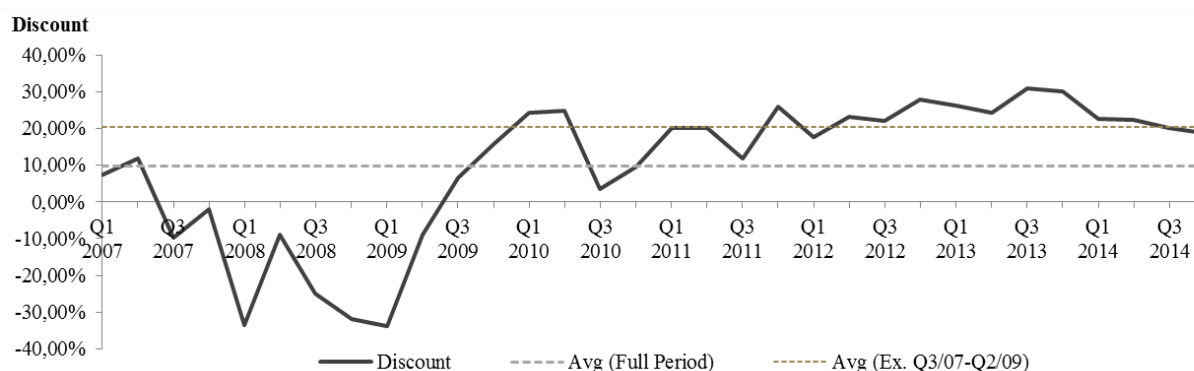
Source: *Compiled by Authors, DataStream (2015a)*

2.6.3 Approaches used by analysts in terms of the discount

Although it seemed like all the interview objects were familiar with the discount in terms of KOG share, few of them actually adjusted their valuation to reflect the discount.

> *"I have never done it. Not even for ORKLA ((Norwegian conglomerate). I know that there are a lot of discussions about it and that you always find a discount on conglomerates. [...] You find yourself in a situation where you think a company is cheap, but it has always been cheap. It's a value trap company which will never trade at its fair price given current structure"*
>
> *- Daniel Westby, Head of Research, SB1 Markets*

After talking with the analysts it seemed like most of them discussed with their investors regarding investment strategies and that most of the investors were aware of the discount. They argued that their reports reflected the fundamental value of the company, but that they together with investors reached the correct prices through discussion and information sharing.

"There are so many ways to do a valuation; my approach is that I tell the investors what I think the company is worth based on news flow. It must be up to them if they want to include a discount or not. … This is where the craftsmanship matters. Everybody could do the calculus of a valuation, but companies change based on the investors' perceptions. The sentiment changes as news emerge."

- Daniel Westby, Head of Research, SB1 Markets

The only one of the analysts interviewed who adjusts the valuation in terms of a discount is Mr. Gjertsen from Pareto Securities. He does not use a specific fixed percentage to discount the fundamental value or adjust WACC or multiples, but rather includes a NOK 5 discount to his derived share price. By examining the research reports provided by other analysts in the market it is evident that their typical approach is to conduct a SOTP to reach the enterprise value and then use pricing multiples of peers such as EV/EBITDA to reach a target price.

Figure 2.6: Overview how analysts covering KOG and their aproaches

	Analyst	Company	Date of last report	Recomandation	Target	Applies discount	Comment
Interviewed Analysts	Chr. Fredrik Lunde	Carnegie	N/A	N/A	N/A	No	Does not issue reports at the moment
	Daniel Westby	SB1 Markets	23.02.2015	Buy	175	No	Report fundamental value
	Jon Gjertsen	Pareto Securities	06.02.2015	Buy	150	Yes	Applies NOK 5 discount
	Haakon Amundsen	ABG SC	60.02.2015	Buy	155	Yes	Discount multiples
Other Analysts	Ivar Andreas Gjul	Fondsfinans	09.02.2015	Buy	160	No	Does not consider a discount
	Øyvind Mossige	Danske Bank	18.11.2014	Buy	160	Yes	Discount pricing multiples
	Magnus Berg	Artic Securities	06.02.2015	Hold (Sell)	125	Yes	Applies a 20% discount on fundamentals

Source: *Authors' own compilation, Carnegie (2015), SB1 (2015), Pareto (2015), ABGSC (2015), Fondsfinans (2015), Danske Bank (2014), Arctic (2015)*

2.6.4 Assessment of State Ownership's Effect on the Valuation of KOG

It is clear that ownership, whether it is private or state, has an implication on valuation and performance of stocks. This is evident both form the empirical review, the regression test, and the interviews with professional analysts. In the case of KOG and the Norwegian Government's administration of its ownership position, suboptimal gearing and a lack of liquidity seems like the most apparent issues. The loss of flexibility in terms of restructuring is also mentioned. Few of the interviewed analysts actually include a discount in their valuation, but all agree that it exists. Furthermore, all but one uses a SOTP valuation method among others to value the equity. The findings presented throughout this section of the thesis provide the authors with confidence that deeper analysis of state ownership discount in relation to KOGs stock price is appropriate.

3. Introduction to Kongsberg Gruppen

The previous section showed that it is evident that state ownership could lead to a suboptimal capital structure and a lack of liquidity in the stock, which in terms can have a negative effect on firm valuation. Moreover, this demonstrates the relevance of analyzing whether KOG's stock is trading below its fair value compared to this thesis' Sum-of-the-Parts valuation. The upcoming sections will therefore try to analyze KOG and its operations in order to build a stronger understanding of the company and introduce the industries it operates.

3.1. Kongsberg Gruppen's History

Kongsberg Våpenfabrikk was founded, 20 March 1814 by mining supervisor Poul Steenstrup. He had a desire to create new jobs in Kongsberg, a town that suffered from hardship and poverty. This was also the year that Norway constituted from Denmark, and the need for an independent national defense became apparent. The company focused on technology and in 1892 they received international recognition as the US army chose their Krag-Jørgensen rifle as their lead weapon (KOG, 2013). After the First World War the company struggled due to decreased military spending. They therefore started to produce tools and components to the shipping industry.

After Second World War the company's sole focus were on the defense industry and together with the Norwegian army they started to develop high-tech products such as the Penguin Missile (KOG, 2013). When oil was discovered in the North Sea the group started to focus on the Maritime segment again and acquired NorControl and Simirad, which had supplied the merchant fleet and the fishing industry with echo sounders and automation systems (KOG, 2013). The company was listed on Oslo Stock Exchange in 1993, and operates now within military and maritime markets. For a detailed description of the company's history see Appendix 3.

3.2 Kongsberg Gruppen's Operations

KOG has divided the group into four business segments; Defense Systems, Protech Systems, Maritime and Oil & Gas Technologies. For the purpose of this thesis the authors has decided to only divide the company in two; KOG Defense and KOG Maritime. This is because the customers of Defense Systems and Protech systems are the same and the issue regarding reduced state ownership corresponds for both segments. Maritime and Oil & Gas Technologies will also be treated as one division due to the limited relative size of the latter segment. In addition, these two segments also share many of the same peers, both in terms of competition and customers. The two divisions will be described in more detail in the following section.

KOG Defense

The combined defense division contributed to 41% of revenues in 2014, and is Norway's premium supplier of defense and aerospace related systems (KOG, 2014). Within Defense Systems they deliver systems for combat management, training and simulation, aero structures, communication and missile systems to land, sea and airborne operations. The customers of these products are mainly the Norwegian government, but they have also had significant contracts with USA, Poland and Oman. The most successful products this far has been the Norwegian Advanced Surface to Air Missile System (NASAMS), and the unique Naval Strike Missile (NSM). Recently they have become the key supplier of the 5th generation NSM, namely the Joint Strike Missile (JSM), which is the only missile that is compatible with the F-35 striker (KOG, 2014). The Protech division delivers products within the military robotics market. The segment has had tremendous success with its medium caliber Remote Weapon System (RWS) family, Protector. Protech Systems is the current market leader for these products with 17 different nations among its customer, and 10.000 units sold to the US Army alone (KOG, 2014). The key customers for the KOG Defense overall are NATO and the Norwegian government.

Figure 3.1: Key defense markets and products for KOG
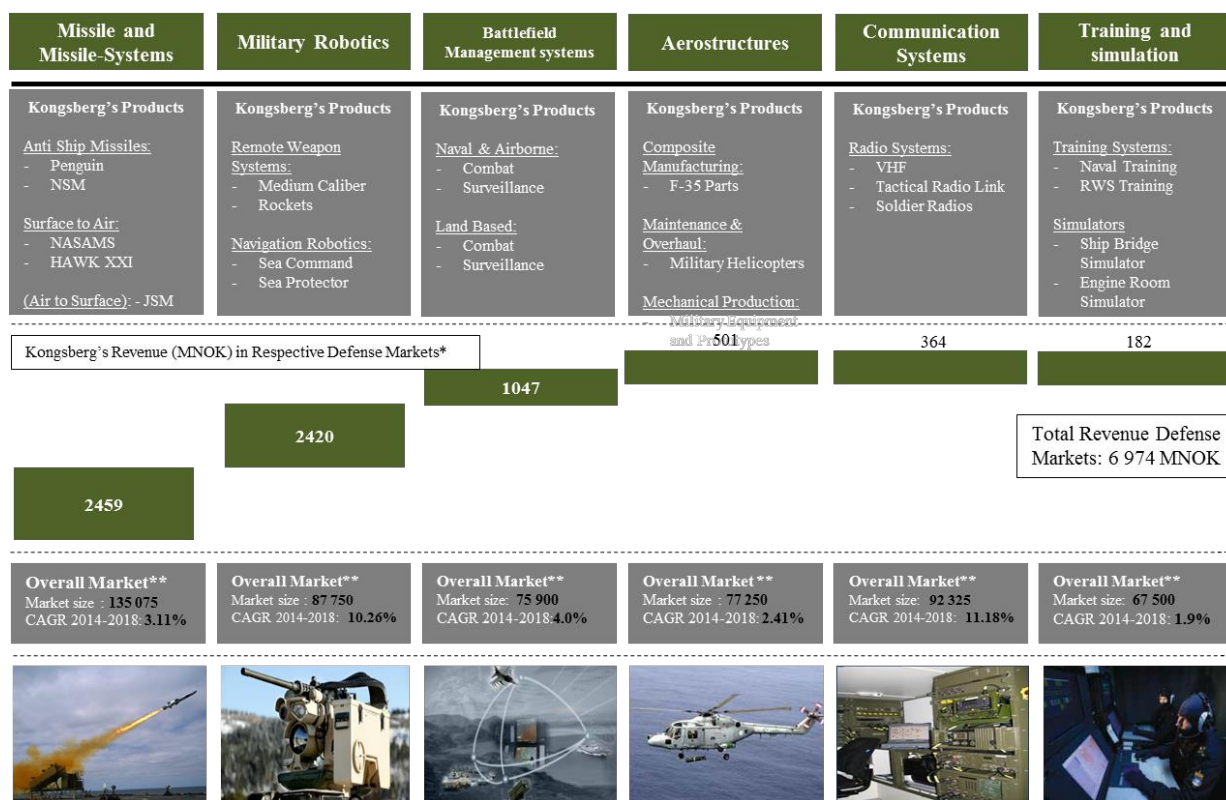
** Assumed NOK/USD 7.50

Source: *Compiled by Authors, estimated based on data from Danske Bank (2014) & KOG (2015)*

KOG Maritime

Maritime is KOG's largest division and provides positioning, surveillance, navigation and automation systems for the merchant fleet, offshore industry and the subsea market. KOG is a market leader within their strategic products and focuses on innovation and high quality. Within the offshore segment, KOG is primarily a product supplier that designs, develops, fabricates and sells products and systems to offshore installations, rigs and vessels. KOG's subsea products consist of underwater navigation systems, automated underwater vehicles, oceanographic survey and research, and control systems (KOG, 2013). The merchant marine segment is made up of supplies to everything from bulk carriers to tankers and complex gas carriers. KOG provides companies in this segment with automation and control systems, safety systems, energy management systems, navigation systems and cargo handling (KOG, 2013). The Oil & Gas Technology division was only responsible for 6% of the group's total revenue in 2014 and has not delivered the profitability the Group has opted for (KOG, 2014). The division provides the oil & gas industry with three different product lines; Engineering Support, Software Services, and Subsea products and solutions.

Figure 3.2: Key Maritime markets and products for KOG
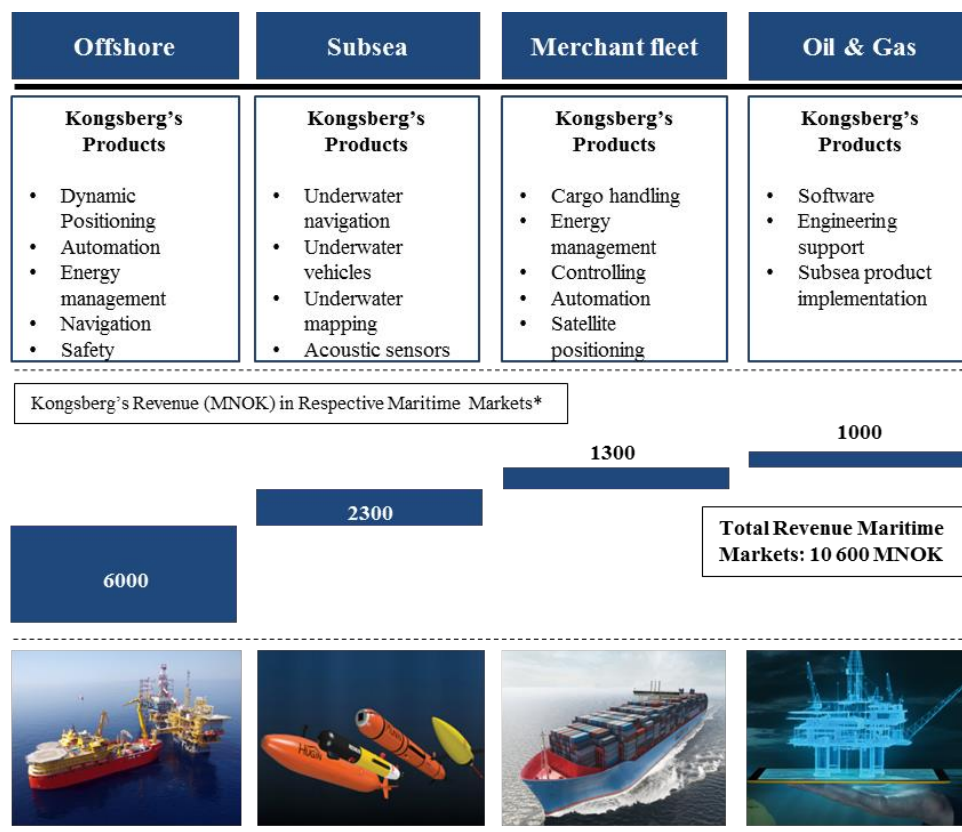
Source: Compiled by Authors, estimated based on data from Danske Bank (2014) & KOG (2015)

3.3. Kongsberg Gruppen's Strategy

Kongsberg mission is to deliver advanced solutions and technology for extreme conditions. Their approach is a dual-use business model like many other defense contractors, where they focus on both military and civilian markets. The management believes that by focusing on technological synergies between these two markets they can achieve technological leadership, and therefore do not have to compete through cost leadership. Furthermore the company is managed based on the following parameters in order to increase shareholder value and competitiveness in the shorter term (KOG, 2014):

- Achieve 10% annual sales growth, half should be organic.
- Double digit EBITDA margins.
- New projects will be evaluated against a 10-15% 'Return on Capital Employed', dependent on risk level.
- "Delta One", a program that should save costs of NOK 1 billion by 2016

3.4. Ownership, management and organization

The company's largest owners are Nærings- og Fiskeridepartementet (NFD) (50,01%), Arendal Fossekompani (7.96%) and Folketrygdfondet (FF) (6.05%). Both NFD and FF are institutions managed by the Norwegian government; the next significant shareholders are institutional. Less than 18% of the stocks are of free float.

The company's CEO is Walter Qvam, has held the position since 2008, and has extensive experience through leading positions in other Norwegian companies prior to KOG. KOG's headquarters are located in Kongsberg, Norway, but the group is present in more than 25 countries around the world. For a detailed description of the top 10 largest shareholders, management, and organizational structure see Appendix 1.

3.5. Share price development and major events

KOG's major historical events in the last decade can be observed and explained by the share price development, which is illustrated in Figure 3.3. The stock has grown steadily over the whole period in tandem with the company's mostly organic growth. The stock price development has been affected by many large contracts in the defense segment and steady ordering activity in the maritime segment.

Some of the major share price drivers have been the NOK 8bn framework agreement with the US Army for delivery of Remote Weapon Stations (RWS) in 2007, and the Norwegian Government's decision at the end of 2012 to collaborate with the US on integration of the JSM on the F-35 fighters. Furthermore, it is noticeable that the stock trades at relatively low volumes. KOG traded at an average of 136,000 shares per day in the last two years, while a comparable company like Aker Solutions had a turnover of 1.2 million shares per day in the same

period (Datastream, 2015b). This phenomenon can be explained by the concentrated ownership of the company, which was elaborated upon in section 2.

Figure 3.3: Share price development
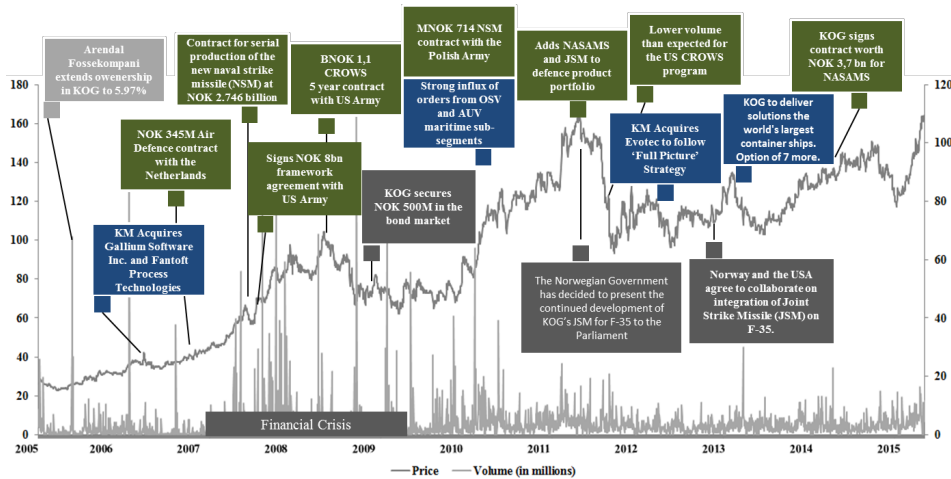
3.6. The Defense Industry

3.6.1 Overview

The purpose of the defense industry is to supply states around the world with military equipment and solutions. This includes everything from combat vehicles, ships and aircrafts, to software systems, communication and weapons. The industry is typically divided into niche markets where some of the contractors provide the entire product range and other focus on niche markets. The industry is as old as the history of war, but the modern defense industry as we know it today emerged during the nineteenth century when large defense contractors where formed (TNO, 2009). Small countries without domestic capacity to provide modern equipment began to contact the large defense corporations for delivery of battleships and rifles. Later, the defense industry and military trade has been used as a political tool; i.e. during the cold war were Russia and US exclusively supplied their proxies.

The largest defense market is by far the US, which spends three times more than China in second place. Japan, France, UK and Russia are also considered substantial defense markets (Deloitte, 2014). However, years of financial struggles in the west and the industrialization of the east, together with a calm geopolitical climate, have shifted the regional defense spending growth in recent years. The former giants of the western world have been cutting their spending, while countries in the Middle East and Asia have been increasing theirs (Frost & Sullivan, 2014). This has led to consecutive years of revenue declines for the largest defense contractors. Trade

restrictions, domestic protectionism and though competition makes it hard to win contracts in emerging economies and introduces additional risk. However, the geopolitical landscape has changed during the last year, with Russia becoming more aggressive, and Islamic State's terrorist attacks forcing the western politicians to put defense on the agenda. Hence many believe that the market would see positive growth in the future.

3.6.2 Value Chain

The defense value chain is characterized by strong relationships between the different suppliers of components included in a product. Most of these products are complex and consist of so many specialized components that no player within the industry has the technological, financial, or risk bearing capability to develop the product on its own. The value chain is therefore made up of many specialized suppliers (AT Kearney, 2008). The prime integrator is often responsible for delivering the finished product to the customer (State), while the third tier suppliers farthest down the value chain often deliver raw materials or small piece parts (See Figure 3.4).

Figure 3.4: KOG Defense's value network, including supply chain and value chain
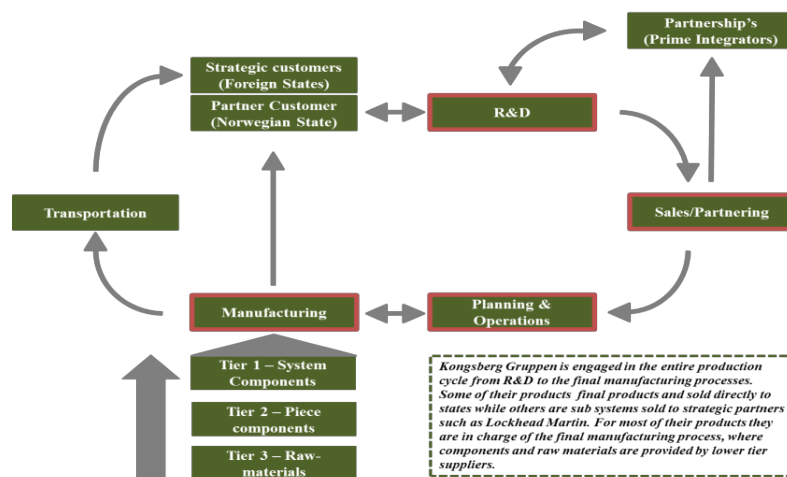
Source: Authors' own compilation

The defense contractors have two types of end customers; foreign and domestic governments. Most of the R&D is conducted in cooperation with the home government to improve the domestic military. Afterwards the systems and equipment are tested and validated before it is sold to foreign states with higher profitability margins. Some systems are developed in partnership with other defense contractors and then sold to the primes. The customer identity is determined based on where in the supply chain the respective company is located in relation to the respective product. This makes the value chain complex. One organization might be buying from another company, selling to it, selling with it, competing against it, and engaged in a joint product or service relation-ship—all at the same time. The word "coopetition," or cooperative competition, is often used to sum it up (AT

Kearney, 2008). As the governments place hard demands, a well-functioning and efficient supply chain is vital, and technology innovation is a shared responsibility. There is a potential bottleneck within the industry if some firms see their business as a predominant and independent part in a network process. This risk increases as we move down the supply chain to lower tiers where the supply chain interactions might be defined as buy/sell transactions (AT Kearney, 2008). The companies within the industry depend heavily on the other companies and the weakest link can destroy the value creation of the entire chain.

3.6.3 Industry structure and market outlook

In the early days of the defense industry there were often several companies supplying the entire domestic market. However, due to a consolidation of the contractors, the market has become more concentrated dominated by a few large players. Internationally, the industry is dominated by large US and European players such as Lockheed Martin, BAE Systems, Raytheon Company, General Dynamics, Airbus Group and Boeing (Frost & Sullivan, 2014). The major consolidation occurred during the 90s where most of the merger and acquisitions occurred at a national level creating national champions, but there were also some international mergers which were approved by the regulators. From 1990-2005 the revenue concentration among the top 5 companies in SIPRI's Top 100 arms companies rose from 22% to 43%, and from 37% to 62% for the top 10 (TNO, 2009). After the financial crisis struck in 2008, the M&A activity has slowed down. According to the Aerospace and Defense Industries Association in Europe contractors have reached the maximum level of consolidation and contractors have become too large in terms of business models, current markets and management capabilities (ASD, 2008). They argue that the large defense contractors should focus on their core competences and divest operations in civilian markets to reduce corporate diversification. However, large European primes such as Finmeccanica and Thales apply a dual-use business model where they develop technology which they apply within both markets. They justify this strategy by stating that they achieve a competitive advantage through quality of their technology, and therefore do not need to compete through cost leadership (TNO, 2009). Others believe that the M&A drought is behind us and that the industry will experience increased activity the following years. This is based on responses to contracting markets and cost pressure, new strategic markets such as surveillance and homeland security, and greater investments in fast growing markets such as China and India, where a local subsidiary grant access.

With the United States and Europe being the two biggest markets, accounting for approximately 60% of global defense spending, it will be hard to offset any loss in key markets by simply targeting international customers (Frost & Sullivan, 2014). There has been a new trend emerging in terms of competition lately, as players are being pressured to reduce costs and improve top-line revenues. In response, defense contractors have formed more partnerships and heavier investments in R&D. 9 out of 10 defense CEOs said that they believe that

partnerships – not in-house efforts – will characterize the future of innovation for their organizations in a survey performed by KMPG in 2014 (KPMG, 2014).

The industry has been affected negatively by budget cuts among Western countries in the last decade. However, regional conflicts and forces of tyranny continue to threat the world community. This raises the potential for armed conflicts. Despotic leaders still have the potential of creating dangerous disruptions, as demonstrated by the recent invasion of Crimea and Arabic Spring. Other potential drivers are the F-35 program and the fact that NATO has urged their members to increase their defense budgets to 2 percent of GDP. Hence, some believe that the drought of the industry is over and that we are heading into a positive cycle within defense industry.

3.7. Maritime industries

3.7.1. Overview

Although the customer range in the maritime segment is extremely wide and comprises many different industries, the industry that KOG Maritime operates in can be generalized and is often called the marine supplies industry (Balance, 2014, p.16). The purpose of the marine suppliers is to deliver materials, systems, equipment or act as service providers in engineering or consulting for all maritime markets (Balance, 2014, p.16). Within the industry, KOG can be characterized as a global market leader for certain technological sub-sectors which more or less serve the entire maritime market.

The marine supplies industry started out as trades in shipyards, and took its current shape as a consequence of comprehensive outsourcing activities from shipyards as vessels became more complex (Balance, 2014, p.15). The need for efficient operation grew and a demand for advanced systems and equipment emerged. This created a surge of new companies that started to specialize in these types of products and services (Balance, 2014, p.15). KOG's maritime operations started to take shape after the end of the cold war when the company gradually shifted its focus from traditional industrial production to a higher degree of technology development and opted opportunities in the maritime markets (KOG, 2013). As of 2013, the Asian marine supplies market accounted for 58.4% of the global demand for marine supplies, while Europe had a market equal to 31.5% and the rest of the world stood for 10.1% (Balance, 2014, pp.24-26). On a country level, China, South Korea, Japan and Singapore are considered the largest markets. Due to strong offshore markets, USA, Norway and UK are also considered large markets for marine supplies in terms of value.

3.7.2. Value Chain

The marine supplies value chain is characterized by close cooperation between the customers, shipyards, sub-contractors and suppliers of systems and equipment. Establishing close relationships with customers and shipyards within the value chain can help generate sustainable competitive advantages, especially for complex ships and offshore structures (Balance, 2014, pp.17-21).

Figure 3.5: KOG Maritime's value network, including supply chain and value chain
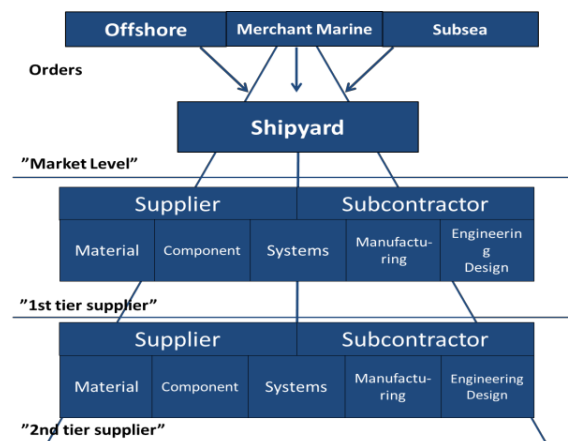
Source: Authors' own compilation, Balance (2014)

In general, the suppliers can be distinguished in system suppliers, component suppliers, and material suppliers. Subcontractors are often responsible for the hardware manufacturing and design (Balance, 2014, p.18). The vertical characteristic in Figure 3.5 enables easy separation of the boundary between shipyards and major systems suppliers, which make up the population of main contractors on the second level and the other parties on the following levels (Balance, 2014, pp.17-21). However, the distinction is not always clear as a contractor often can be both a first and second tier supplier/ subcontractor. KOG Maritime is involved in the whole supply chain and develops technology, components, and manufactures and designs most of the hardware. It can therefore be considered both a first and second tier supplier (Amundsen, 2015).

3.7.3. Maritime structure and market outlook

There has been an upward sloping trend within commodities and energy in the last 10 years, which has had a positive impact on KOG Maritime and especially the Offshore and Subsea sub-segments. This trend has changed quite drastically in the last seven months with the steep decline in the oil price. Consequently, there is now an overcapacity of vessels within oil field service, which is expected to result in lower newbuild activity and a lower order intake for the suppliers of systems and equipment to the segments (ABGSC, 2015).

The merchant marine is a pure shipping segment and follows a different cycle. There has been a certain weakening in some of these sub-segments as well. Orders for bulk carriers increased slightly in 2013, but were reduced by 20% in 2014 (Platou, 2015). Container orders also fell in 2014 compared to the previous year. On the other hand, contract orders for more capital intensive vessels like liquid gas carriers, chemical tankers and cruise ships increased by almost 50% (Platou, 2015). In total, new orders were down by 15% from 2013 to 2014 in the merchant marine segment (Platou, 2015). However, KOG's merchant marine sub-segment has experienced a growth in their orders of more than 50% in 2014 compared to 2013 even though the total vessel orders in the market has come down moderately in the same period.

The large global players in the marine supplies industry have been very active in M&A activities in the last decade, particularly in the years following the financial crisis where the players were concerned by the global drop in the newbuild market. The situation resulted in many players entering into strategic mergers and acquisitions to overcome the tough market conditions. The rationale behind the development was often cost reductions, competence improvements, as well as a wish to optimize the regional structure of production facilities (Balance, 2014, p.48). KOG, on the other hand have been relatively passive when it comes to strategic mergers and acquisitions except for a few smaller acquisitions between 2008 and 2012 which were acquired on a debt-free basis (KOG, 2008-12). As communicated in section 2, this could be due to the concentrated state ownership, which complicates the process of raising capital to fund larger acquisitions.

Another development in recent years has been the shipbuilding market's movement towards Asia. This has imposed a threat for the European marine suppliers as there is a risk to lose market shares to developing Asian marine supplies competitors. Some Asian countries have established strategies to improve their market position. Examples of this are South Korea's export offensives and programs to develop systems for offshore units and a sharp increase in obtaining Type Approvals for marine equipment by Asian manufacturers (Balance, 2014, pp.43). In response, many European suppliers have formed acquisitions, co-operations, license agreements, joint ventures and production sites in Asia. KOG formed in 2008, a joint venture with Zhenjiang Marine Electrical Appliances and Kongsberg Maritime China Jiangsu as attempts to strengthen its market position in the Asian region (KOG, 2015).

4. Strategic Analysis

After having developed a better understanding of the characteristics of KOG Defense and KOG Maritime and their respective industries of operation, the proceeding sections intend to recognize the components that impacts KOG's value. These components will comprise the foundation for forecasting future cash flows for KOG's Maritime and Defense segments. The strategic analysis is split into external and internal components in order to create an orderly and detailed picture of the company. The PESTEL and Porter's Five Forces framework have been chosen for the external analysis, where the authors intend to identify opportunities and threats by recognizing the macroeconomic environment and the specific industries of the two respective segments For the internal analysis the authors have chosen the VRIO framework, with the intention of identifying KOG's potential competitive advantages through an analysis of the company's own resources and capabilities.

The economic literature consists of numerous models and methods to analyze the strategic aspects of a company and an industry. It is therefore essential to consider the relative value each specific model could contribute with to ensure high overall quality. The PESTEL framework is chosen as the authors argue it would provide valuable insights and a strong understanding of the segments' economic environment. Further, the Porters Five Forces framework will provide essential knowledge in terms of the forecasting. Lastly, firm specific resources and capabilities will affect KOG's profitability specifically. The VRIO framework is effective in addressing these strategic aspects and has therefore been chosen for the internal analysis.

Figure 4.1: The build-up of strategic analysis and the relationship between the analyzed sections
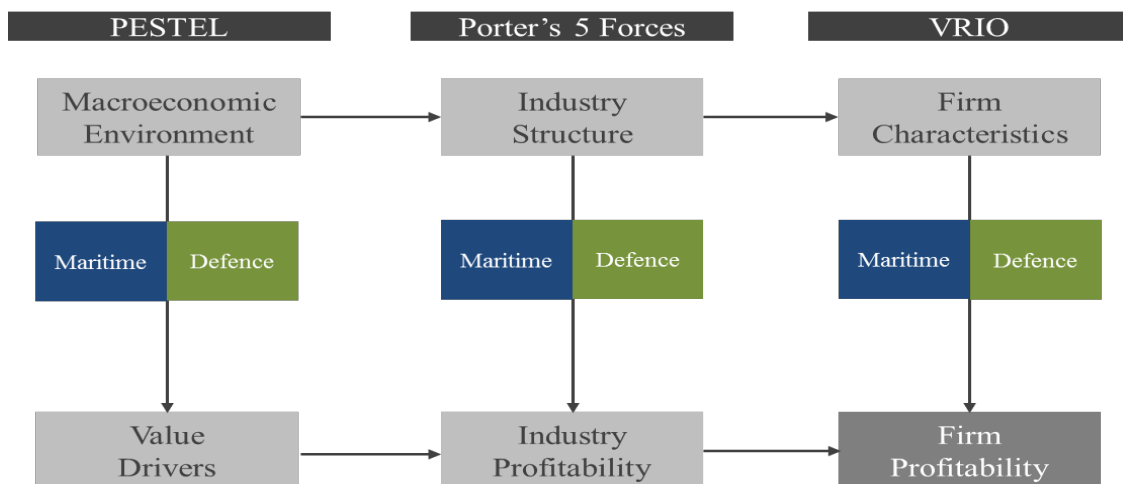
Source: Compiled by Authors

The PESTEL analysis is an in-depth exploration of the political, economic, socio-cultural, technological, environmental and legal factors. Each factor will be analyzed with the intention of describing the current situation, an evaluation of the future prospects in the industry. More than 75% of the company's revenue can be attributed to customers outside Norway and segmentation is provided in Figure 4.1 (KOG ASA, 2014). Consequently, our main focus in the analysis will be the macroeconomic environment in the regions with the largest revenue streams.

Figure 4.1: KOG's key regions based on sales
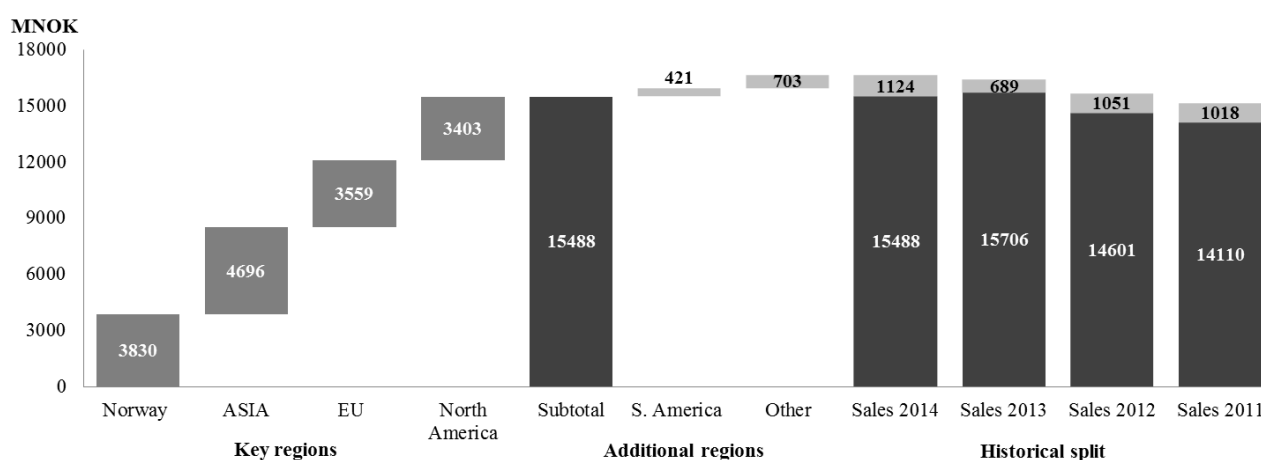
Source: Compiled by Authors, KOG ASA (2015)

4.1.1. Political & Legal Factors

The four largest regions where KOG is engaged in trade are Norway, EU, Asia and North America. Norway is not a part of the European Union and is thus not subject to the Common Customs Tariff. However, the Agreement of the European Economic Area has formed a single market by bringing the 28 EU member states together as well as Liechtenstein, Iceland, and Norway (EFTA, 2014). The EEA agreement grants free trade within the economic area. However, Customs Union and Common Trade Policy and Common Agriculture and Fisheries Policies are excluded from the policy. The World Trade Organization (WTO) and EU are working together to dissolve trade barriers by fighting protectionism and opening up markets. Through this, the EU hopes to stimulate economic growth (European Commission, 2013). Inside the union although the policy is respected, but some major partners still maintain some trade barriers. One of these is Norway, which still protects and subsidizes some of the country's industries.

Political and Legal factors' Impact on the Defense Industry

The defense industry is a very protective industry in terms of regulations and market interference by the domestic states. The industry is viewed by many as quite secretive and as functioning in a relatively closed environment. Defense businesses, and the governments that support and regulate them, have in the past decade come under increasing policy pressure by regulators, investors and the society, which demand more transparency and less corruption, as well as social responsibility and sustainability (Kytömäki, 2014). In response, the Organization for Security and Cooperation in Europe (OSCE) is now aiming to open the European defense market to work in a non-discretionary way (Det Kongelige Nærings- og Fiskeridepartementet, 2014). This could provide new opportunities for the Norwegian defense market in Europe. An example of this is the F-35 program where repurchase agreements (Repo) have been limited. All suppliers and producers had to compete equally to win contracts following the "best value" principle. The Norwegian defense industry has won several of these actions such as the JSM-Missile System provided by Kongsberg Gruppen, and thus secured revenue streams in many years to come (Regjeringen, 2010).

Domestic and International defense regulations affecting the Norwegian defense industry's export

The Norwegian defense exports are regulated through export control by the Norwegian Foreign Ministry. Law 18, 1989 (updated 2013) no. 93 gives the Norwegian Foreign Ministry authorization on behalf of the Norwegian King, control over all exports of weapons and other military equipment. This means that all transactions with foreign states must be approved by the Norwegian authorities, and that all companies need a specific export license (Det Kongelige Nærings- og Fiskeridepartementet, 2014). There are several requirements that must be fulfilled in order to be granted such a license. However, the overall considerations are that no Norwegian produced military equipment should be sold to customers who are engaged in "international conflicts" or "internal conflicts", or if there is a risk that it could be used in violation of a country's sovereignty or in terrorist acts (Det Kongelige Nærings- og Fiskeridepartementet, 2014). Sometimes special considerations are made, when USA invaded Afghanistan after 9/11 they were protecting their nation against terrorism, thus export was granted.

The Norwegian government has decided that Norwegian companies, in every case possible, should relate to the same frameworks as their foreign competitors. EU standards were therefore implemented in 2003. Through COARM information about criteria of export licenses and rejected applications are published and shared. EU has over the last decades adopted several restrictive sanctions against states in terms of weapons trade, and Norway usually supports these provisions. The most central regulations are directed towards; Iran, Syria and North Korea. Furthermore, the cooperation has resulted in participation and leading partnership in several international conventions that restrict spread of certain types of weapons. Examples are the Non-Proliferation Treaty, Chemical Weapons Convention and Biological and Toxic Weapons Convention (Det Kongelige Nærings- og

Fiskeridepartementet, 2014). Norway is also a part of the Wassenaar Agreement, which was established in order to contribute to regional and international stability through transparency and responsibility to prevent destabilizing accumulations of arms (Wassenaar, 2015).

In December 2014, the first international convention regulating trade of military equipment, the Arms Trade Treaty (ATT), was signed by members of the UN in New York. The treaty is an attempt to regulate international trade of military equipment with the purpose of contributing to international and regional peace, and reducing human suffering. It obligates member states to monitor and to ensure that weapon exports are not being used for human rights abuses, including terrorism. Members of the UN are expected to enforce regulations of exports that can track the destination of weapons to ensure that they do not end up in conflict areas such as Syria (Kytömäki, 2014). There are challenges within the industry as the business environment is in danger of becoming divided between actors striving to operate responsibly, and those who utilize regulatory loopholes to gain market advantages by being lenient on issues such as end-user control. This situation is not healthy for the industry, but global treaties such as ATT serve as instruments against this (Kytömäki, 2014). It is hoped that a common regulatory environment could provide fewer risks and uncertainties, improved transfer security, predictability and reliability for the players within the industry.

Repurchase agreements

As the international defense industry is characterized by states' favoring of domestic contractors, repos are seen as a necessary instrument to secure a competitive Norwegian defense industry and access to foreign markets. This is illustrated through article 296 of the Amsterdam Treaty, which excludes military equipment from the EAA agreement (Regjeringen, 2010). If the Norwegian Armed Forces purchases equipment for more than NOK 50 million from a foreign supplier, the government demands that the supplier guarantees investments in operations performed by Norwegian companies (Regjeringen, 2012). Several experts and scholars have criticized the use of repos as they see this as an inefficient and expensive way to do business (NHH, 2007). Besides gaining access to markets, repos make it easier for Norwegian defense companies to form alliances with strategic partners and cooperate with international players in terms of R&D.

R&D contracts

The Norwegian government also invests heavily in R&D to support the Norwegian defense industry. This is done through public R&D contracts (OFU-Contracts) provided by the authorities. The Defense Research Institute (FFI) partners with several Norwegian companies to develop needed equipment for the Norwegian Armed Forces (Regjeringen, 2010). This is done by funding projects and providing state of the art research labs.

The Penguin Missile family is an example of collaboration between FFI and KOG in terms of developing advanced military equipment (Westby, 2015).

Geopolitical forces

The world's geopolitical tension is driving the states' spending in terms of military equipment and weapons. Currently, 65 countries and 640 separatist groups or militias-guerillas are involved in wars and conflicts around the world (WIW, 2015). Some receive more attention from the international press, and thus have more impact on politicians and defense spending. Consequently, the authors will focus on those that currently impact defense spending in KOG's key regions.

The Russian saber is rattling and the invasion of Crimea has received a lot of attention from other European countries and USA. Sanctions have been enforced and the relationship is turning into one that resembles the cold-war era. This has led to a renewed focus on military and security in Europe. The threat of terror acts has also increased recently. In 2015, two terror attacks have been acted out in Europe (Denmark and France) and the Islamic State (IS) is growing stronger. States in the Middle East are also increasing their defense investments due to concerns related to the Arabic Spring. Oman just placed an order of NOK 3.2 billion with KOG Defense to modernize their defense (Lunde, 2015). Furthermore, throughout history there has been a disagreement between the Western World and Iran in terms of nuclear facilities. USA and its western partners suspect that Iran are using centrifuges to produce uranium intended for nuclear bombs, while Iran argue that it is intended for medical research and power plants. Iran has through sanctions been omitted from the global market place as the US demands inspections. Currently, negotiations are on the agenda, with June 30th as their common deadline. The tension creates uncertainty in the region and contributes to increase defense spending both in the Middle East and Western countries (New York Times, 2015). After Kim Jong-Un took over as the leader in North Korea they have had an aggressive attitude towards the US. The state has also been provoking by testing of nuclear weapons and their direct confrontations with South Korea, an US ally and important customer of KOG. Furthermore, the current situation in the South East China Sea is contributing to increased defense spending in Asia. China, Taiwan, Vietnam, Malaysia, Brunei, Japan and the Philippines are competing for territorial claims over the right to exploit the regions vast oil and gas reserves (Council on Foreign Relations, 2013). The US is highly involved in the conflict as a negotiating partner.

The latest issue within defense and security is cyber-attacks on states. During the last two years there have be several instances where public agencies or companies have suffered from attacks on their IT systems. In December 2014, Sony's network was hacked and several confidential e-mails of Sony executives were leaked. Defense contractors and commercial companies have increased their efforts to develop systems that enhance the

security of intellectual property, and it is consensus among CEOs within the industry that this is a field with great opportunities in the future (KMPG, 2014).

It is beyond the scope of this thesis to analyze and forecast the outcome of the current conflicts around the world. However, as defense spending is the main revenue-driver of KOG Defense. It is important to understand the nature of the current conflicts and the world's relative conflict level.

Political and Legal factors' Impact on the Maritime Industry

KOG's maritime operations are influenced to a large extent by the development in the maritime trade. Shipowners' ordering of new ships and changes to existing ships are the main revenue drivers of KOG's maritime operations. Hence, the authors will in this section analyze the different macroeconomic factors that may have an effect on the maritime trade.

The Maritime Laws

Figure 4.2: The Maritime regulation process

Source: Author's own compilation based on Stopford (2009)

Maritime regulation is arranged through the system illustrated in Figure 4.2. The exercise of organizing the interests and achieving compliance to a dependable body of maritime laws falls to the United Nations (UN). The broad structure is set by the United Nations Convention on the Law of the Sea (UNCLOS 1982), while the responsibility of establishing and maintaining applicable regulations within this structure is delegated to the two UN agencies, the International Maritime Organization (IMO) and the International Labor Organization (ILO) (Stopford, 2014, ch.16). The IMO sets the rules with regards to ship safety, pollution and security, while the ILO is responsible for laws governing the people on board vessels (Stopford, 2014, ch.16). It is also the task of the

IMO to establish 'conventions' that become law once they are enacted by the maritime states. The other important 'players' in the regulatory process are the classification societies, which are the maritime industry's system for the regulation of the technical and operational standards of ships. They make rules for ship construction and maintenance (Stopford, 2014, ch.16).

To remain competitive as a manufacturer of maritime supplies one seeks to verify that products will function effectively over their expected lifetime. The most effective way to do this is to be granted a certification and Type Approval, which is granted to a product that meets a minimum set of regulatory, technical and safety requirements (Balance, 2014, p.55). The IMO, flag states and classification societies regulate the Type Approval process, which consists of three steps. First, the supplier submits an application containing all fundamental information about the product. The second step consists of a thorough evaluation of the application executed by the Classification Society. If all requirements are met, the Type Approval is granted and the Class Society puts the supplier's product on the list of type approved products. The approval is usually valid for five years before it needs to be renewed (Balance, 2014, p.55).

The Type Approval works as a vital prerequisite for marine suppliers in terms of the marketing of their products. The requirements may vary from country to country and it is therefore often necessary to have more than one type approval for each product. It is also considered a quality sign among the customers in the industry to have multiple certificates (Balance, 2014, p.55). Det Norske Veritas (DNV), ABS (American Bureau of Shipping) and CCS (China Classification Society) are examples of major classification societies that issue Type Approvals (Stopford, 2014, ch.16). All three are members of the International Association of Classification societies, which consist of ten members and account for about 90% of world classification activity (Stopford, 2014, ch.16). KOG operates in countries on every continent of the world so it is crucial for them to maintain a good reputation among the different societies. This means that they need to be thorough when developing new products, as well as staying updated on the specifications and requirements of the Type Approvals.

New Regulations

The shipping industry has been and will be affected by increased regulations regarding CO2 emissions, ballast water cleaning, and oil pollution. The principal global convention covering issues related to the maritime environment is called MARPOL (International Convention for the Prevention of Pollution from Ships). MARPOL has six technical annexes which set out the detail of the regulations, ranging from prevention of oil pollution and gas emissions to pollution from garbage (Stopford, 2014, ch.16). As the last couple of decades have shown many incidents of major oil pollutions and an increased focus on the global environment, the IMO have amended many of the annexes, resulting in new and stricter regulations. These new regulations have

created a demand from the market for more cost efficient vessels that can meet the specifications from MARPOL.

In particular, there are multiple existing and currently discussed regulations by the IMO and MARPOL that will affect the shipping market depending on vessel size, vessel type, equipment size, etc. (Balance, 2014, pp.62-85). The two most extensive new regulations are related to GreenHouse Gas emissions (GHG) and are called the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP). Both instruments were made mandatory for certain vessel types in 2013, but are planned to cover further types in the upcoming years. The EEDI requires an increased fuel efficiency of 30 percent over a three-phase period up until 2025 (Stopford, 2009, ch.16). The SEEMP is based on a study performed by the IMO, which showed that a 20 percent reduction on a tonnage-mile basis is possible through improved new technology and operations (Balance, 2014, p.84). This regulation is also organized in three phases and after phase 2 (2020), new ships have to operate 20 percent below the IMO reference lines (Balance, 2014, p.84). In addition, MARPOL have introduced new regulations regarding; Sulphur Oxides (Sox), Nitrous Oxides (NOx) and Ballast Water Management. These new regulations have and will have a large impact on the shipping market and impose a challenge as well as an opportunity for the marine suppliers to develop new technology that can help ship owners meet the regulations in a cost-efficient way.

KOG has increased its focus on fuel efficiency and other environmentally friendly solutions in the last couple of years in order to provide ship owners with products that can help the meet the requirements of the new regulations. Their marine automation systems have functionalities that helps reduce fuel consumption and thus environmental pollution (KOG, 2013). More specifically, these systems concern control of the main engine, power production, route planning and dynamic positioning.

Geopolitical forces

There have been at least nine political incidents since the Second World War that have had a significant influence on ship demand. One of the most extensive incidents was the closure of the Suez Canal by the Egyptian government in 1956, which caused oil tankers sailing from the Middle East to Europe to be redirected around the African Cape. This incident caused a significant sudden increase in vessel demand (Stopford, 2009, ch.3).

The last year has also presented geopolitical unrest. However, these events have not infected the shipping markets to a significant extent. Russia's invasion of Crimea and antagonism towards Ukraine did not disrupt any vital trade flows or sailing routes, except from a modest erosion of LPG trades from the two respective countries. Moreover, the West's sanctions towards Russia were widely based, but bypassed Russia's energy production and

trade (Platou, 2015). Lastly, the growing terror group IS shocked the world with their gruesome and brutal actions, but it has not had any significant impact on oil production and trade (Platou, 2015).

Although the geopolitical crises of the last year have not had any substantial effect on the maritime markets yet, history has shown us that it is highly likely that it may affect the markets in the future. The recent Saudi Arabian military operation against Iranian-Supported Houthi rebels in Yemen could potentially block one of the world's crucial oil chokepoints (Business Insider, 2015). According to EIA's factsheet (2014) on global oil chokepoints, 3.8 million barrels of oil passes through the conflicted Bab el-Mandeb in Yemen each day on its way to Europe, Asia and the US. There is no sign of the Bab el-Mandeb being compromised as yet, but the chokepoint's global significance could potentially lead to an increase in the oil price if the chokepoint is blocked (EIA, 2015). Situations like these may lead to disruptions in the supply and demand of vessels, which again can affect KOG's maritime revenues. It is therefore important, although complex and hard to foresee, to have an understanding of how these geopolitical forces may impact the maritime markets.

Expected effect of political and legal forces on future growth prospects for KOG

The political and legal forces are expected to have **positive** effect on the defense forecast, and a **positive** effect on the maritime forecast.

Very Positive	Very Positive
Positive	Positive
Neutral	Neutral
Negative	Negative
Very Negative	Very Negative

Continued opening of the defense market within EU are likely to increase the competition, however KOG Defense will also be presented to new opportunities and as a highly differentiated defense contractor it is expected that they will capitalize on this change. Further, the export regulations are expected to remain stable and have little impact on the future growth. Lastly, increased geopolitical tension is expected to trigger increase in spending by states, and thus have a positive impact on the defense segment forecast.

The new regulations by IMO and MARPOL are likely to have a positive impact on KOG Maritime as it presents new opportunities to some of its products and introduce new product development prospects. Currently there are no geopolitical situations that affect KOGs maritime revenues, but according to history the industry is likely to experience such situations in the future. This could both have negative and positive impacts on the segments activity. However, potential future geopolitical situations will not be taken into consideration when forecasting the future of the maritime segment.

4.1.2 Economic forces

Gross Domestic Product

Real GDP is an important indicator of an economy's health. It is an inflation adjusted measure of all goods and services produced by a country within a calendar year. An annual GDP growth of 2.5-3.5% is generally considered to be optimal as this is enough to create corporate profits and jobs without causing too much inflation. Development in real GDP within Kongsberg's strategic regions will both be important for the maritime and the defense segment.

Figure 4.3: Development and projections of real GDP growth in KOG's key regions
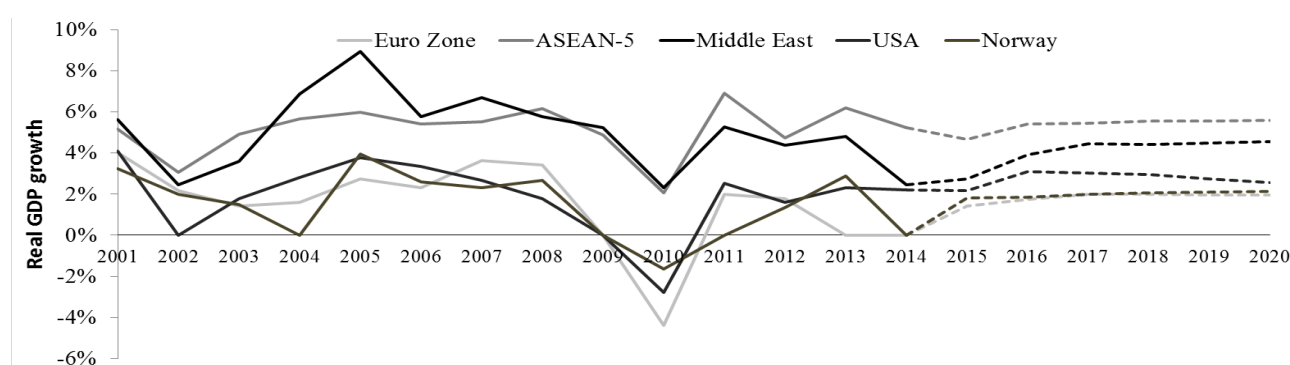
Source: IMF (2014), Compiled by authors

The financial crisis caused a significant negative development in GDP in 2009 for all continents. The GDP rate later recovered in 2010, before experiencing a new negative development caused by excessive debt levels in countries such as; Greece, Spain, Portugal, Italy and Cyprus. The rate has started to recover slowly and is expected to reach historical levels in 2014/2015 (Figure 4.3). Developed Asia has experienced tremendous growth, led by the industrialization of China and technological excellence in Japan and South Korea. The Middle East has also experienced relatively high growth rates and improvements in accumulated wealth. This is mostly driven by high oil prices, and thus the growth is expected to flatten out over the next years. USA suffered hard during the financial crisis as many of their large financial companies struggled. Lately they have gotten their economy back on track and it is expected that the region will experience further growth in the future. Norway was not struck as hard as the other developed economies during the Financial Crisis. However, the economy is highly dominated by the oil industry and 2014's price reductions have slowed down the growth. As the oil price is expected to increase somewhat during 2015 and 2016 the development in real GDP will improve, but there are still a lot of uncertainties tied to the outlooks.

Interest rate and currency exposure

Figure 4.4: The Norwegian Bank's key policy interest rate
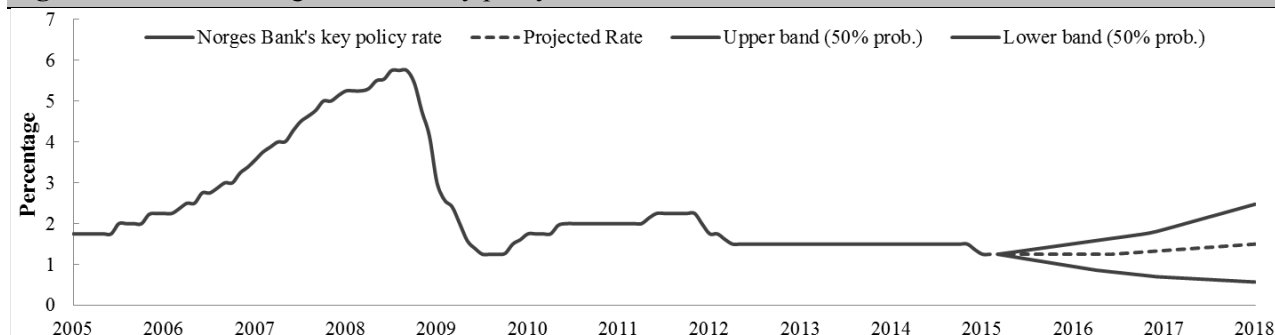
Like most other companies, KOG is affected by interest rates. Kongsberg's interest rate risk is mainly related to KOG's limited debt portfolio. The group's main source of financing is loans from their partner banks and loans in the Norwegian Bond market. After the financial crisis, the Norwegian key policy interest rate has been held at a historically low level to trigger economic growth and consumption. The rate peaked in mid-2008 and experienced a substantial drop to 1.3% in mid-2009. The interest rate is expected to be maintained at a low level in the future; reaching 1.5% during 2017/2018 as illustrated in Figure 4.4.

Figure 4.5: Development in EUR/NOK and USD/NOK
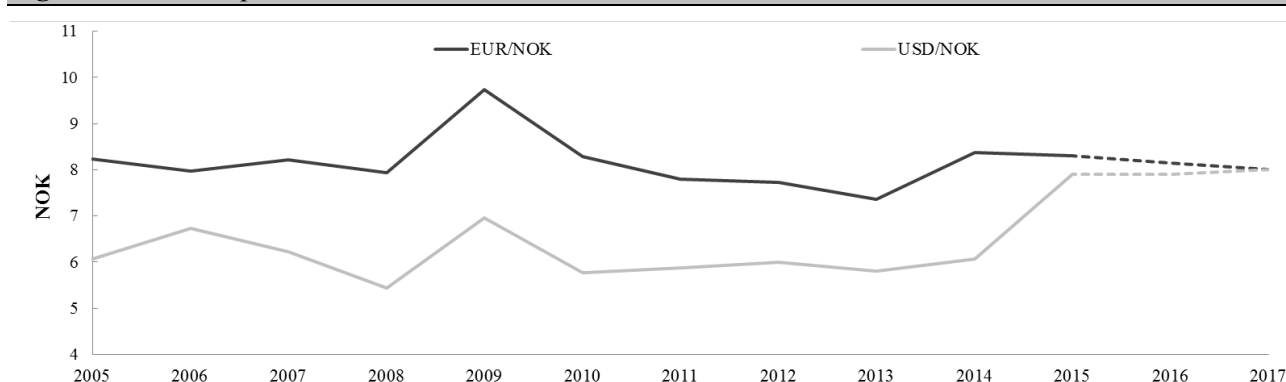
Kongsberg Gruppen is a multinational company earning more than 75% of their revenue outside of Norway. As the company's primary markets are Asia, EU and North America a large part of their revenue is in EUR and USD. In times of a weak Norwegian exchange rate to these currencies, Kongsberg is benefiting from having most of their costs in NOK while their revenue is in foreign currency. This can to some extent serve as a natural hedge. The Maritime segment is mainly driven by oil price, which is also true for the Norwegian Krone. When the oil price decreases, NOK is weakened and vice versa. Thus, when demand for oil falls, the NOK value of their revenue is increasing as their costs remain the same. This helps them defend their EBITDA margins in

tougher market conditions (Sparebank 1 Markets, 2015a). However, KOG is hedging most of their currency exposure, so it is not expected that we will see any effects of the attractive currency situation before late 2015.

Economic forces affecting KOG's Defense segment

Defense spending by states

States need a healthy economy to be able to purchase military equipment as these transactions often are of a significant size. The state's decision processes are often long and bureaucratic and it is easy to imagine that a healthy economy with positive outlooks is an important precondition when buying from foreign suppliers. Growth in real GDP and defense spending are correlated in the longer-term (McKinsey, 2013).

The demand within the defense industry is highly influenced by economic decisions made by politicians. Thus, besides the geopolitical climate discussed earlier the demand will also be determined by current governments' willingness to invest and maintain their military. Currently, Kongsberg benefits from a strong relationship with the Norwegian Government which provides stability. The Norwegian defense budget is NOK 43 billion of which roughly 25% is allocated to investments (Danske Bank Markets, 2014a).

Besides its partnering with the Norwegian government, Kongsberg Gruppen generates most of its defense sales through NATO and its member countries. During their meeting in Wales in 2014, NATO urged their members to spend a minimum of 2% of GDP on defense, due to the changes in geopolitical climate (NATO, 2014). Most of the countries have a difficult time meeting the ambition as the financial environment in Europe has been difficult in the last year. Nevertheless, whenever the members meet these expectations there should be a growth potential for KOG Defense in the medium to long-term as there is a need to reform military in a more technologically sophisticated way (Danske Bank Markets, 2014a). The current spending is illustrated in Figure 4.6:

Figure 4.6: Defense spending by NATO members, percentage of GDP
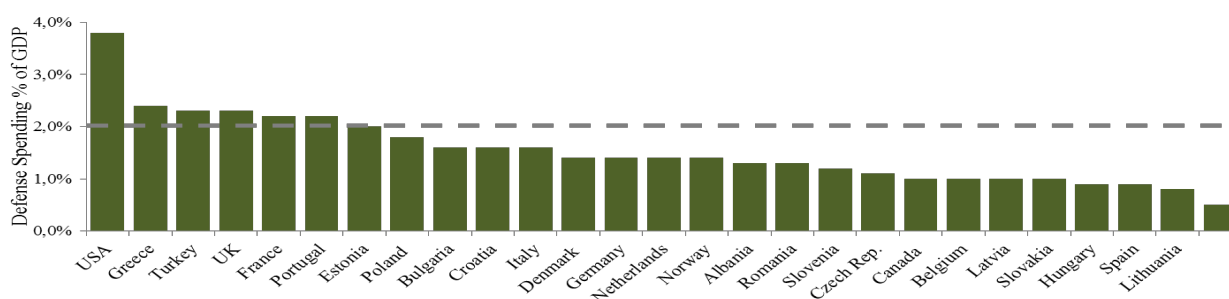
Source: SIPRI (2014), Compiled by authors

Economic forces affecting KOG's Maritime segment

GDP growth effect on Maritime earnings

The demand for ships and maritime supplies is to a large extent determined by the development in GDP. Fluctuations in the rate of GDP growth creates cycles in seaborne trade, which creates a cyclical pattern in the demand for ships (Stopford, 2014, ch.4). The ship owners place their orders for new ships based on estimates of the future demand for shipment of goods and will start to order ships when the estimates are promising. Shipbuilding is a long-process business and there is a time-lag of 1 to 4 years from the order is placed to the vessel is delivered. Consequently, the size of the merchant fleet will not grow completely in line with the GDP. In times of economic prosperity, ship owners rush to the purchase & sale market causing the prices of second-hand ships to go up. When second-hand prices become too expensive, the shipping companies turn to the newbuilding market. As there is a time-lag from order to delivery, there will be an oversupply of ships in the market at the time they are delivered, which forces the freight rates down. Consequently, the price of second hand ships drops fast and the ship owners have to turn to the demolition market. As the ships are scrapped, supply falls and the freight rates rises again (Stopford, 2009, ch.5). This phenomenon is reflected in Figure 4.7. The growth in the merchant fleet is continuously lagging behind the growth in GDP and seaborne trade. The time-lags affect the marine supplies industry as well as they lag behind the effects of upturns and downturns in the shipbuilding industry by 1-2 years.

Figure 4.7: The relationship between GDP growth, seaborne trade and merchant fleet size
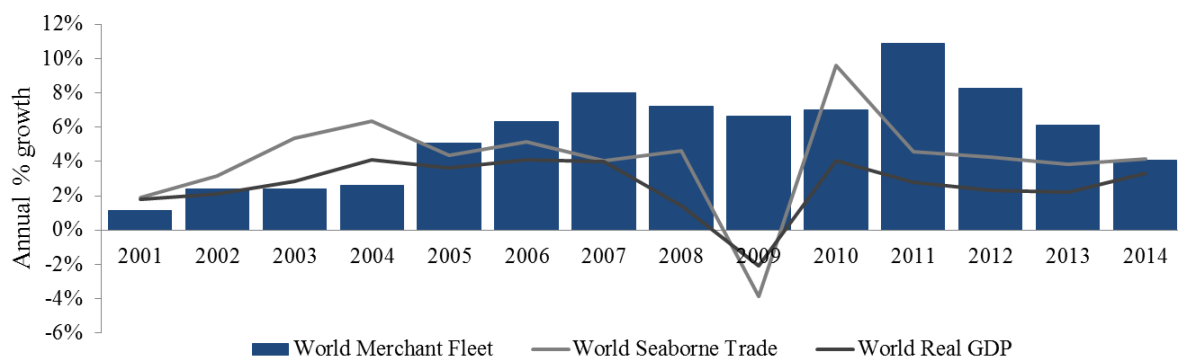
Source: Author's own compilation based on OECD (2014), Platou (2014), IMF (2014)

The Oil Price's impact on Maritime revenues

As 60% of KOG's maritime revenue comes from the offshore segment it is important to analyze the factors that affect this market (KOG, 2014). The demand for newbuilds in the offshore segment is a function of numerous factors, but the most important factor is the global oil exploration & production (E&P) spending, which in turn is affected to a large extent by the development in the oil price. Last year was a year where the oil market

experienced a production war between Saudi Arabia and the US' shale oil production, which caused the oil price to drop by 60% from June 2014 to mid-January 2015. According to EIA (U.S. Energy Information Administration) (2015), global petroleum consumption grew by 0.9 million bbl/d (barrels per day), averaging 92.2 million bbl/d for the year in 2014, while the global petroleum production grew by 1,5 million bbl/d averaging 93.0 million bbl/d in the same period. The current global over-supply is estimated at about 1.2 million bbl/d and OPEC's lack of a production cut will probably increase the likelihood of an oversupplied market for a long period of time (EIA, 2015). However, there is an ongoing cost discipline among E&P majors and the postponement of a number projects will most likely reduce the incremental non-OPEC supply. This will help prevent the oil price from a collapse from current levels. Swedbank (2015) looked at oil price (Brent) data from 1985 through today and divided the return data into periods of 25 weeks and found that in 41 of the 1,530 weeks since 1985, the oil price declined by more than 50% over the previous 25 weeks. Only three of these observations have been followed by a new 25-week period with an oil-price decline (twice in 1986 and once in November 2008). Given that the oil price declined by almost 50% over the past 25 weeks, history suggests that there is around 7% probability (3/41) of a further oil price decline and a 93% probability of an oil-price increase (Swedbank, 2015). In Appendix 9, oil price expectations from different brokerage firms and international organizations have been summarized. The authors have taken an average of these projections as a basis for our E&P spending projections in the next section. The projections are showed in Figure 4.8

Figure 4.8: Oil price projections

	$/bbl. Real
2015	62
2016	75
2017	80
Long-term	81

Source: ABG (2015), DNB (2015), Swedbank (2015), Nordea (2015), EIA (2015), IEA (2015)

E&P Spending

A leading factor of the demand for KOG Maritime's products in the Offshore, Oil & Gas segment is the development in E&P spending. Appendix 9 illustrates the relationship between the different stages of the production. It shows how the E&P spending drives the demand for offshore vessels, rigs and platforms, which again affects KOG's maritime order book to a large extent. A large part of KOG Maritime's revenue is therefore a positive function of the global E&P spending. In Figure 4.9 the authors have run a regression showing the relationship between two variables; x, which represents the oil price (brent crude spot), and y, which represents the capital expenditures (CAPEX) of 48 major E&P companies from 1987 to 2014. The regression shows a strong positive correlation (R squared of 0.9424) between the two variables. Consequently, the authors believe

that the future development in E&P spending will follow the development of the oil prices found in the previous section to a significant extent.

Figure 4.9: Line-fit plot of the relationship between oil price and CAPEX of E&P companies
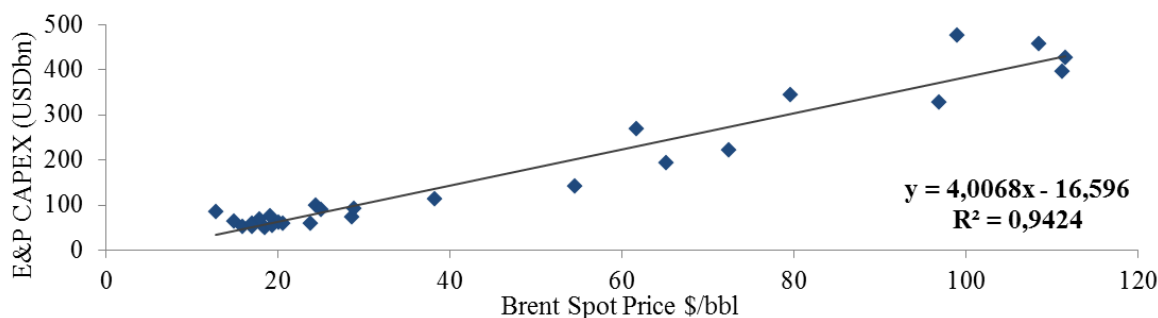
Source: Author's own compilation based on data from the Department of Commerce, US (2014)

For the E&P companies the most important budget measure is the average breakeven rate of production, also called the hurdle rate. When the oil price drops below this rate, the exploration and development of new fields is scaled back and focus is put on cutting costs. The break-even rate is not constant and will vary from project to project. According to DNB Markets (2015), the breakeven price for E&P companies lies in the range of $40 to $100 bbl depending on the accessibility of the oil, technology, economies of scale etc. Nevertheless, it is certain that many projects will be or have been put on hold with the last year's oil price development.

Figure 4.10: Historical and projected oil price and E&P CAPEX
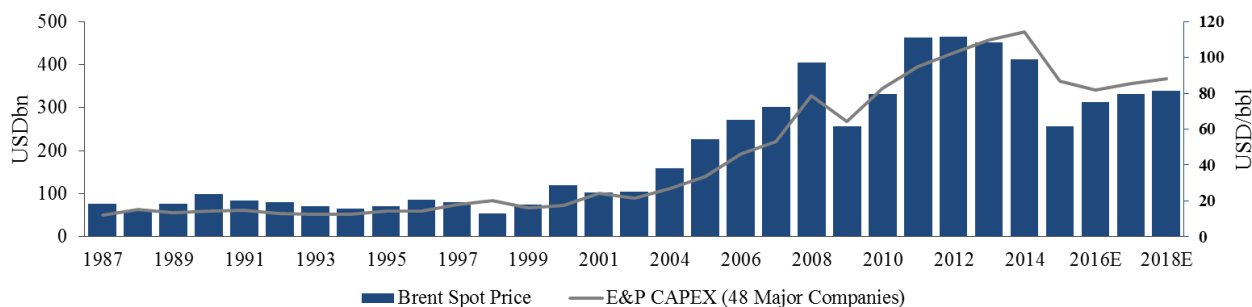
Source: Author's own compilation based on Department of Commerce (2014), EIA (2014)

The authors have used two different forecast methods in the projections for E&P spending in the next years. For the short term the authors believe that the most reliable indication of E&P spending growth is the CAPEX budgets of the major E&P companies. Hence, the short term is forecasted by taking the average projected growth rate of CAPEX budgets from 15 major E&P companies from 2014 to 2015. For the longer term (2016-2018) the regression equation in Figure 4.9 has been used, where x is set equal to the oil price projections in the previous section. In addition, the E&P spending projections from 7 brokerage firms has been used where the average of

these forecasts has been included in order to smoothen out the projections from the authors' own forecast. The results are illustrated in Figure 4.10 above and the data can be seen in Appendix 9.

Expected effect of economic factors on future growth prospects of KOG

The authors believe that economic factors will have a **positive** impact on future growth for KOG Defense and **negative** impact on KOG Maritime.

Very Positive	Very Positive
Positive	Positive
Neutral	Neutral
Negative	Negative
Very Negative	Very Negative

The defense segment will benefit from improving GDP rates as this is likely to increase defense spending in many of the markets that has been essential in previous years. The new spending target set by NATO, urging members to spend at least 2% of GDP on their military further supports this projection. Lastly, the segment will also benefit from the attractive currency situation in the shorter term.

KOG Maritime will to some extent benefit from improving GDP rates, which is likely to increase the demand for seaborne trade and ship building in the merchant marine sub-segment. However, as most of the segment's revenue is generated in the offshore industry, the oil price decline is likely to have a larger negative effect. The reduction in oil price will have a negative impact on E&P spending in both the short- and medium-term with a significant projected impact on the segment.

4.1.3. Socio-Economic Forces

The defense and maritime industries are like all other industries influenced by public opinion and socio-economic forces. One element that will potentially influence both industries is the demographic development. With decreasing birth rates and an ageing population in Europe, available personnel to the industries in this region will be reduced (TNO, 2009).

Factors affecting Defense revenues

The compulsory military service has been abolished in most countries in the EU. Migration and automation may diminish the need for human resources to some extent. However, foreign nationals are usually not allowed to join the military in the respective country. Today, all OECD countries except Poland experience net immigration. Immigrants' contribution to the labor force has had a positive effect on the development of domestic economies in most cases. However, it imposes security challenges as the cultural differences in the society increase. Minorities may increase the threat of terror and the need for security initiatives (TNO, 2009).

Another important socio-economic force is the public opinion, as defense spending is a highly political matter. Fear of terror and risk perception is likely to be positively correlated in relation to public opinion of defense spending. A conflicting argument is the criticism of the recent wars in Iraq and Afghanistan. TNO (2009) argues

that political trends among teenagers and young adults may drive this opposition, as supporters of environmentalism, humanism and left-leaning stands are growing. It is also important to understand that the defense industry is competing for funds with other suppliers of the government. The last years have shown how a growing proportion of governmental spending is allocated to healthcare. Many of the countries within the region are spending between 5-10% on healthcare (TNO, 2009). However, there are dual-use synergies between the defense industry and healthcare. R&D programs within the defense sector have provided cutting edge healthcare technology to the civil market. This provides justification for why governmental funds are being directed to defense development programs.

Factors affecting Maritime revenues

In the maritime industry, increased globalization and urbanization has led to a more international workforce onboard the vessels of the world's merchant fleet (Stopford, 2009, ch.16). As there is no requirement to employ nationals either as officers or crew, ship owners will often hire the cheapest workforce possible. This often involves hiring crew from less developed countries with lower wage levels. However, the requirements for safety and conditions of employment for seafarers have become stricter in recent years.

Towards the late 20th century the maritime industry and governments were finding the complicated structure of maritime labor conventions hard to approve and prosecute (Stopford, 2009, ch.16). In 2006, the ILO and the international seafarers and ship owners' organizations developed a joint resolution, which called for international standards applicable to the industry as a whole (Stopford, 2009, ch.16). The new convention sets minimum standards for seafarers, including conditions of employment, hours of work and rest, accommodation, safety systems on vessels, healthcare etc. (Stopford, 2014, ch.16). For marine suppliers this development presents both opportunities and risks. Firstly, it creates opportunities to develop sustainable technology in existing and new markets. This involves both ensuring that suppliers and business partners comply with principles that are in alignment with sustainable social responsibility, and also the opportunity to innovate and develop new technology that can enhance the safety and conditions onboard vessels. Secondly, the development presents risks with regard to maintaining the right to engage in business activities. Without routines for analysis, verification, reporting and follow up of possible violation of worker's rights linked to their own operations, marine suppliers may risk losing the opportunity to grow (KOG 2014).

Expected effect of socio-economic factors on future growth prospects of KOG

The authors believe that socio-economic forces will have a **neutral** effect on both of KOG's divisions.

Very Positive	Very Positive
Positive	Positive
Neutral	Neutral
Negative	Negative
Very Negative	Very Negative

Increased immigration could lead to cultural differences increasing the threat of terrorism and legitimate further defense spending. On the other hand there is a trend among newer generations that one should limit spending on defense and rather focus on other solutions.

The maritime segment could be affected by stronger demand of safety for crew and seafarers, which ultimately could serve as an opportunity for new products. However, this could also increase the risk of legitimacy in relation to engaging in business activities with ship owners that are lenient on safety of crew.

4.1.4. Technological and Innovational Forces

Kongsberg Gruppen should be recognized as a high-tech company within all fields of its operations. The Group is a leading supplier within many of their products, and for some products they are the only supplier on a worldwide basis. Therefore, technology and innovation is vital both for the company's existence, but also in terms of keeping up with the respective industries and staying competitive. The fact that KOG invests around 10 percent of sales in R&D underlines this importance (KOG, 2013). Figure 4.11 illustrates the R&D spending of the major industries, and their relative spending to revenues.

Figure 4.11: R&D intensity segmented by industries
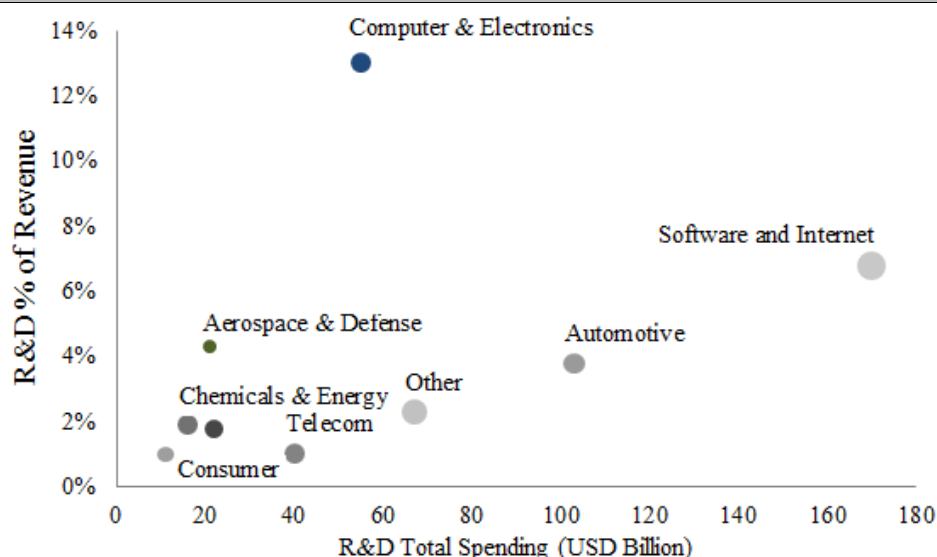
Source: Compiled by authors, Strategy& (2015)

Technological and Innovational forces affecting KOG's Defense segment

The defense industry has been one of the most innovative industries throughout time and is responsible for the internet, space travel, and much of the telecommunications we know today. Often, defense contractors plant the first seeds of the technology used in commercial products when they are developing systems and products for defense purposes. Lives are often at stake, so the technology needs to be accurate and sophisticated. After track records are proven by states' military, the technology is adapted by commercial companies that adjust it into products that create value for individuals or companies before marketing and consumption. Figure 4.11 illustrates that the Aerospace and Defense industry is the third most R&D intensive relative to revenue out of all industries. The real figure is likely to be higher as most of the development projects are partly or fully funded by the companies' domestic governments. However, there has been a shift in new development programs over the last decades. During the cold war era, military spending was high and there was a technology race between the West and Soviet. In recent years the focus has changed from rapid introductions of new programs, to long-lived specialized programs. This is illustrated in figure 4.12.

Figure 4.12: Number of years between new combat aircraft programs
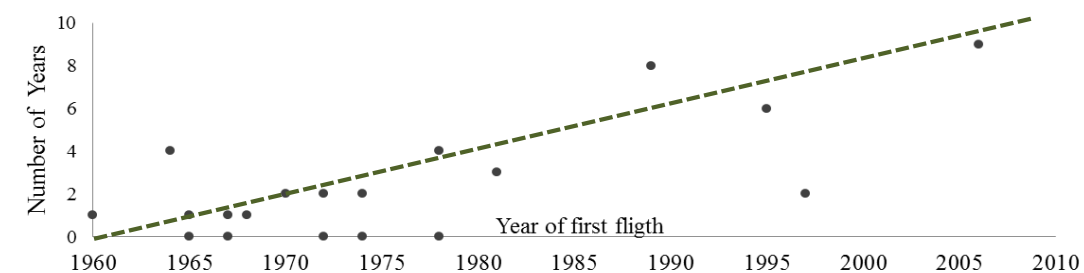
Source: Strategy& (2014), compiled by authors

The change in focus can be explained by a calmer geopolitical climate after the Berlin Wall fell and the fact that governments are focusing more on affordability, as new programs are often expensive. Defense contractors must adapt to the evolvement of the industry and focus their strategic efforts thereafter to remain competitive. As the overall revenue in the industry is declining, efficiency in operating processes are key in order to defend historical profitability margins. Even though engineering is still the most important capability within the sector, the nature of this work has changed as the companies now must address the optimal number of engineers and capability mix (Strategy&, 2014). Different skills and capabilities are required throughout the life cycle of a program. The development stages demands tier one personnel, while the production and sustainment phases are less complex, and opens for less experienced engineers. During the challenging 1990s there was a "hiring drought" and downsizing of junior engineers. This has caused a twin problem in the current workforce situation where there is an excess of highly experienced, highly capable engineers, and a shortage of early- and mid-career talents

(Strategy&, 2014). Figure 4.13 provides an illustration the common workforce situation in many defense companies.

Figure 4.13: Current workforce distribution versus optimal distribution based on seniority
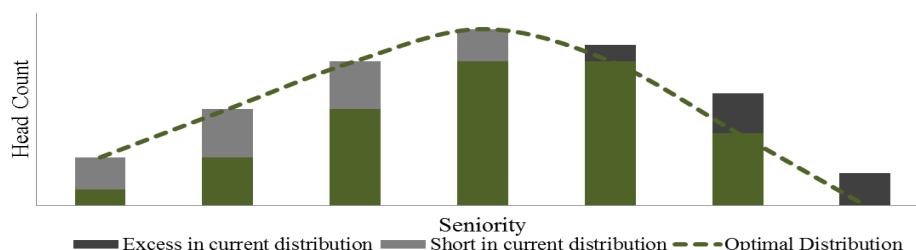
Source: Strategy& (2014), compiled by authors

Without an optimal workforce structure it is more challenging to achieve efficiency gains. Lean principles are already widely used in defense plants. However, where a commercial company might seek to achieve productivity gains year after year, some defense contractors are satisfied by simply not exceeding the budgeted amount of time for an activity. Besides efficiency, it is reasonable to assume that highly capable and experienced workers are concerned about their individual reputation, which might influence their priorities. These employees are likely to add complexity to the systems and products to maximize personal utility. However, it is important to understand that some complexity in a product's design adds value for customers, while some complexity just adds to the cost of development, i.e. adding complexity without any return in price or customer value (Strategy&, 2014).

In the currently shrinking business landscape, defense contractors should ensure that they execute coherent strategies, consistent with their core strength instead of pursuing potential risky growth outside their area of expertise (Strategy&, 2014). Regardless, it is important to understand that the security landscape is not static. The recent terror attacks in Europe have revealed that a new type of threat is emerging from the known force on force combat situation. This new more invisible threat demands a different strategy which focuses more on intelligence and surveillance, which opens up for more dual use technology development that could be provided in cooperation with commercial technology firms (TNO, 2009). The new threat also increases the focus on protection of civilians and civilian infrastructure, for example against future cyber-attacks. Such evolvement opens up new opportunities for the defense companies in terms of new revenue streams and product development.

Technological and Innovational forces affecting KOG's Maritime segment

Technological leadership is also of vital importance in the global marine supplies industry, and especially for KOG Maritime, which is largely involved in developing high-technology systems. KOG Maritime develops its

products and services on the grounds of elementary know-how in technology engineering (Balance, 2014, p.90). In order to keep its global market position it is necessary to maintain this stand and keep a position at the cutting edge of innovation. In addition, it requires a strong understanding of the customer needs, trends, and cooperation with shipyards.

In order to maintain a strong knowledge base, the maritime suppliers build their capabilities around a strong academic framework with heavy engineering capabilities. Consequently, it is of great importance that on-going education and training are developed further, maintained and fitted to the demand of new developing markets and technologies. Balance (2014), performed a survey asking experts in the marine supplies industry what research activities and topics they regard as the technologies of highest importance for specific maritime technology. They found that communication technology, energy technology and environmental technology were the most important developments going forward. Figure 4.14 illustrates the ranking and gives ideas on further important generic technologies which have the potential of sustainable market changes (Balance, 2014, pp.114).

Figure 4.14: Ranking of technologies of highest importance
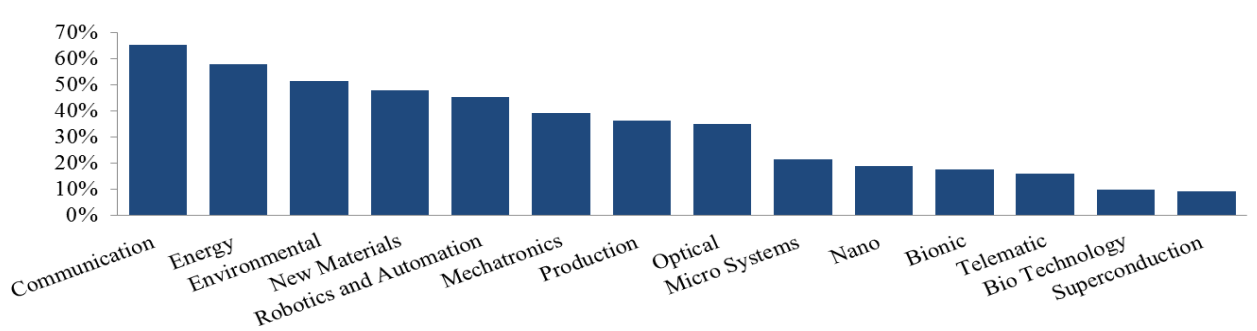
Source: *Author's own compilation, Balance (2014)*

On a more specific level, the recent trends have been an increased focus on technologies to improve energy efficiency, oil spill fighting, offshore wind technologies and offshore oil & gas technologies (Balance, 2014, p.113). Another example is emission abatement technologies, where new legislation forces vessel managers and entities to consider new technologies. Furthermore, so-called 'full-picture solutions' are becoming more and more important in the industry as there is a trend towards making all electronic systems on a vessel integrated so that they can be easily controlled from the bridge. This makes the operations of the vessels easier for the crew, as well as more cost-efficient. KOG Maritime has focused largely on the development of integrated systems in the last years and has several different types of these systems in their product portfolio depending on the level of integration and the type of vessel (KOG, 2014).

Expected effect of technological forces on future growth prospects of KOG

The authors believe that the technological forces will have a **positive** impact on both divisions.

Very Positive	Very Positive
Positive	Positive
Neutral	Neutral
Negative	Negative
Very Negative	Very Negative

Changes in the overall R&D perspective by states have increased the need and importance of maintenance of defense programs. KOG invested in facilities to accommodate this shift in 2008 and are well positioned to capitalize on this change (KOG, 2008). However, the workforce situation in the industry could increase the competition of young engineers and pose as a threat. Further, the changes in threat due to technology evolution present opportunities for new product development.

New technology in terms of energy efficiency serves as an opportunity for the maritime segment. Additionally, the system integration trend is positive for the division as it is favorably positioned to capitalize on this trend.

4.1.5. Environmental Forces

Environmental forces affecting KOG's Defense segment

The US department of defense uses USD 15 billion on fuel each year, which is almost as much as the entire French procurement budget (McKinsey, 2013). This illustrates that pollution and environmental issues are highly relevant for defense contractors, both in terms of their own operations and in terms of providing solutions to their customers that contribute to preserving the environment. Many of the contractors are dependent on using toxic materials in their production processes. Stricter environmental regulations require therefore that many producers must update their production plants in order to meet these new environmental criteria.

In 2007, The European Parliament decided that military aircraft emissions were included in EU's GHG trading scheme (Defense Industry Daily, 2007). These events may introduce a new business opportunity for the defense contractors. Initiatives could include improved understanding of exact age and use rates of petroleum fueled engine components, which allows engines to be maintained at levels that increase their fuel efficiency, limit their emission and help reduce their operating cost (Accenture, 2008).

The partnership trend is an effect of bids on military programs, which has resulted in geographical dispersion of the manufacturing process in order to minimize costs and risk elements. It is likely that the globalization of the supply chain will increase requirements of inter-facility transfers and therefore programs' emission footprint. Further, the consumption of local resources such as land, water and power are likely to increase due to investments in new plants (Accenture, 2008). The defense contractors can address these challenges by co-locating facilities to reduce emissions from inter-facility transfers, and consolidate sourcing and procurement to reduce the costs and environmental impacts. These initiatives may also increase the efficiency of the supply

chains and provide financial benefits through a high degree of transparency, which can ultimately enhance optimization and improve the attractiveness of the contractor as a supplier of systems (Accenture, 2008).

Environmental forces affecting KOG's Maritime segment

KOG Maritime is involved in the oil, gas and merchant marine industries, all of which face challenges related to GHG regulations. Although the division has no activities of its own that cause serious emissions to air or water, the division's growth in recent years means that their total footprint on the environment has increased. There is an increasing demand for energy and transportation, and although alternative greener energy and greener vessels are introduced to the market, oil and gas will continue to be the largest energy sources for many years to come (KOG, 2013). This has caused the market to focus on ways to ensure greener shipping. More environmentally friendly shipping involves raising the awareness of optimal operations to minimize vessel's emissions, which requires training of crew and new technology. Many shipping companies, educational communities and systems suppliers like KOG have taken part in a project known as Energy Management in Practice in order to develop new efficient ways to handle this problem (KOG, 2013).

Another focus in recent years in search for alternative greener energy has been the development of the offshore wind industry. This development is to a large extent dependent on national energy policies and their implementation. According to Global Wind Energy Council's 2013 global outlook, wind energy will stand for 10 to 25% of the world's global energy demand by 2030, depending on different scenarios proposed by the IEA (Balance, 2014, p.99). A problem in the industry has been that the capital and operating expenditures have been too high due to the complexity of installing and operating the windmills in deep waters and harsh conditions. This presents opportunities for suppliers who are able to develop new systems and technology that can lower these costs in the long-term. KOG embarked on the wind power market in 2012 (KOG, 2014). They are already delivering monitoring and systems to the maritime sector which could be applied to managing and controlling wind parks in order to optimize operations and minimize costs.

The new maritime regulations discussed in the Political and Legal forces introduce a market for systems and products related to optimization, safety, operation and control of machinery, production processes and equipment. KOG Maritime among others has technology systems and products which automate, regulate and optimize operations. These systems offer functionality that helps reduce fuel consumption and thus environmental pollution. More specifically, areas of focus include control of the main engine of vessels, power production route planning and dynamic positioning. Moreover, suppliers that focus on the delivery of systems and services which facilitate the efficient use of resources, more efficient sailing routes and safer operation of vessels could therefore develop a competitive advantage in the long-term (Balance, 2014, p.90).

Expected effect of environmental forces on future growth prospects of KOG

The environmental forces are analyzed to have a **neutral** impact on KOG
Defense and KOG Maritime.

Very Positive	Very Positive
Positive	Positive
Neutral	Neutral
Negative	Negative
Very Negative	Very Negative

New regulations may force contractors to invest in new production plants that
are more ecofriendly and their emission footprint may be penalized through
fines. However, KOG Defense's facilities are rather new and most likely
prepared for future environmental regulations. The increased focus on environmental issues may pressure the
contractors to move towards the "sustainable value chain".

For KOG Maritime the move from oil as the major source of energy may threaten the demand for its offshore,
oil & gas products and services in the long-term. However, many of its products could be applied to other
industries if they were developed further, i.e. windfarms. Additionally, the environmental pressure on merchant
and offshore shipping may open new opportunities in terms of energy saving systems.

4.1.5. Total impact of macroeconomic forces

Based on the PESTEL analysis the overall future outlook of the macroeconomic factors affecting the growth
prospect of the two industries is considered to be **quite positive** for the defense industry and **slightly negative**
for the maritime industry.

Figure 4.16: Overview of the impact form macroeconomic factors
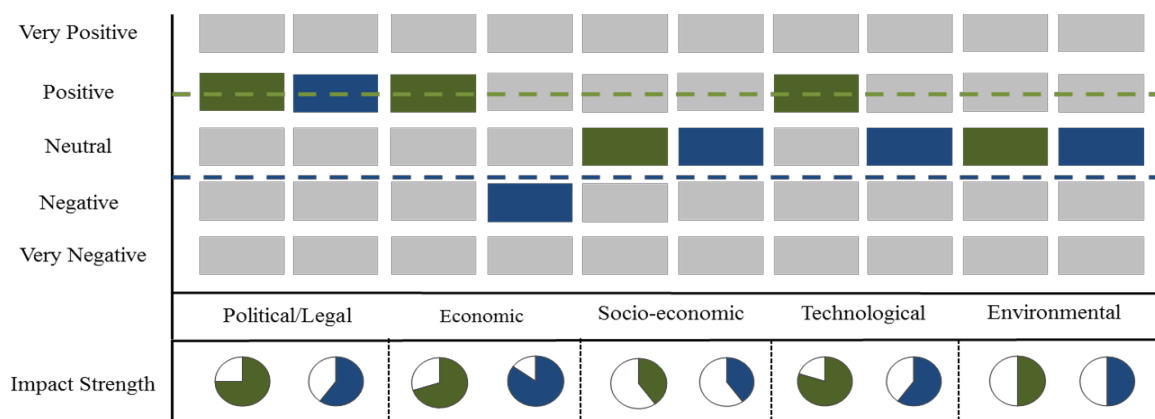
The weights of the different forces are considered to be unequal. The authors argue that technology and political
are the most influential factors within the defense industry, and that the economic outlook is the most important
within the maritime industry. However, one should note that these weights are only meant to illustrate that the
different forces carry different power.

4.2 Porter's Five Forces

Porter's five forces is a strategic framework that was established by Michael Porter in 1979. The framework contends that the attractiveness of an industry depends on five factors, and indicates how the economic value created by an industry is divided between related parties. Generally, the attractiveness is a function of the competitive landscape, and a high level of competition reduces the chances of obtaining abnormal returns (Porter, 1979). The strength level of each factor will be rated on a five-step scale, ranking from 'very high' to 'very low'. A lower rating, other things being equal, suggests a greater potential for profit generation.

The purpose of the analysis is to gain a deeper understanding of the different forces that is shaping profitability in the Maritime and Defense industries. Providing this insight will be vital when forecasting future cash flows later in the thesis. The following analysis will only consider the characteristics of the sub segments where KOG is present, and the main focus will be within the geographical regions where the company generates most of its revenue.

X.2.1. Threat of new entrants

New entrants to an industry bring new capacity, desire to gain market share, and often hold substantial resources (Porter, 1979). The seriousness of the threat of entry depends on whether there exist barriers to entry and how the existing competitors react to threats.

Threat of new entrants in KOG's Defense segment

Approximately 90% of KOG Defense's is obtained from Missile and Missile systems, Military Robotics and Battlefield Management Systems (Westby, 2015). Within these markets there are a few strong players with differentiated products. There are also significant initial investment requirements in terms of product design and manufacturing (TechNavio, 2013a,b,c).

Profit margins within the defense industry have been relatively high throughout history, making the industry attractive for new entrants. Since the initial investment requirements are high, new companies generally do not hold the financial resources to enter. However, established commercial companies might pose a threat. When surveyed by KMPG (2014), some of the CEOs in the industry mentioned that entry of commercial companies within segments such as Battlefield Management Systems was a potential competitive threat. Large technological companies such as Microsoft are world leading when it comes to developing software systems. As the geopolitical environment changes, the need for surveillance increases. It might therefore be attractive for companies like Microsoft to develop software systems tailored for the defense industry. Missiles and Missiles systems are not comparable to any commercial products or industries, as the potential entrant must start from scratch. Additionally, the economies of scale are significant within the industry, but even more important are the

current companies' positions on the learning curve. KOG has had operations within defense for 200 years, while new companies must attain the know-how and experience equivalent to the current companies within the industry to survive. Another aspect of the industry is that the contractors strive to differentiate their products in order to hold on to market shares and increase the barriers to enter. For instance Kongsberg Gruppen's Remote Weapon System is the only of its kind in the western world (Lunde, 2015).

It is vital for customers of military products that they can trust the equipment they are purchasing, as lives often are at stake. Brand loyalty among customers makes it easier for established defense contractors to win new contracts with states if they already have engaged in transactions with them before. There are also significant switching costs as military programs are resource intensive both in terms of investment and education of personnel in introductory stages. It is more common to update or maintain already installed equipment or software. KOG Defense Performs maintenance and upgrades to their RWS Protector, which provides them additional life-cycle revenues and at the same time increases switching costs for the customers. As states interact with the same companies through the life cycle of programs, and these same companies are likely to provide products in terms of new investments, relationships are established. This increases the entry barriers further as the current contractors grow stronger and hold an advantage towards potential new entrants.

Section 4.1 described how strong impact politics has on the defense industry. Export regulations limit the market of potential customers. There is also a high level of protectionism within the industry as many governments choose domestic producers over foreign without regard to best value principles. Furthermore, alliances, such as NATO, favor products produced by members within the alliance. This makes it harder for new entrants to infiltrate and steal market shares within the international markets where the group earns most of its revenue. However, as described earlier, the European commission wants reduce the entry barriers by limiting the use of repos within the industry. There are also elements that increase the entry barriers in the domestic market. KOG, for example, has a very strong relationship with the Norwegian government as they are both their most important customer and majority owner. Having a strong relationship with the domestic government is very valuable for defense contractors as it provides the legitimacy that is vital to achieve sales in the foreign market, it could almost be seen as a distribution channel. A new domestic entrant would have to earn and establish this domestic relationship.

Threat of new entrants in KOG's Maritime segment

The marine supplies industry is characterized by many sub-sectors that are highly fragmented, but with a few large well-diversified players that invest heavily in R&D in order to keep their market shares. This has two consequences for potential new entrants. Firstly, the capital requirements are high. The need to invest large

unrecoverable financial resources in R&D in order to compete with the established players creates a barrier to entry, which reduces the seriousness of the threat from new entrants (Porter, 1979). Secondly, it leads to supply-side economies of scale. Established high-tech corporations like Rolls Royce or KOG, which already produce many different systems, will enjoy a lower cost because they can spread fixed costs, employ technology more efficiently, or command better terms from suppliers (Balance, 2014, pp.48-50).

In addition to having solid products with few defects, there is a great advantage of being first or early in the industry. The final customers, especially in the offshore market, are quite slow and not found of acquiring equipment from new suppliers (EY, 2014). Consequently, new players are having difficulties penetrating the market for products that are already supplied by established players. Also, ship owners often want to have a uniform fleet, as there are many technical gains coming from this. This underpins the importance of being an early mover as the switching costs for the customer grows significantly once a system is installed.

Furthermore, there exists a close collaboration between the suppliers, sub-contractors, shipyards, and the final customers throughout the supply chain. Accordingly, the new player needs to secure distribution of its product or service. This may not be an easy task, as the new player must displace others from the market via price breaks, intense selling efforts, or by having a better product (Porter, 1979). The margins are already slim, especially within the Dynamic Positioning and Navigation systems, as the early movers like KOG and Rolls Royce set a strategically low price from the start in order to keep new potential competition away (Gjertsen, 2015).

The threat of new entrants

The threat of new entrants is considered to be **very low** for both Divisions.

Very High	Very High
High	High
Medium	Medium
Low	Low
Very Low	Very Low

Within the defense segment there is high initial investment costs that increases the barriers and most of the current contractors have been around for decades, which places them high on the learning curve. The states are loyal to brands as they care a lot about quality; their loyalty is further strengthened by high switching costs. However, some major commercial companies might pose a threat in terms of exploiting new opportunities such as protection of intellectual property against terrorist attracts.

The maritime industry is R&D intensive, and a new entrant would have to invest heavily in technology, which increases the barriers to entry. The ship owners are also quite brand loyal and prefer to use one single supplier on their vessels, which increases the switching costs. Ultimately, the players are cooperating to a reasonable extent throughout the value chain, and a new entrant would have to invest in forming partnerships with shipyards and sub-contractors at different stages.

4.2.2. Bargaining power of suppliers

The power of each important supplier depends on several factors, including; the differentiation of the products, the concentration of suppliers, the switching costs and the degree of whether the suppliers relies on the revenue from the industry (Porter, 1979).

Bargaining power of suppliers in KOG's Defense segment

It can be useful to look at the automotive industry to better understand how the supplier relationships work within defense industry. In the automotive industry the suppliers are the captains of the industry as technology is the key factor of success. In response, Toyota has established a manufacturing philosophy based on a network of suppliers. By shifting from a transaction-based mindset to a co-makership paradigm they have managed to increase quality and cost efficiency (TNO, 2009). Comparable to the automotive industry the finished products in the defense industry consist of many piece parts and depend on many suppliers. However, the production series in the automotive industry are much larger than within defense industry. Often, this cooperation takes the form of joint ventures in the defense industry, such as the NASAMS agreement between KOG Defense and Raytheon. Other times it is done through shares in subsidiaries. Nevertheless, the prime contractors are still very R&D intensive themselves and conduct much of the research and manufacturing at own premises, and only sub-critical components are outsourced (TNO, 2009).

It is very important for the prime contractors that there is a high degree of competition among suppliers as this fosters innovation, new technology and efficiency in a flat market. It is therefore common that the defense contractors expand vertically backwards in the supply chain if one supplier gains too much power.

Bargaining power of suppliers in KOG's Maritime segment

As previously mentioned, KOG Maritime's value chain is characterized by close relationships and strategic alliances between shipyards and suppliers. Both KOG and its suppliers/sub-contractors produce high-end specialized products that are dependent on deliveries from each other. KOG is in most cases dependent on small components that are compatible with their technology as well as shipyards that are able to integrate their equipment with the vessels. Consequently, long-term contracts are often developed between shipyards, hardware manufacturers and technology suppliers, as strong alliances can generate sustainable competitive advantages, especially for complex ships and offshore structures (Balance, 2014, pp.42-48). The shipyards can to a certain extent be seen as a supplier to KOG as their equipment needs to be integrated on the vessels that the shipyards produce. However, decisions with regard to major electronic and nautical systems are most often taken by the operators (final customer) of the vessels (Balance, 2014, pp.17-20).

As illustrated in Figure 3.5, the supply chain has the shape of a pyramid, which indicates that more and more suppliers are added to the value chain the further down you move. Moreover, the parts become more commoditized and less unique the further down the pyramid. Some of KOG's suppliers will therefore be quite dispersed with little or no bargaining power, while others will be specialized component producers that KOG is relying on in order to sell their product.

Barging power of suppliers

The power of suppliers is **low** within the defense industry and **medium** in the maritime industry.

In the Defense segment the most important technology input (value added) is done at the primes, and more sub ordinated components are acquired from suppliers. Consequently, their power is reduced. Also, if one supplier gets too strong the primes acquire them.

Very High	Very High
High	High
Medium	Medium
Low	Low
Very Low	Very Low

KOG Maritime is dependent on suppliers to some extent, but their power is disrupted the further down the value chain you move. Additionally, the suppliers focus on cooperation through long-term contracts and alliances.

4.2.3. Bargaining power of buyers

The presence of powerful buyers reduces the profit potential in an industry. Buyers increase competition within an industry by forcing down prices, bargaining for improved quality or more services, and playing competitors against each other (Porter, 1979).

Bargaining power of buyers in KOG's Defense segment

The defense contractors end customers are states around the globe. The U.S. spends by far the most on defense with 39% of the total global spend (Deloitte, 2014). Thus, any reduction in the U.S. defense budget will have a disproportionally higher impact on the global spending. The customers have strong bargaining power over the contractors and place high demands. Revolutionary innovations, great flexibility to incorporate emerging technologies over the system's life, fast time to market, managed risk and cost-effective outcomes and long-term product support and service is often required to win contracts (AT Kearney, 2008).

The source of their strong bargaining power is that the customer universe comprises few buyers and the overall spending is concentrated. UK and Western Europe are responsible for approximately 60% of the total spending on a world-wide basis. However, defense spending is increasing in several areas of the globe, especially in UAE, Saudi Arabia, India, South Korea, Japan, China, Russia, and other countries. Many of these countries have

produced the incremental wealth necessary to equip their militaries with modern defense platforms and technologies (Deloitte, 2014). The defense spending in 2013 was USD 1.731 billion; Figure 4.17 illustrates that the customers are quite concentrated.

Figure 4.17: Global customer concentration within KOG's defense segment
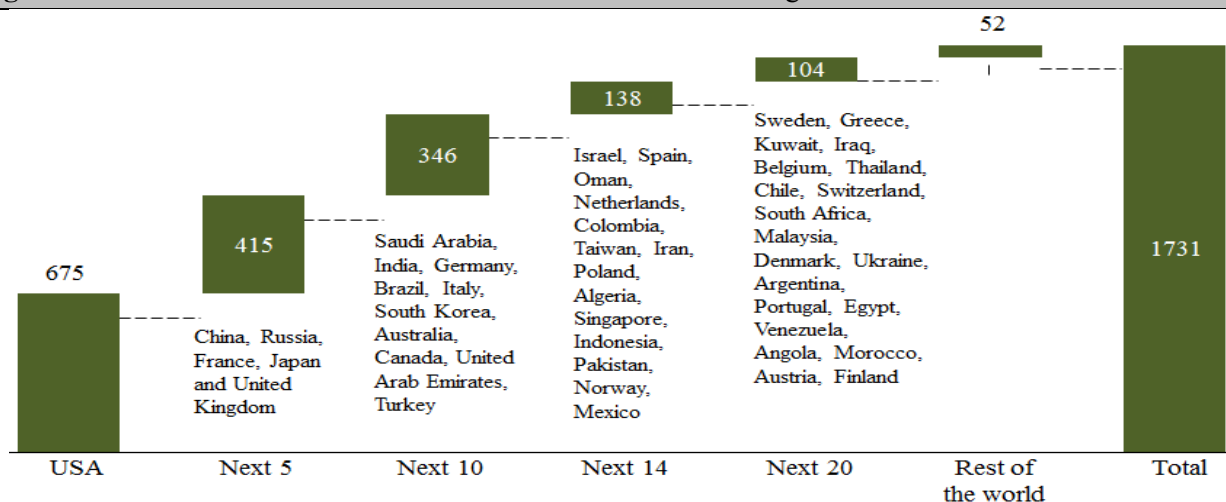
Source: Compiled by Authors, Deloitte (2013)

As described earlier, it is essential to have the domestic government on the customer list, both because it will provide the needed legitimacy in foreign markets and because the R&D investments are of high risk and cost. This provides the domestic government with additional bargaining power. In addition, they usually demand an open book relationship, providing insights to product accounts before negotiating a purchase price. The usual norm is that the contractors receive a single digit-margin in their domestic market (Westby, 2015).

Another characteristic of the customers is that their decision processes are long, often spanning over several years, which increases their bargaining power and the risk contractors face in their operations. To remain competitive the contractors must be ready when their customers decide to hand in an order. If not, it could take several years to develop the product, and by then the technology could be outdated (Lunde, 2015).

One of the key markets for KOG Defense is Europe. The EU wants to align the defense efforts of its member states. This will reduce the differentiation of demand and provide more transparency, which ultimately reduces the bargaining power of the buyers (TNO, 2009). Furthermore, KOG Defense's products are highly differentiated. The JSM, for example, is the only missile in the world that fits within the F-35 striker, which is another factor that contributes to a reduction of the bargaining power of buyers.

Bargaining power of buyers in KOG's Maritime segment

As previously mentioned, the offshore segment is the largest and most important segment for KOG Maritime. OSV (Offshore Supply Vessel) is the largest individual offshore sub-segment, and newbuild activity for AHTSs (Anchor Handling Tug Supply) and PSVs (Platform Supply Vessels) is what decides KOG Maritime's revenue outlook to a large extent. It is therefore of great importance to have a clear view of the buyers in this market.

The OSV industry is a fragmented industry, but is dominated by a few large companies. Tidewater and Bourbon Offshore are the largest AHTSs and PSVs owners globally, closely followed by COSL, Swire Pacific, Hornbeck and Edison Chouest (Pareto, 2015). Most of these companies own smaller vessels, but KOG also deliver equipment to the high-end fleet, which is dominated by companies operating in the North Sea. It is very important for KOG to capture and maintain newbuilding contracts with the larger companies in the offshore industry. This provides these buyers with some bargaining power towards KOG Maritime and its peers. The largest owners in the OSV market is illustrated below, where PSV vessel sizes are measured in dwt (Deadweight tonnage) and AHTS vessel sizes are measured in BHP (break horse power).

Figure 4.18: Global customer concentration within KOG's maritime segment
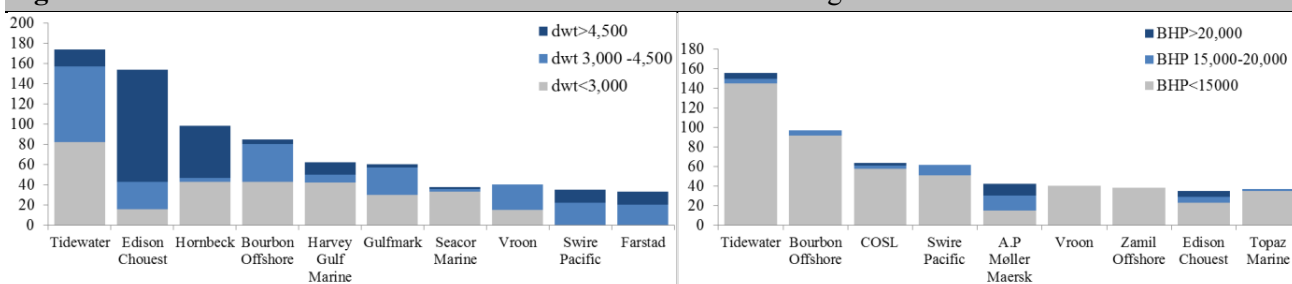
Source: Authors' own compilation, Pareto (2015)

The equipment and solutions that KOG and its peers produce are quite critical for the services that vessels and drilling units perform for their clients. The Dynamic Positioning system, for example, is a computer-controlled system which automatically maintains a vessel/drilling unit's position in rough conditions. This is a factor that contributes to a weakening of the buyers' bargaining power, especially in the offshore segment.

The Merchant Marine segment and Subsea segment is characterized by a broader range of maritime sectors globally, which also means a more dispersed group of buyers than for offshore. KOG delivers equipment to all types of vessels in the maritime sector, including; bulk carriers, tankers, LPG, LNG, and container ships (KOG, 2014). The fact that these groups of buyers are so numerous contributes to a lower bargaining power in these segments than for offshore.

Common for all three segments is that once a supplier is chosen, the bargaining power of the buyer drops significantly. As previously mentioned, there is a strong demand for a uniform fleet within all the maritime

sectors as there are significant technological advantages of this. Consequently, the switching costs for the ship owner increases once a system has been installed on a vessel.

Another factor that may change the level of bargaining power for buyers is that the medium-term outlook within the offshore sector is relatively poor. This creates incentives among the ship owners to lower their purchasing costs, which may force the suppliers to lower their prices (Porter, 1979). It is questionable however, to what extent they are able to pressure the suppliers on pricing as the margins are already very moderate in the industry and to what extent the cost savings from a potential switch of supplier will exceed the savings from lower prices.

Barging power of buyers

The bargaining power of buyers within the defense industry is seen as **very high** while it is **medium** within the maritime industry.

Very High	Very High
High	High
Medium	Medium
Low	Low
Very Low	Very Low

A few states are responsible for a large fraction of the defense spending on a global basis making the market more concentrated and ultimately the barging power of buyers stronger. Additionally, the contracts are few and substantial which further increases the states bargaining power.

Most of the maritime revenues come from offshore shipping, which is a market dominated by a few strong players, which increases their bargaining power. However, many of KOG Maritime's products are essential for these ship owners' operations. This offsets some of the bargaining power. The merchant fleet is far more dispersed and therefore the customers within this segment hold a relatively weaker power over KOG.

4.2.4. Threat of substituting products

KOG delivers a broad range of products in many different categories, both within the defense and maritime segment. Substituting products limit an industry's profit potential by placing a ceiling on price (Porter, 1979). The level of this force is therefore important to analyze in order to assess the individual segment's future profitability.

Threat of substituting products in KOG's Defense segment

It is hard to imagine any substitutes to defense equipment and solutions. Instead of thinking substitutes in the traditional way like using car vs train for transportation, one should address the likelihood of revolutionary new technology within the industry. As the defense industry is affected by technology to such a high extent, substitutes emerge from new and better technology provided by existing defense companies. A good example could be that an aircraft used for surveillance might be threatened by a new unmanned aerial vehicle (UAV),

which can perform the same tasks. Developing substituting technology is therefore an important part of a company's strategy and is used to compete with other contractors.

Threat of substituting products in KOG's Maritime segment

The DP system is one of KOG Maritime's main offerings. The system is a computer-controlled system to automatically maintain a vessel's position by using its own propellers and thrusters. It is much used in the offshore oil industry in the North Sea, Persian Gulf, Gulf of Mexico, West Africa, and off the coast of Brazil (Pareto, 2014).

There exist mainly two substitute solutions to the DP system; Jack-up barge and Anchoring. Both solutions have the advantages of lower initial costs of installation and less complexity in terms of thrusters, extra generators and controllers. There are also no underwater hazards from thrusters. However, the Jack-up barge has no maneuverability once positioned and very limited water depths (175 meters) (KOG, 2014). Anchoring has the disadvantages of limited maneuverability, timely procedures in terms of anchoring out and less suitability in deep waters. Anchoring is also no longer allowed for some types of vessels due to environmental issues.

The DP system has many advantages compared to the two other systems. The maneuverability is excellent, the set-up is quick and to a large extent automated, and it is not dependent on water depth (KOG, 2014). The advantages of the system are becoming more compelling, especially in the offshore segment where deeper water with harsh conditions is entered. However, the system has high initial costs of installation and high fuel costs, which makes it more directed towards the high-end vessels.

Figure 4.19: Example of product integration within KOG's maritime segment
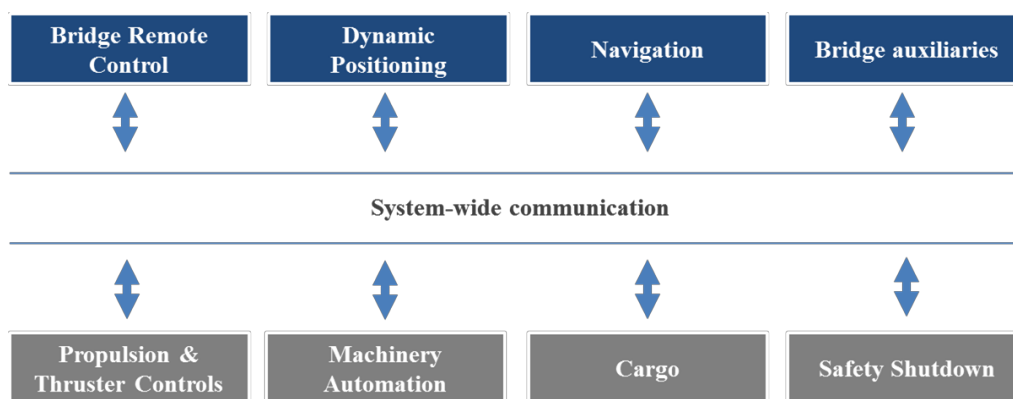
Source: Compiled by Authors, KOG (2014)

KOG's systems have in the last years been sold less frequently as single products. DP sales generate substantial cross-sell of control and bridge systems. Moreover, increasing vessel complexity demands that various systems

be integrated and there is a strong demand for 'full picture solutions'. Although there exist substitute products on the individual product-level, the threat of substitute products is quite low if one looks at the integrated systems as one product. An example of an integrated product is illustrated in Figure 4.19.

Threat of substituting products

The authors argue that the threat of substitute products within the defense segment is **medium**, and **low** within the maritime segment.

Very High	Very High
High	High
Medium	Medium
Low	Low
Very Low	Very Low

In the defense segment current systems and products are currently being threatened by new and improved products supplied by competitors. However, the technology analysis in the PESTEL analysis revealed that the life-cycle of products is increasing.

There are substitutes to the products that the maritime segment delivers on an individual basis. However, as most of KOGs products are sold as integrated systems tailored to each customer's needs the threat is considerably reduced.

4.2.5 Rivalry among established competitors

Rivalry among existing competitors takes the familiar form of jockeying for position – using tactics like price competition, product introduction, and advertising slugfests (Porter, 1979). Intense rivalry is related to the presence of a number of factors.

Rivalry among existing competitors in KOG's Defense segment

Regarding the intensity of competition among competitors the conclusions are dependent on the perspective. KOG Defense's market can be segmented into the domestic market and NATO. In terms of the domestic market KOG operates under almost monopolistic conditions especially if you consider their niche products. This is more or less the norm in the industry with the US market as an exception, as it is split between the big prime contractors. NATO on the other hand is a much more competitive market. If the alliance is to roll out a member-wide program a tender action is often arranged and the "best value" principle often determines who wins the contract. Earlier, due to regulations, the EU and the US could be seen as region-monopolistic markets. In 2009, European companies had only captured 0.3% of the US procurement market (TNO, 2009). However, the winds are changing and regulators are working to create more open markets in order to increase trans-Atlantic competition. The increase in defense spending by emerging economies has received attention from the primes and the market is becoming more global. In terms of these new contract opportunities the rivalry is significant. The overall degree of competition within the defense industry is and has been limited historically. However, as

regulators are opening up current markets, protectionism is reduced and new markets are opening up. Consequently, the degree of rivalry and competition is increasing, which could lead to changes in the industry. As a higher degree of competition would lead to cost pressures, some companies may be pressured out, and the industry would be left with more sustainable companies. Another effect of the cost pressure as a consequence of increased competition is that discretionary spending such as R&D is reduced. This will lead to less innovation within the industry. A strategic response to compensate this effect is to strengthen the link-up with research organizations such as FFI (TNO, 2009).

Rivalry among established competitors in KOG's Maritime Segment

Many of KOG's biggest competitors in the maritime segment are large conglomerates like GE, Rolls Royce, and Halliburton. However, they also compete with pure high-tech oil field service and shipping equipment companies like Aker Solutions, Cameron, and Cargotec.

In total, KOG competes with a highly fragmented group of players as they operate in many sub-sectors within the global marine supplies industry. However, there are different levels of rivalry within each sub-sector. The authors will therefore analyze the most important ones in terms of revenue for KOG.

The DP system is estimated to account for 40 percent of total revenues within the maritime segment and is therefore the most important market to analyze (Pareto, 2014). GE and Rolls Royce are two competitors that offer the same kind of system and are considered the largest competitors in this market. So far, KOG has held strong market positions within this sub-sector, especially within offshore vessels. The company's high-end product line within offshore has enjoyed a 70-100 percent market share in recent years (Gjertsen, 2015). The competitive edge originates from the fact that KOG has delivered a strong system with few defects from the very beginning, and the fact that they also started out with quite moderate margins (Gjersten, 2015). It has therefore been tough for other players to compete and steal market shares from KOG within the high-end segment. However, there are signs that the competition is toughening. GE Oil & Gas has experienced an increase in orders for DP Systems on offshore vessels in Brazil, while Rolls Royce holds a strong market position within DP systems for merchant ships and especially cruise ships. The challenge for KOG in the upcoming years will be to improve their position within the other shipping segments where their market share is lower.

In addition, KOG holds a strong market position within AUVs (Automated Underwater Vehicles), as they were early in developing the technology that made AUVs being used for tasks related to make detailed maps of the seafloor for oil exploration. According to KOG (2014b) there are only around 10 companies that sell AUVs on the international civilian market. Furthermore, the capital requirements of R&D within this sub-segment are very high, which further decreases the intensity of competition in this market

Rivalry among established competitors

Within the defense segment the rivalry among competitors is seen as **medium**, while it is **high** among the competitors within the maritime segment.

Very High	Very High
High	**High**
Medium	Medium
Low	Low
Very Low	Very Low

The regulators has focused more on opening up the market and let the market forces rule in the recent years. This has increased the completion among contractors and while it is a threat for some, it could provide market access and opportunities for others.

The rivalry within the maritime segment depends on the product line addressed since KOG offer a wide range of different products. Within some product lines such as DP and AUVs, KOG Maritime faces little competition within some customer segments, while the competition is stronger within other products lines and among other customer segments. However, the overall impression is that the rivalry is high in the marine supplies industry.

4.2.5 The overall effect of the five competitive forces

Figure 4.20 illustrates that the overall effect of the five competitive forces for the defense segment are **low/medium** and **medium/low** for the maritime segment. The most important forces within the defense segment are seen as bargaining power of customers and threat of new entrants. The maritime segments most dominant forces are rivalry among competitors and threats of entry.

Figure 4.20: The overall strength of the five competitive forces for the two segments
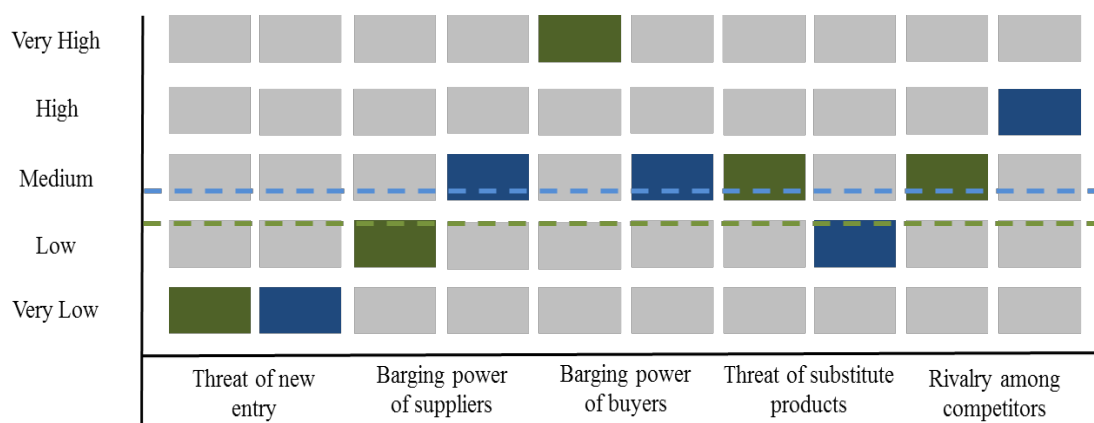
Source: Compiled by authors

4.3. VRIO Analysis

The VRIO framework was created by Barney & Hesterly (2006) and was a revision of Jay Barney's VRIN framework, which was introduced in 1991. The framework works as a tool for assessing whether a firm's resources and capabilities can be recognized as sustainable competitive advantages. In order to determine this, the framework asks four different questions related to the resource or capability's value, rarity, imitability and the organization's capability to make use of the advantages given by the three previously asked questions. The analysis seeks to answer the question listed below (Barney & Hesterly, 2006):

- **Valuable:** Is the firm able to exploit an opportunity with the resource?
- **Rare:** Are there only a few companies holding this resource?
- **Imitable:** Is it difficult to imitate, and will there be significant costs associated with a player trying to imitate or duplicate the resource?
- **Organization:** Is the firm properly organized to take advantage of the opportunity/resource?

The analysis of KOG's resources and capabilities will focus on the most important findings from the strategic analysis, as well as more intangible strengths such as their workforce or ownership. The analysis will also discuss whether the resource is relevant for the company as a whole or whether it is specific for one of the two segments.

4.3.1. Ownership

The state being a majority owner should be addressed as a resource for KOG Defense. The fact that members of the board are elected by government representatives could be valuable when considering the Norwegian Armed forces are one of the key customers. This could help KOG's management to achieve insights in terms of product design and needs of a potential customer, which would serve as a strategic advantage when the Norwegian state is choosing their next supplier of military equipment. Section 4.1 highlighted the importance of repos and R&D contracts within the industry. As the Norwegian state is the majority owner of the company it is reasonable to assume that the group is more likely to be included in repos or handed R&D contracts than if the government did not own a stake. Also, the group could enjoy lower barriers to enter markets where the domestic government and the Norwegian state are allies.

The value of the aforementioned elements is hard to quantify as they are highly political and the regular economic forces do not necessarily rule. However, it is easy to imagine that a small defense contractor such as KOG Defense depends heavily on the close ties to the Norwegian government and that the state's owner stake is extremely valuable and legitimates KOG Defense's brand name in the international market place. As the majority of the industrial companies in the industrial world have been privatized this resource is both very rare

and likely to be impossible to duplicate. KOG has been state owned since the very beginning of the company's history. It is therefore easy to imagine that the organization is properly organized to exploit this resource. The latest achievement of being handed the contract of supplying the F-35 program with the JSM missiles would most likely be impossible unless the government owned the company and made them a key contractor on an international basis through repos.

4.3.2. Partnerships

In section 2.6 it was pointed out that none or few of the defense contractors have the capabilities to own the whole value chain within the defense industry. Partnerships are therefore essential in order to exploit opportunities, as a given firm is considerably dependent on players in the other layers of the value chain. Secondly, partnerships among contractors allow the companies to develop products of higher quality at a lower cost as they are able to exchange information and unite capabilities with the respective partner. This integrative procedure is likely to become increasingly important in the future as the market place is opening up and placing more bargaining power in the hands of the states which are already demanding higher quality at lower costs. Thirdly, a strategic partnership could provide new opportunities in markets where the single contractor would not have access by itself. Emerging markets are flourishing with growth opportunities, but they come at a risk. By partnering up with another contractor this risk could either be shared or the combined value of respective relationships might be higher than if separated. KOG Defense has several strategic relationships with other contractors around the world. One of the most profiled relationships is the ongoing development relationship with Raytheon. As a contractor that specializes in advanced missile technology one of KOG Defense's contributions is valuable technological know-how, while Raytheon as one of the largest contractors in the world offers market access and economies of scale. Figure 4.21 illustrates some of the defense partnerships of KOG:

Figure 4.21: KOGs defense network of international strategic partners

Source: KDS CMD 2014

It is evident that strong strategic partnerships allow KOG Defense to develop market leading products, distribute them to a market of desired size and manage their operational risk exposure. The authors therefore argue that the resource is very valuable. However, as these relationships take time and reputation to build, they are not uncommon among the other contractors around the world so it would be an overstatement to claim that they are rare. On the other hand, new companies entering the industry would need to put in effort to develop such relationships, which are likely to take time and to be costly. Hence, it is a reasonable statement that it would be challenging to imitate this specific resource.

Lastly, whether strategic partnerships could result in a sustained competitive advantage depends on whether KOG is properly organized to capitalize on them. It is fair to state that many of these partnerships are correlated with the professional relationships between management of the respective companies in question (Westby, 2015). These relationships are developed over time. Thus, years of experience within the specific company and the industry are likely to affect the ability to develop and sustain such professional networks.

Figure 4.22: Key personnel and their respective experience

Name	Years in KOG	Position
Walter Qvam	7	CEO - Kongsberg ASA
Egil Hugsdal	19	Executive Vice President - Product Development
Harald Ånnestad	29	President - Kongsberg Defense Systems
Geir Håøy	7	President - Kongsberg Protech Systems

Source: Compiled by Authors, Kongsberg (2015)

The four leading persons with responsibilities regarding the execution of strategic initiatives within the defense segment hold 62 years of experience accumulated. This gives a good indication that KOG Defense's organizational position to develop and sustain partnerships is apparent.

4.3.3. Product Development

Innovation and technological characteristics was found to be key elements both within the defense- and the maritime industry.

The Porter's analysis revealed that the treat of substitutes within the defense industry is apparent through new and improved systems and equipment replacing the old, rather than a totally different product. To sustain its market share and remain competitive it is vital for KOG Defense to develop new products and at the same time upgrade and improve current products. For KOG Maritime on the other hand it was evident that the development of 'full picture solutions' lead to both a lower level of threat from substitutes and larger profit potential. Over the last years, KOG has spent approximately figures equal to 10% of revenue on product development and came up with several new products and systems. Some of this technology is not comparable to anything else in the world

and KOG is the only provider of certain systems and products. Figure 4.23 illustrates the missile product line's contribution to revenue over time. Since 2007, the product line has provided an estimated compounded annual growth rate of approximately 23%. KOG started out developing the anti-ship missile Penguin, and has later made additional investments in this technology, which has resulted in the NSM and the JSM.

Figure 4.23: Illustration of KOGs successful product innovation within anti-ship missile systems
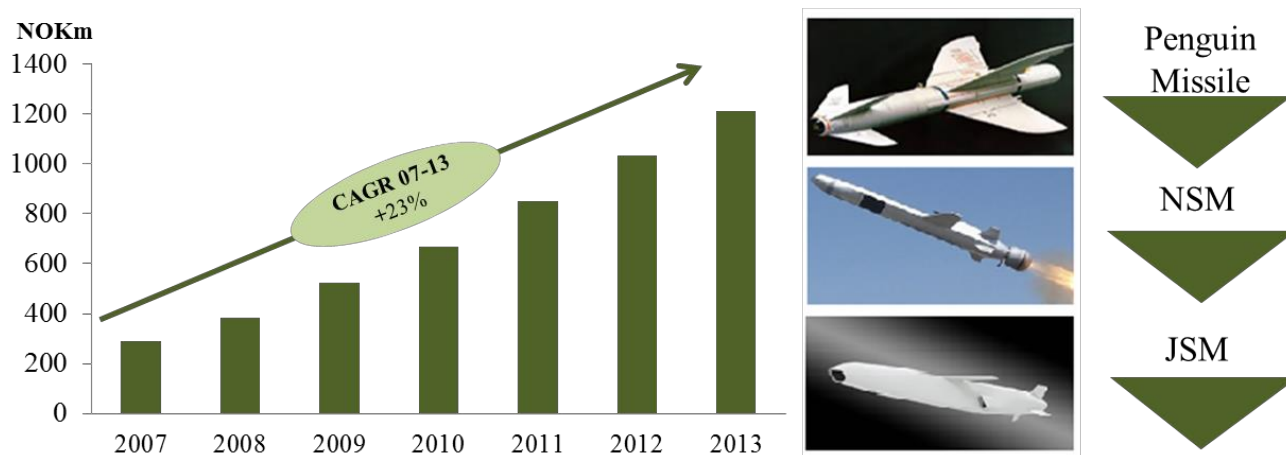
Source: Compiled by Authors, Kongsberg Gruppen 2015a

It is clear that product development is a valuable capability for KOG Defense given the positive contributions to revenue. In the maritime industries it is seen as a technical advantage to have a uniform fleet. KOG Maritime's ability to innovate and integrate their systems with various types of vessels is therefore seen as a valuable capability (Arctic, 2014). Additionally, their wide range of products and systems is a prerequisite for making this capability possible.

Secondly, it could be argued that this capability is rare for both divisions. The JSM is the only missile which fits inside the new F-35 body without reducing the aircraft's ability to not appear on enemy radars (Gjertsen, 2015). When competing with other contractors to win the right to develop this missile, KOG was chosen above others because of their unique capabilities of product development within this specific area. There are reasons to believe that also KOG Maritime's strong position within high-end offshore vessels, for example, is largely due to their superior ability to develop well-functioning full-picture solutions.

Third, it is argued that this to some extent is hard to imitate for both divisions. Defense contractors protect and are very secretive about their technology know-how. It would therefore be hard for current competitors or new entrants to imitate KOGs capabilities within product development. The most likely source of imitation would be through workforce spillover or company secrets being leaked. Products like KOG Maritime's Integrated Bridge System are very costly and complex to develop and the level of imitation from competitors will reflect this fact.

Although the technology itself can be patented it is rarely so exclusive that competitors cannot create a similar product on an individual level (Balance, 2014, pp.42-48). It is therefore the integration of the different systems that is seen as hard to imitate for KOG Maritime's competitors.

Lastly, the authors argue that KOG is well organized to capitalize on this capability. KOG has a proven track record of developing world class military equipment and maritime products for several decades. Furthermore, the most important input in this technology intensive product development is skilled workers. The group is currently ranked 3rd most attractive employer for engineers in Norway, which confirms that the company is competitive in attracting the best engineers (Universum, 2015).

4.3.4. System Integration

KOG Maritime's products have a dominant position within offshore and modern high-end vessels. At the heart of the company's success lie its DP systems, which allow the OSVs or rigs to maintain its position in very demanding conditions, while optimizing fuel. The DP system's competitive edge is a comprehensive library of functionality and the reliability associated with the product. Owing to the high cost of failure, vessel owners are willing to pay to ensure efficient and reliable operations. However, other actors are also entering the market with the same product. The question is then whether KOG is the only supplier that can provide this reliability. Needless to say, the answer to this question is of course no. Large companies like Rolls Royce or Halliburton have all the resources available to produce the same product with the same reliability. Hence, the DP system in itself does not provide KOG with a competitive advantage.

It was pointed out in section 4.2 that DP sales provoke considerable cross-sell of control and bridge systems and that fully integrated systems are becoming more and more important for vessel owners. Additionally, the increasing vessel complexity demands that various systems be integrated (Pareto, 2015). Deliveries increase in scope and value in proportion to vessel complexity, such that deliveries to rigs could amount to NOK 40-50 million (Nordea, 2014). The Porter analysis showed that KOG Maritime understood early that they had to focus on integrating their products and offers today different versions of fully integrated systems. An example is their integrated bridge system, K-Bridge, which meets all IMO regulations and classification societies' Type Approvals. The product comprises navigational equipment and DP systems, which are seamlessly integrated in the K-Bridge (KOG, 2014). KOG's experience in developing integrated systems is therefore a valuable capability in an increasingly competitive market environment.

Furthermore it can be argued that this capability is rare as the K-Bride was completely new and innovated by KOG in 2011 (KOG, 2014). The product was also honored with the prestigious Norwegian Award for Design

Excellence in 2011 due to its innovativeness, advanced functionality, which increases both efficiency and safety (Norsk Design, 2011).

KOG's installed base of around 17,000 vessels, gives them a tacit know-how that will take time and investment for competitors to imitate. As was stated above, in addition to having a powerful reputation of being a countable supplier of integrated systems and having a large installed base, the company attracts highly skilled employees. This provides reasons to believe that KOG is well organized to continue exploiting this capability and that this is where KOG Maritime's competitive edge lies.

4.3.5. VRIO summary

The analysis has revealed that KOG hold several competitive advantages to its competitors. Within the defense segment these seem to relate to their close ties to the Norwegian state and their capability to form alliances and strategic partnerships across the industry. For the group as a whole the culture for excellent product development has helped the firm achieving consecutive years of growth both within strategic product areas, and on a consolidated basis. Specific for the maritime segment is the division's ability to offer integrated systems; which may lean ship owners towards KOG Maritime as a supplier instead of competitors.

Figure 4.24: VRIO Summary

Resource / Capability	Valuable?	Rare?	Imperfectly imitable?	Organized properly?	Economic implications
Ownership	✔	✔	✔	✔	KOG Defense is granted access to important markets and is likely to sustain a more constant revenue stream.
Partnerships	✔	✗	✔	✔	Allows the KOG Defense to form valuable relationships that helps it increase volume and recognition.
Product Development	✔	✔	✔	✔	Ensures future growth capabilities that secure future operations for both divisions
System Integration	✔	✔	✔	✔	Allows KOG Maritime to compete with international giants as they are able to integrate systems with high quality and capabilities within several areas.

Source: Compiled by authors

5. Financial Analysis

In order to forecast KOG's future cash flows, this section will find comparable peer groups for KOG Defense and KOG Maritime. The peers will be used as comparable benchmarks in a thorough profitability analysis, liquidity analysis and in deriving valuation multiples for each segment. The profitability analysis will focus on the development in annual 'Economic Profit Divided by Revenue' as the authors see this metric to yield the highest information value when comparing maritime and defense with their peers. The liquidity analysis will consider KOG as a group, as KOG has communicated that the segments' financing is coordinated at the group level. The authors have chosen an historical timeframe of five years when analyzing the financial statements, as this is considered sufficient to capture the cyclicality of both the defense and maritime segments.

For the purpose of creating a credible valuation forecast for KOG's different segments, it is necessary to develop a comprehensive understanding of their financial performance. The financial statements of KOG and its peers are in conformity with the International Financial Reporting Standards (IFRS) and US GAAP. This guideline does not thoroughly separate between 'operating' and 'financing activities'. Consequently, it is essential to reclassify the financial statements in order to identify the fundamental value creation of the firm (Petersen & Plenborg, 2012 P.68). The findings from the financial analysis will help the authors in getting an understanding of the historical development, which will give more reliable forecast estimates.

5.1. Reclassification of Financial Statements

In the analytical income statement, all accounting items are to be classified as either 'operating' or 'financing' items. Through the reclassification, the operating activities will result in 'Net operating profit after tax' (NOPAT), which is a key performance measure that shows the profit of a firm's core business activities regardless of capital structure (Petersen & Plenborg, 2012, p 70-73). After NOPAT is calculated, 'Net financial expenses' and the corresponding 'tax shield' is added. This results in 'Net earnings', which should equal the reported 'Net earnings'. The analytical balance sheet should correspond to the analytical income statement and results in 'Invested Capital', which represents 'Net operating assets' on one side of the balance, and 'Net interest-bearing debt' (NIBD) plus equity on the other side (Petersen & Plenborg, 2012, p. 73-75).

5.1.1. Segmentation of KOG's income statement and balance sheet

The SOTP-valuation of KOG requires the maritime and defense business to be valued separately. Consequently, it is necessary to split up KOG's income statement and balance sheet into two separate parts. KOG reports segment information in 'Note 6' in the annual reports, where they differentiate between 'Revenue', 'EBITDA' and 'EBIT' for each segment in the income statement. In the balance sheet, however, they only differentiate between 'segment assets' and 'Current segment liabilities and provision', which means that the authors have had

to do certain estimations and assumptions on the remaining items in order to calculate 'Invested Capital' on a segmented level. See Appendix 13 for a full explanation of the segmentation of the analytical income statement and balance sheet.

5.1.2. Analytical Income Statement

The majority of the income statement items are fairly transparent and can without any further investigation be classified as either part of 'operations' or 'financing'. This section will therefore only offer further explanation when justification is needed. Moreover, as KOG only reports segmented income statements down to 'EBIT', special estimation and assumption of 'Financial expenses' and 'Income tax' has been conducted. The reclassified income statements of KOG Maritime and KOG Defense are illustrated in Appendix 14.

Other expenses

When classifying the item 'Other expenses' it could be discussed whether this item should be part of 'operating' or 'financing'. KOG report very little details regarding this item, but it is an item that is recurring every year in the historical period and it is therefore classified as part of operations. When it comes to the segmentation of the item, information about 'Revenues' and 'EBITDA' is reported on a segmented level. This means that the earnings after operational costs is known for each segment, but the split between 'COGS', 'Payroll expenses' and 'other expenses' is unknown. Consequently, the authors have conducted a common size analysis of the operating expenses on a group level and used the results to distribute 'COGS', 'Payroll expenses' and 'Other expenses' to each segment. The authors believe these are fair assumptions as long as 'EBITDA' corresponds to KOG's report.

Financial expenses

In order to calculate financial expenses for each segment, the cost of 'NIBD' has been calculated on a group level by dividing 'Financial expenses' by 'NIBD'. 'Financial expenses' for each segment was then calculated by multiplying the Group's cost of 'NIBD' with each segment's estimated 'NIBD' (See Appendix 13).

Income tax and tax shield

As the income statement does not distinguish between 'tax on operations' and tax on financial items ('tax shield'), the authors have estimated them separately. This was done by calculating the 'tax shield' from net financial expenses. Because KOG operates in several countries with different tax rates, the effective tax rate has been used each year, as this rate reflects different tax rates within the group (Petersen & Plenborg, 2012, p. 76). The same effective tax rate has been used for each segment.

5.1.3. Analytical Balance Sheet

KOG reports 'Segment assets' for each segment, which contains all assets on the reported balance sheet except; 'available-for-sale shares', 'other non-current assets', 'derivatives' and 'cash' as these are controlled on a group basis (KOG, 2014). They also report 'Current segment liabilities and provision', which contains all current liabilities on the reported balance sheet except; 'short-term interest-bearing debt', 'derivatives' and 'fair value adjustments'. This information combined with other information presented in the annual report provides the basis for the estimation of invested capital for each segment. The most important estimations related to the split of invested capital will be elaborated on in this section (see Appendix 11 for full list of items). Furthermore, the section will provide explanation of the classification of items that require further analysis.

Disaggregating NIBD, Equity and Cash

In order to calculate the 'NIBD', the authors first calculated 'NIBD' on a group level. KOG has communicated that they shall have a moderate gearing ratio (NIBD/EBITDA), and in 2014 KOG had a gearing ratio of -0.96. 'NIBD' and 'cash' are not assigned to segments, but rather presented for the Group as a whole (KOG, 2014). Consequently, the 'NIBD' for each segment have been calculated through equation 5.1, where the Group's gearing ratio is multiplied by the segment's EBITDA. Segmented 'cash' is found through equation 5.2, where segmented 'cash' equals 'NIBD' minus 'interest-bearing debt' plus 'interest bearing assets'. Finally, equity can be estimated through equation 5.3 where 'invested capital' (net operating assets) and 'NIBD' is known.

Eq. 5.1 $\textbf{Segmented NIBD} = \text{Group gearing ratio } \frac{\text{NIBD}}{\text{EBITDA}} \times \text{segmented EBITDA}$

Eq. 5.2 $\textbf{Segmented Cash} = \text{NIBD} - \text{Interest bearing debt} + \text{Interest bearing assets}$

Eq. 5.3 $\textbf{Segmented Equity} = \text{Invested Capital (Net operating assets)} - \text{NIBD}$

Other Current and Non-current Assets and Liabilities

In reality, these items could be classified as both operating and financing activities. However, these items are assumed to be non-interest bearing as the information provided is very limited and they are therefore classified as 'operating' items (Petersen & Plenborg, 2012, p.77). On a segmented level they are split between Defense and Maritime based on revenue contribution (See Appendix 13).

Derivatives

Derivatives in KOG comprise forward hedge contracts and interest swap agreements. KOG has a very conservative hedging policy to limit currency risks, while taking a pro-active attitude to the importance of a currency as a competitive parameter (KOG, 2014). It becomes apparent that derivatives items in KOG's balance sheet can be differentiated by splitting them up into project hedges and loan hedges. The project hedges are

related to income and expenses on ongoing projects, and are therefore classified as part of 'operating' activities. The loan hedges are related to interest rate swap agreements on outstanding loans and are therefore considered part of 'financing' activities (Petersen & Plenborg, 2012 p. 78). On a segmented level, the derivatives items are split between Maritime and Defense based on revenue contribution to the Group's total revenue.

Shares in Associated Companies

This item is only apparent on the balance sheet in 2014 and the authors therefore see the item as non-recurring and not part of KOG's core activities. Thus, the item is classified as a 'financing' activity. On a segmented level this item is split between the segments based on revenue contribution.

Available-for-Sale-Shares

This item comprise shares in which KOG does not have significant influence of the companies through its ownership (KOG, 2014). The authors see these shares as minor interest-bearing investments, which do not concern the Group's operating activities. Hence, the item is recognized as related to 'financing' activities and is split between the segments based on revenue contribution.

5.2 Peer group

The objective of this section is to designate peer groups of KOG Defense and KOG Maritime. The peer groups will be used as benchmarks, which will help evaluate the performance of the two divisions. They will also provide the input for multiples calculations, which will be used in the relative valuation method.

According to Petersen and Plenborg (2012, pp.64-65), a comparable peer group should be exposed to similar risks, and their financial statements should be comparable in terms of accounting principles. The authors have therefore, in accordance with the above mentioned principles, gathered potential peer groups for KOG Defense and KOG Maritime in Figure 5.1.

Figure 5.1: Peer group for KOG Defense and KOG Maritime – before evaluation of peers

Source: Compiled by authors

Enterprise value (EV) to EBITDA is viewed as the most appropriate valuation multiple when performing the relative valuation of the two divisions. This is due to the fact that the multiple is immune to differences in capital structure within the peer group (Gjertsen, 2015). The multiple is driven by the operating tax rate (T), the return on invested capital (ROIC), the weighted average cost of capital (WACC) and EBITDA.

Eq. 5.4: $$\textbf{Decomposed } \frac{\textbf{EV}}{\textbf{EBITDA}} = \frac{(1-\text{T})\left(1-\frac{\text{g}}{\text{ROIC}}\right)}{\text{WACC}-\text{g}}$$

As companies within an industry will have different growth prospects and differences in ROIC, the multiples will also differ (Koller et al., 2010, p.306). The authors have therefore performed an analysis of different growth projections and EBITDA-margins among the two peer groups in order to address this issue. It is expected that differences in tax rates and WACC has to be accepted, as there are very few domestic peers within both of KOG's divisions. However, the authors expect the effects to be rather limited as most of the companies in the peer groups are large multinational corporations.

Nine of the identified peers have been rejected due to significant differences in growth projections, and/or EBITDA-margin. The list of filtered peers is shown in Figure 5.3. A thorough explanation of the analysis and procedures used to evaluate the different peers can be found in Appendix 18.

Figure 5.2: Sales growth and EBITDA-margin for KOG's segments over the last five years

Segments		2010	2011	2012	2013	2014	Average Growth	Average Margin
Defense								
	Sales	8.693	7.805	7.330	6.974	5.842	-9,3%	
	EBITDA	1.383	1.165	1.205	939	784		14,8%
Maritime								
	Sales	6.761	7.323	8.322	9.341	10.720	10,9%	
	EBITDA	1.102	1.229	1.089	1.228	1.342		14,4%

Source: *Compiled by Authors, KOG (2014)*

Figure 5.3: Refined peer group per segment

Segment	Valuation multiples EV/EBTIDA	Consensus projected Financial Performance	
		Sales Growth 2014-2017 (%)	EBITDA margin 2013 (%)
Defense			
Raytheon	6,3	11,7	6,7
Lockheed Martin	9,4	3,0	14,7
Northrop Grumann	9,4	3,5	14,9
Rheinmetall	8,5	3,6	14,7
General Dynamics	10,3	4,9	14,5
Thales	6,3	4,6	11,5
Average	8,4	5,2	12,8
Maritime			
Halliburton	5,4	25,9	18,9
Rolls Royce	18,1	9,1	15,3
FMC Technologies	8,5	1,7	15,9
Cameron	7,9	-3,0	15,0
Aker Solutions	4,0	-7,8	8,1
Subsea 7	19,0	-9,6	17,9
Average	10,5	2,7	15,2

Source: *Compiled by Authors, DataStream (2015a)*

KOG has similar EBITDA margins as the average peer group in both the defense and maritime sector. KOG Defense's sales growth has been negative historically, which is mostly because the RWS system market has declined after tremendous sales volumes early in the historical period. Therefore, the authors believe that the projected average growth represented by the peer group is comparable to what KOG is likely to experience within defense. This is justified by the industry's recovery and KOG Defense's attractive position in terms of product portfolio. The average projected sales growth within the maritime segment differs a lot. This is because most of the peers are large companies with diversified products within the maritime and other industries. The

authors argue that KOG's extensive backlog within the maritime segment and the favorable currency situation make the average sales growth comparable to what KOG Maritime could experience. Consequently, the average EV/EBITDA will be used to value both segments in the relative valuation.

For the profitability and risk analysis the authors argue that a selection of the companies which are most comparable in terms of KOG Defense and KOG Maritime's primary operations gives the most value. Due to relative revenue generation from the defense industry and geographical sales distribution; Lockheed Martin, Raytheon, General Dynamics and Northrop Grumman are considered the most comparable defense contractors. Based on product portfolio; Cameron, Aker Solutions, Halliburton and Rolls Royce are seen as the best peers for the maritime segment.

Figure 5.4: Tier-one peer gorup

Defense peers	About	Financials (USDm)	Niche Products/Markets	Location
LOCKHEED MARTIN	Lockheed Martin (US) is the largest defense contractor in the world. It started out as a commercial seaplane outlet in 1912, and have later become a defense company. Approximately 94% of sales are generated form defense.	**Revenue:** 45 600 **Enterprise Value:** 67 500 **Market Cap:** 63 100	Aeronautics 32.3% CMS: 16.9 % Missiles: 16.7% Training: 16.7% Space: 17.5%	US: 80 % International: 20%
Raytheon	Raytheon started out as a electronics company in 1922, it become a defense contractor during WW2 and today it is no. 4 world wide. Around 93 % of revenues are defense related.	**Revenue:** 22 830 **Enterprise Value:** 34 030 **Market Cap:** 33 610	Missiles: 50.7% CMS: 24.5% Space: 24.8%	US: 78 % International: 22%
GENERAL DYNAMICS	The company was formed by a merger of an boat manufacturer and aviation company. They emerged into a defense contractor after being aggressive during the M&A wave of the 90s. Today they are no. 6 and 60% of sales come from defense.	**Revenue:** 30 850 **Enterprise Value:** 43 630 **Market Cap:** 44 620	Combat Ship: 23.7% Com. Aircraft: 28% CMS: 29.% RWS: 18.6%	US: 79 % Europe: 8 % Asia: 5 % Africa & ME: 7 % South America: 1 %
NORTHROP GRUMMAN	Started out as two separate defense contractors in the 1930s until 1994 when Northrop acquired Grumman. Today the company is the 5th largest defense contractor world wide an 80% of revenues come from defense products.	**Revenue:** 28 980 **Enterprise Value:** 34 390 **Market Cap:** 32 560	Aerospace: 38.5% CMS: 26.8% Info. Systems: 24% Tech. Services: 10.8%	US: 85 % International: 15%
Maritime peers	**About**	**Financials (USDm)**	**Niche Products/Markets**	**Location**
AkerSolutions	Aker solutions is a global provider of products, systems and services to the offshore oil and gas industry. In 2014, the company was split into two separate companies, where one of the entities kept the original name.	**Revenue:** 4 120 **Enterprise Value:** 10 070 **Market Cap:** 12 520	Subsea 73% MMO 26% Engineering 4%	Norway 48% International 52%
CAMERON	Cameron International started out as the world's first blowout preventer in Houston, US. Today it is a global provider of production, control, processing, and separation systems for the oil and gas industry.	**Revenue:** 10 380 **Enterprise Value:** 10 420 **Market Cap:** 8 960	Drilling & Production - Systems 61% Valves & Measurement 21% Compression Systems 18%	Americas: 43% M East/Asia: 23% Africa: 15% Europe: 19%
Rolls-Royce	Started out as a car munafacturer in 1884 in Manchester, UK, before developing into a provider of power systems for use in the air, on land and at sea. Approximately 39 percent of their revenue come from 'Land & Sea'	**Revenue:** 20 510 **Enterprise Value:** 16 960 **Market Cap:** 17 790	Civil 42% Power systems 18% Defence 17% Marine 13% Energy & Nuclear 10%	Americas 34% M East/Asia 30% Europe/ Africa/ Russia: 36%
HALLIBURTON	Halliburton (US), is the second largest oilfield services in the world, with operations in more than 80 countries. The company serves the upstream oil and gas industry throughout the lifecycle of the reservoir.	**Revenue:** 32 870 **Enterprise Value:** 43 320 **Market Cap:** 37 120	Completion & Production 62% Drilling & Evaluation 18%	North America 54% Latin America 12% Europe/ Africa 17% M East/Asia 17%

Source: Authors' own compilation based on company annual reports (2014)

5.3. Profitability Analysis

It is necessary to develop an understanding of KOG Maritime's and KOG Defense's past performance in order to create reliable forecasts of the future cash flows for the two segments. In general, the most commonly used tool for measuring performance of a company is the 'Du Pont model', which decomposes Economic Value Added into its fundamental elements (Petersen & Plenborg, 2012, p. 94). The general profitability measure in this model is the return on invested capital (ROIC) formula, which is benchmarked against both the weighted average cost of capital (WACC) and peers. However, when the invested capital side of the ROIC equation approaches zero, as it increasingly does among high-tech software development and services companies, the ROIC gets extremely large (whether positive or negative) and very sensitive to small changes in invested capital (McKinsey, 2005). Even for traditional businesses, the average level of invested capital has decreased from around 50% of revenues in the early 70s to around 30% in 2004 (McKinsey, 2005). This is evidently true for KOG where the average invested capital in the historical period comprise 27 percent of revenue, while for the average maritime and defense peer, invested capital stands for 54 and 61 percent respectively (see Appendix 12 and 20). The reason for this can be explained by the Group's negative NIBD. As discussed in section 2, this could be due to the concentrated state ownership, which seems to contribute to a very careful capital structure.

Hence, the ROIC measure will be highly volatile and inappropriate as a tool for comparing the performance of KOG's segments with its respective peers. This is especially relevant for the defense segment, where invested capital turns negative in 2014. The authors have therefore decided to use a different metric, 'Economic Profit divided by revenue', when comparing KOG's maritime and defense profitability with their respective peers.

5.3.1 Economic Profit as a Percentage of Revenue

The 'Economic Profit Divided by Revenue' is based on the same logic as ROIC and is able to illustrate economic value creation, like the 'Economic Value Added' metric (McKinsey, 2005). However, the metric avoids the pitfalls of ROICs that are extremely high or meaningless as a result of low or negative invested capital. Instead, the metric shows a clearer picture of absolute and relative value creation for KOG's segments, regardless of their absolute level of invested capital (McKinsey, 2005). In contrast to ROIC, the 'Economic Profit' divided by revenue is positive for companies that have negative invested capital and positive profit margins. Additionally, it is less sensitive to changes in invested capital. Based on this logic, the authors consider this approach to yield the highest information value when comparing KOG Defense and Maritime's profitability with their respective peers.

Eq. 6.4 $\text{Economic Profit as \% of Revenue} = \dfrac{NOPAT - WACC \times Invested\ Capital}{Revenue}$

It is not necessarily true that accounting profits equals value creation. In order for this to be true, accounting operating profits (NOPAT) has to exceed 'Invested Capital' multiplied by the companies 'weighted average cost of capital' (WACC). If that is the case, the company is able to create excess return or 'Economic Profit' (McKinsey, 2005). To proceed with the calculations it was necessary to compute the WACCs of each individual peer. This procedure is explained and illustrated in Appendix 22.

Economic Profit as a percentage of Revenue for KOG defense

It is evident from figure 5.5 that KOG's defense division is creating economic profit in the whole period. Furthermore, they are able to do so at a higher rate than its peers, which displays a very positive picture. The development over the five years is relatively stable for all companies, except for General Dynamics, which destroys value in 2012 due to a large impairment cost. In order to analyze the underlying drivers of this development, it is necessary to break down the metric into 'Profit Margin and 'Invested Capital as a Percentage of Revenue'.

Figure 5.5: Economic Profit as a Percentage of Revenue for KOG Defense & Peers
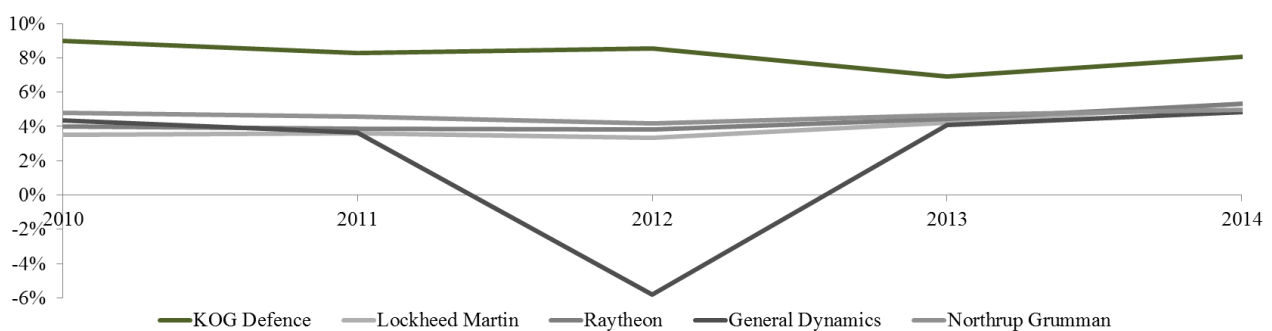
Source: Author's own compilation based on company annual reports (2010-2014)

The Profit Margin shows the relationship between revenue and expenses and is calculated as operating income (NOPAT) as a percentage of revenue (Petersen & Plenborg, 2012, p. 107-108). The Invested Capital as a percentage of revenue describes the annual level of capital investment a firm needs to generate its revenue (McKinsey, 2005).

Figure 5.6 shows the development of the two metrics for KOG Defense and its peers. It is evident that KOG Defense's Profit Margin stays above its peers from 2010 to 2013 before dropping below all of its peers in 2014. By analyzing the indexed income statement (See Appendix 15 & 16), it becomes clear that it is mainly KOG Defense's revenue development that is contributing negatively to the division's 'Profit Margin'. The revenue drops by 20% from 2012 to 2014 as a result of a generally weak defense market in the last 3 years. Also, the

'Protector' product, which has been a major revenue contributor historically, has moved into the declining stage of its lifecycle (Westby, 2015).

Figure 5.6: Decomposition: Economic Profit into PM (left) and Invested Cap. as % of revenue (right)
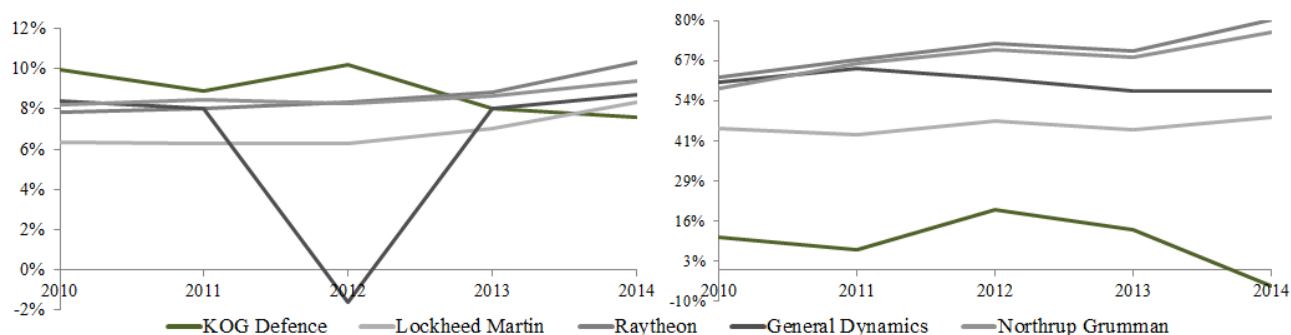
Source: Author's own compilation based on company annual reports (2010-2014)

The findings from the analysis of KOG Defense's 'Profit Margin' shows that KOG's strong performance in terms of economic profit must come from its low relative level of invested capital. KOG Defense's peers are larger defense companies that develop products which require higher capital investments and are as a result involved in more asset-heavy operations. In addition, the low invested capital could be explained by the Norwegian Government's aggressive defense project funding programs. As KOG Defense is handed an extensive share of these R&D contracts, they do not need to invest as heavily in product development compared to their peers.

Economic Profit as a Percentage of Revenue for KOG Maritime

Figure 5.7: Economic Profit as a Percentage of Revenue for KOG Maritime & Peers
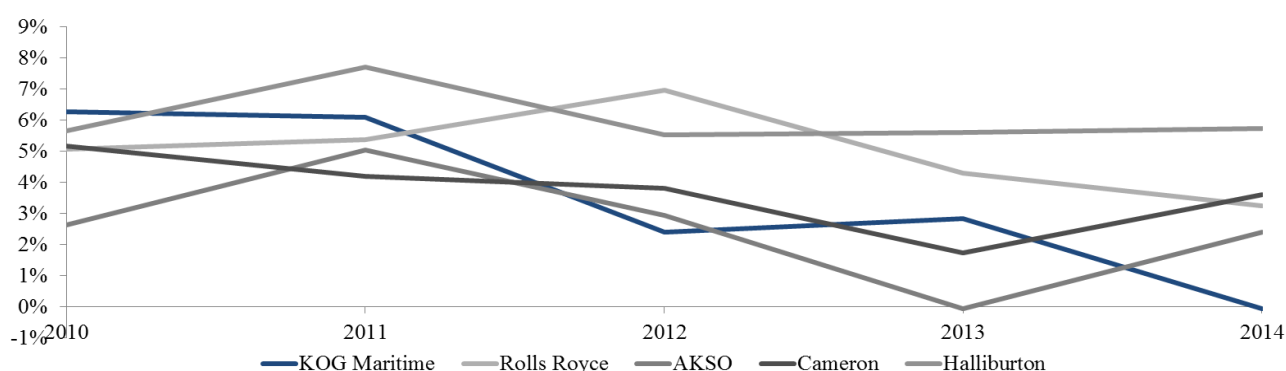
Source: Author's own compilation based on company annual reports (2010-2014)

Figure 5.7 illustrates that KOG Maritime is creating value in all years except for 2014. The rate of value creation is declining steadily and is approaching zero in 2014, where it turns marginally negative (-0,05%). Compared to

maritime peers, KOG Maritime goes from the best performer in terms of Economic Profit in 2010 to the worst performer in 2014. This is a very negative trend that needs to be further investigated.

Again the metric is broken down into 'Profit Margin' and 'Invested Capital as a Percentage of Revenue' in order to analyze the negative development for KOG Maritime. Figure 5.8 shows that Invested Capital has stayed relatively stable relative to revenue. It is also evident that KOG Maritime is more capital intensive than KOG Defense. This can be explained by the trend towards 'Full Picture Solutions', which requires higher capital investments for this division (Arctic, 2014). In addition, KOG Maritime's value chain is also less involved in partnerships when it comes to the manufacturing of the final products, which results in a stronger need to invest in fixed assets.

Figure 5.8: Decomposition: Economic Profit into PM (left) and Invested Cap. as % of revenue (right)
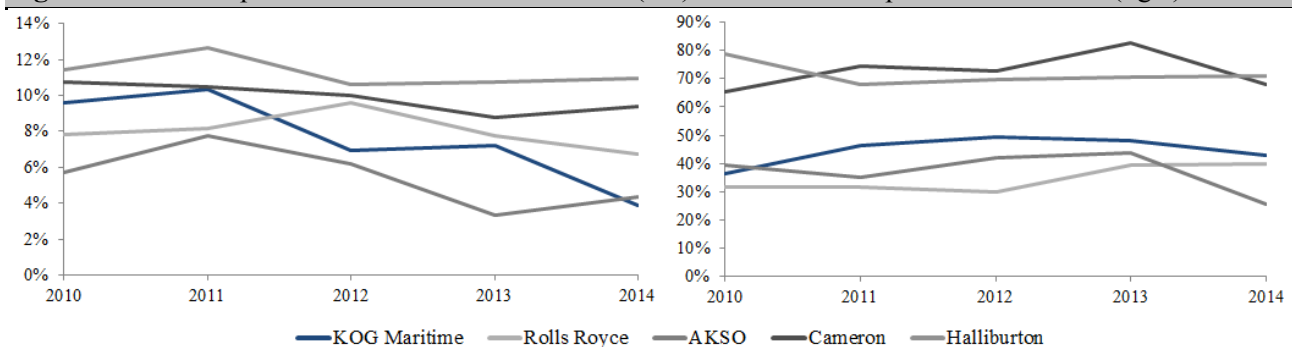
Source: Author's own compilation based on company annual reports (2010-2014)

It becomes clear by looking at Figure 5.8 that the strong decline in KOG Maritime's 'Profit Margin' is the main contributor to the negative development in 'Economic Profit as a percentage of revenue'. The 'Profit Margin' drops from 10,3% in 2011 to 3,9 % in 2014. The common size and index analysis (see Appendix 15 & 16) show that the largest contributor to this development is a large 'goodwill impairment' cost in 2014 of NOK 320 million, which was carried out due to the Oil & Gas Technology sub-segment's weaker prospects and changed market conditions (KOG, 2014). By adjusting for this impairment, the 'Profit Margin' is 6,8% in 2014, which would have put KOG Maritime as the 3rd best performer among its peers. However, there would still be a negative trend as the 'Profit Margin in 2011 was 10,3%. The Index analysis shows that revenue is growing steadily, which infers that the negative development must come from higher costs. The common-size analysis shows that 'COGS' is relatively stable in the whole period at around 34% of revenue. On the other hand, it is evident that 'Payroll Expenses' have increased from 26% in 2010 to 37% of revenue in 2014. An explanation for this development can be that KOG's average full-time employees have grown quite rapidly from around 5,200 in 2010 to 7,500 in 2014 and revenues have not been able to grow at the same pace (KOG, 2010-2014).

5.4. Liquidity Risk Analysis

Liquidity risk refers to a firm's ability to meet its current (short-term risk) and non-current liabilities (long-term risk), and is affected by the capability to generate net positive cash flows (Petersen & Plenborg, 2012, p. 150). The short-term analysis will show KOG's ability to meet all short-term obligations as they become due, while the long-term liquidity risk will measure KOG's long-term financial health and ability to cover long-term obligations. In addition to measuring KOG's short- and long-term liquidity risk, the ratios found in this section will also help provide input to the credit analysis, which have been conducted for the purpose of calculating WACCs for peers. The liquidity ratios are based on end-of-year figures, as these are considered the most updated (Petersen & Plenborg, 2012, p.155). For a complete illustration of the performed credit analysis, see Appendix 25.

5.4.1 Short-term liquidity risk

Liquidity cycle

The liquidity cycle is an indicator of the number of days it takes to convert operating working capital into cash. It is attractive to have a low liquidity cycle, as this shows stronger cash flow. Figure 5.9 shows that KOG's 'Liquidity cycle has increased quite rapidly from 2010 to 2014. This is an effect of a sharp increase in the maritime working capital, as can be seen in the in the index analysis (Appendix 15). However, it is evident that KOG's liquidity cycle is below its maritime peers the whole period, but is approaching approximately the same level in 2014. Compared to defense peers the level of short-term risk (in terms of liquidity cycle) associated with KOG is considered low, taking into consideration that the average liquidity cycle of defense peers is consistently negative, as their current liabilities exceeds their current assets in the whole period.

Figure 5.9: Liquidity cycle of KOG compared to Maritime and Defense peer groups
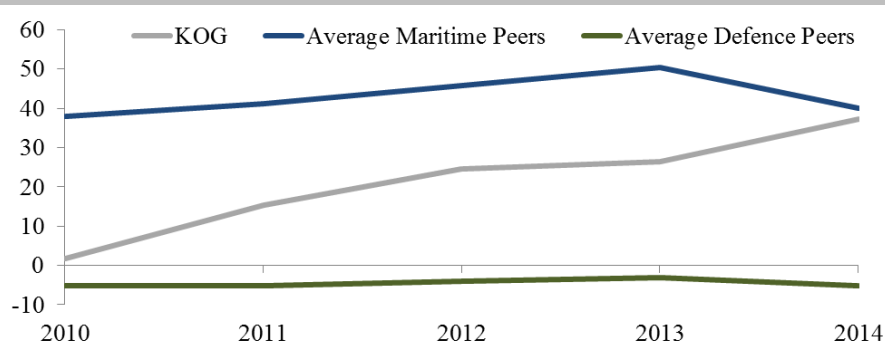
Source: Author's own compilation based on company annual reports (2010-2014)

Current Ratio

The current ratio is an alternative measure for short-term liquidity. It measures the likelihood that current assets cover current liabilities in the event of liquidation (Petersen & Plenborg, 2012, p. 155). KOG's current ratio lies below maritime peers and more or less in line with its defense peers in the whole period. The ratio is below both peer groups in 2014, which signals that KOG's short-term liquidity risk is higher than its peers. However, the authors do not see the risk as alarming as the ratio is consistently above 1.00, which indicates that current assets are able to cover current liabilities in the event of liquidation.

Figure 5.9: Liquidity cycle of KOG compared to Maritime and Defense peer groups
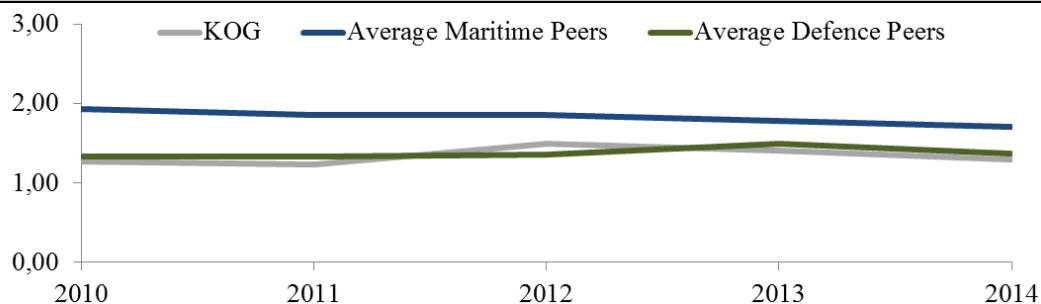
Source: Author's own compilation based on company annual reports (2010-2014)

5.4.2. Long-term liquidity risk

Solvency ratio

The solvency ratio is one of the most frequently used measures of a firm's long-term liquidity risk. In general, a low solvency ratio indicates high long-term liquidity risk. The ratios of KOG and its two peer groups have been calculated based on market values, as these are closer to the realizable values. Figure 5.10 shows the historical development, while the calculations can be seen in Appendix 24.

Figure 5.10: Solvency ratio (Market-Values) of KOG compared to Maritime and Defense peer groups

(Market Values)	2010	2011	2012	2013	2014
KOG	1,1	1,1	1,1	1,1	1,2
Average Maritime	0,9	0,9	0,9	0,9	0,9
Average Defense	0,7	0,7	0,8	0,8	0,8

Source: Authors' own compilation based on Datastream (2015c)

KOG's 'Solvency Ratio' indicates a very low long-term liquidity risk compared to both maritime and defense peers in the whole period. The market value of equity (end-of year) accounts for more than 100% of the value of debt and equity combined, which induce an almost unnaturally low long-term liquidity risk. The reason for this is that KOG has a significantly negative NIBD, which, as indicated in section 2, could be explained by the company's state ownership.

6. SWOT Analysis

Before conducting the financial forecasting, this section will tie together the previous conducted analysis to gather the aggregate net impact of strategic and financial factors affecting KOG Defense and KOG Maritime's key value drivers. The PESTEL and Porter's Five Forces analysis identified and analyzed main macroeconomic and industry-specific factors affecting current and future profitability. The VRIO and the Financial Analysis elaborated on underlying strengths and weaknesses driving the historical economic performance.

In order to combine these findings, the authors will conduct a SWOT analysis as this is seen as an effective framework for this purpose (Petersen & Plenborg, 2012, p. 192-193) The SWOT categorizes the identified factors as strengths, weaknesses, opportunities and threats. This will show a clear picture of KOG Defense and KOG Maritime's position, as well as the potential threats and opportunities the two divisions are facing.

In order to measure the impact of the different identified factors, each factor has been evaluated based on its expected effect on KOG's economic projections for the respective segments. Further, the factors are categorized to either have a short- (ST) mid- (MT) or long-term (LT) effect. Figure 6.1 and 6.2 presents the total effect of how all factors affect the two segments, while Figure 6.3 presents a summary of each identified impact.

Figure 6.1: Summary of identified factors (1/2)

SWOT	Strengths	Weaknesses	Opportunities	Threats	Economic Outlook
Macroeconomic					
Political/Legal			Access to new markets, more geopolitical tension and new NATO spending targets (2% of GDP). New regulations by IMO and MARPOL.	Less protectionism would increase competition in key international markets. This could result in fewer contracts. Old systems may not fulfill new regulation demands	**Positive (ST-LT) Positive (MT)**
Economic			Improving GDP rates are likely to increase defense spending. Attractive currency rates. GDP recovery might strengthen demand form merchant fleet. Attractive currency crosses.	Reduction in oil prices will have a strong negative impact on E&P spending, which ultimately reduces new orders within the Offshore, Oil and Gas sub-segment.	**Positive (ST-LT) Negative (ST-MT)**
Socio-Economic			Higher likelihood of terror will increase defense spending. Increased focus on safety could trigger higher demand for some maritime products.	More liberal opinions legitimacy of defense spending. Reduced legitimacy of trade engagements with ship owners.	**Neutral Neutral**
Technological			Cyber attacks and longer life cycles of defense programs. Trend towards system integration	Increased competition for new engineers within the industry.	**Positive (ST-LT) Neutral**
Environmental			Additional benefits through the sustainable value chain. Ecofriendly customers could represent a new revenue source.	New regulations could force investments in new production plants. Reduction in oil and gas activity due to greener energy sources.	**Neutral Neutral**

Source: Compiled by authors

Figure 6.2: Summary of identified factors (2/2)

Industry specific					
Market Position	The states are brand loyal. Switching costs are moderate. Holds a strong position within the Offshore market, and ship owners are brand loyal.	Have had difficulties entering high-growth eastern markets. Weak position in alternative markets such as cruise vessels.	Order from Oman could be a door opener into the Middle-East. The technology could easily be applied to new maritime segments, which could serve them with a first mover advantage.	Repos have secured orders in the past within EU and NATO. This security are likely to be less significant in the future. Competitors are increasing their efforts within the DP segment, and KOG must fight for market shares in the future.	**Positive (ST-LT)** **Neutral**
Product differentiation	Placed high on the learning curve due to long history. Offer integrated system-solutions and unique end-products.	Tough to differentiate on single products	Current specialized products could be develop into new cutting edge systems at a relatively lower investment. Increasing demand for integrated systems, where KOG has strong know-how	Key products could be replaced by revolutionary technology developed by other contractors. Some of the products face competition from lower quality cheaper solutions.	**Positive (ST-LT)** **Positive (ST-LT)**
Supplier dependence	Critical components are produced at site. Strong relationships across the value chain.	If one violate deadlines all producers suffer. Some suppliers are more important than other.	Many of the contractors are big and financially strong making room for acquiring suppliers if they grow too important. KOG has developed joint ventures in Asia	Large movement of suppliers to Asia	**Positive (ST-LT)** **Neutral**
Customer concentration	Very large customer base as KOG supplies ships in all merchant marine markets	Few buyers are responsible for a large fraction of total spending. The offshore segment consist of a few large buyers.	Already large installed base will generate life-cycle revenues	Customers increased focus on affordability, quality and cutting edge technology put pressure on the contractors. The reduction in E&P spending will increase customers cost focus.	**Negative (ST-LT)** **Negative(ST)**
Market saturation	New markets are presenting hockey stick growth projections. Diversified Market	Current key markets seem to be mature and likely provide low growth. The markets are highly cyclical.	Offshore wind energy is a new unsaturated potential market	The contractors must fight for revenue in both new and current markets. Oversupply of ships in the Offshore sub-segment	**Neutral** **Negative (ST)**

Company specific					
Partnerships	Strategic partnerships induce knowledge sharing that increases quality and efficiency. Strategic partnerships in Asia		The partnerships could provide new market access. Partnerships in Asia could provide increased market access	The partnerships could provide new market access.	**Positive (ST-MT)**
Product development	Historical investment of in R&D has secured strong growth within strategic product lines. Experience in the development of integrated systems		Continued governmental financing of product development projects. Early in developing products for offshore wind energy	Workforce spillover could threaten the intellectual property.	**Positive (ST-LT)**
Ownership	Access to foreign markets	Conservative capital structure	R&D contracts and Repos through the Norwegian Government	Cannot participate in consolidation phases.	
Profitability	Division has been able to outperform its peers due to relatively lower invested capital. Division has created economic profit in the historical period.	Segment experience a negative relative profit trend. Division experience a negative profit-margin trend.	The industry's recovery and the Groups attractive position is likely to improve profit figures going forward. Revenue growth in subsea and Merchant Marine sub-segments	Customers high barging power could reduce profit margins. The negative profit margin development is likely to continue due to poor macroeconomic outlook.	**Positive (ST-LT)** **Negative (MT)**
Liquidity	The groups liquidity risk is extremely low, both in absolute terms and relative to peers.	The conservative liquidity management has resulted in a suboptimal capital structure.	The excess cash could be used to payout significant dividends in the future, or be a source of financing in strategic M&A transactions.		**Negative (ST-LT)**

Source: *Compiled by Authors*

The factors above are presented as strengths, weaknesses, opportunities or threats, and some of the net economic effect will neutralize each other. Furthermore, some of the factors above will impact the revenues and profit margins with different weights. To create a better understanding and connection of the financial and strategic factors the authors have conducted an assessment of the total effects in Figure 6.3.

Figure 6.3: The overall impact of strategic- and financial factors on future economic development

Defense	Short-term (1-2 years)	Medium-term (3-4 years)	Long term (5+ years)
Revenue	**Turnaround form negative to positive growth**	**Small increase before decrease towards stable**	**Stable**
Main drivers	Increase due to industry recovery and shift in geopolitical situation. Further supported by attractive market position.	Further increase as NATO states seek target. Followed by a small down turn as competition increases and the market cools off.	Revenue growth is expected to reach the weighted inflation rates in key markets.
EBITDA-margin	**Margin improvements due to volumes**	**Margin peak due to R&D capitalization**	**Stable**
Main drivers	Small improvement as international orders increase. Margins will also be backed by "Delta One" and currency situation.	Margins will peak when final rollout of strategic product lines occur before returning to normal values due to customers barging power.	Margins are expected to reach steady state.
Maritime	Short-term (1-2 years)	Medium-term (3-4 years)	Long term (5+ years)
Revenue	**Move from positive to negative growth in period**	**Continued negative impact before positive turnaround**	**Stable**
Main drivers	Extensive backlog will support first year revenue together with merchant segment, before reduction in E&P spending will force a negative growth.	Continued negative growth before a expected normalization in oil prices will support increased E&P spending, which ultimately has a positive effect	Revenue growth is expected to reach the weighted inflation rates in key markets.
EBITDA-margin	**Negative development due to E&P spending decrease**	**Further negative development before turnaround**	**Stable**
Main drivers	Decrease in order volumes will have a negative impact on revenue. However, the attractive currency crosses will offer some support in terms of historical digits	Further negative development due to the expected E&P spending level. Before improvement towards long-term levels when oil prices improve.	Margins are expected to reach steady state.

Source: Compiled by authors

It is in the authors' opinion that the defense segment is likely to increase in importance for the Group going forward as its strategic outlooks are promising, which is supported by a solid financial position and track record. The segment also holds an attractive product portfolio, which is likely to help them capitalize on the industry's recovery. The maritime segment on the other hand is facing a more challenging environment with reduction in orders and negative revenue growth, largely due to budget cuts among E&P companies. These findings and analysis will be vital to conduct justified and reasonable forecast of the segments future.

7. Forecasting

The forecast horizons of mature companies like KOG are generally shorter than for 'younger growth companies', which are expected to experience more fluctuating and higher growth rates. As both the DCF- and EVA approach assume a constant growth rate in the terminal period it is essential that the forecast horizon is long enough to allow the company to reach a "steady state" (Petersen & Plenborg, 2014, p. 214). The business segments that KOG Defense and KOG Maritime operate in could be classified as cyclical. Consequently, to reach a "steady state", the included historical figures and forecast should allow for one business cycle to occur. The authors have therefore split the forecasting period into three parts, short-term (2015E-2016E), mid-term (2017E-2018E) and long-term (Terminal).

According to the DFC- and EVA models, the terminal growth is assumed to continue into perpetuity. Hence, if the growth rate exceeds the economy as a whole, it would imply that the company had the ability to outperform the market's growth into eternity (Gordon, 1962). The authors do not see this as a realistic assumption and has therefore based KOG Defense and KOG Maritime's terminal growth on the projected long-term weighted inflation rates in KOG's major operational markets (see Appendix 27).

KOG Defense and KOG Maritime will be valued individually. Consequently, the assumptions related to the pro forma financial statements are handled separately for each division. The forecasts assumptions for each forecasting item are presented in full in Appendix 29. The forecasting section is built on a revenue-driven method, meaning that the majority of all line items are affected by fluctuations in revenue. This will contribute to a higher quality in the forecast as the revenue is closely related to the activity level within each segment (Koller, et al., 2010, p. 188-189). The development and assumptions used in the forecast are largely based on the findings in the strategic and financial analysis. As revenue and EBITDA-margins are of great importance in the forecast, it is essential that these have received credible forecasts. Therefore, careful description of assumptions and considerations made regarding these are presented in this section.

7.1.1. Forecasting of KOG's Defense segment

Revenue growth

The revenue streams generated from the defense operations has experienced a negative development over the last few years. Since 2011 the revenue has dropped 28% from NOK 8.080 million to NOK 5.842 million. This can be explained by the negative development in military spending by the US and Western Europe. Figure 7.1 illustrates the historical relationship between each region's defense spending and KOG Defense's revenues from products within this industry.
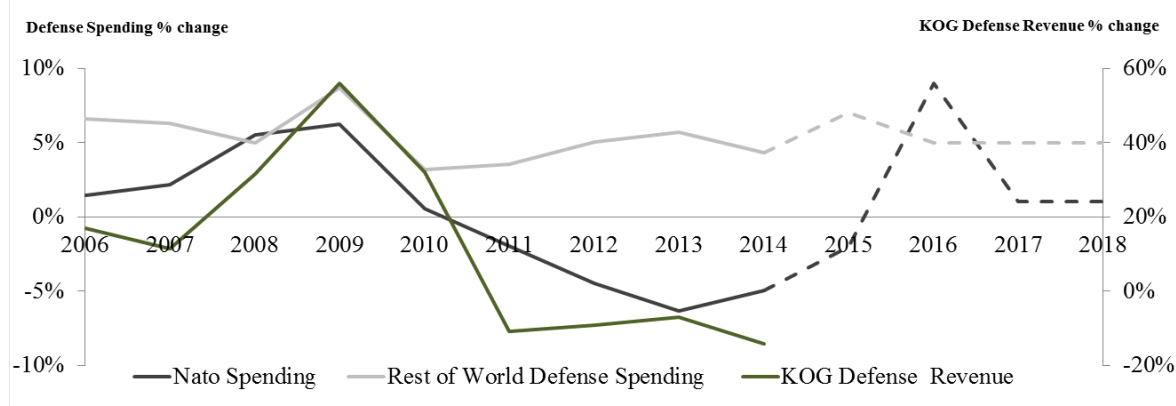
Source: Compiled by authors, Pareto (2014) & SPIPRI (2014)

As can be seen from Figure 7.1 there is a clear relationship between the development in defense spending and KOG's military revenue. After the spending cuts the last couple of years the revenues have followed with negative growth. It is clear that NATO spending has had most impact on KOG's revenue. However the authors note that the spending growth in the rest of the world has been stable and positive, which provide future growth opportunities. Further, due to increased geopolitical risk in terms of tensions between Russia and the Western World, and reduced recessionary pressure, consensus is that the drought is over and that the market yet again will experience increased defense spending (Pareto, 2014). When analyzing Figure 7.1 one should note that the tremendous growth between 2007 and 2010 was due to the extraordinary success of the Protector System. This confirms findings in the strategic analysis regarding the importance of technology, as a particular product's success can have a huge impact on revenues. Also, as KOG is a small defense contractor on an international basis, fluctuations in defense spending have a huge impact on revenues. One single contract can make or break several financial years because of the size and longitude of orders and contracts.

The authors argue that KOG's product portfolio is well positioned to capitalize on the upside potential in defense spending as many of their products are in the early stage of their life cycle. The scope for NASAMS is significant as KOG together with Raytheon has already won contracts with international customers. The system is currently used by Finland, Chile, Norway, Oman, Spain and US. The NOK 3 billion contract with Finland in 2009 and the NOK 3.7 billion contract with Oman in 2014 are considered justified benchmarks in terms of incoming orders. As several European countries currently use the old MIM-23 Hawk as their air defense, many of these countries are in need of modernization. Also, the Oman contract could serve as a door opener into the Middle Eastern region. The need to secure strategic assets from threats such as the IS give further raise to potential contracts from this region (Pareto, 2014).

Furthermore, the NSM missile is the only fifth generation long range strike missile currently in production. Poland has already handed in two orders totaling NOK 1.4 billion, and there should be a substantial demand potential from other European NATO members. However, the largest upside potential lies with the US Navy's Littoral Combat Ship program, which includes 55 new ships. The US Navy is currently in the process of selecting a missile solution for its LCS program and conducted a successful test launch of the NSM in 2014. If they decide to use the NSM it could lead to a NOK 5.5-11 billion revenue potential, according to estimates from Pareto (2014). In the longer term the division's JSM Missile which is developed together with the Norwegian Armed Forces shows large potential. The completion of the product is expected to occur in 2017, and if it is fully adopted by the F-35 program for Navy applications the revenue potential would lie around NOK 17-18billion. The Protector's success story has suffered significant volume declines the recent years. This is largely due to the procurement cuts of the US Army and the US withdrawal from the Middle East. KOG has also fully financed the development of the next generation Protector, Medium Caliber Remote Weapon System (MCRWS), which has had an impact on the margins. When the US procurement budgets reach historical numbers and the first orders of the MCRWS are placed, the authors expected that the product can contribute to revenue growth in 2016-2017.

The book-to-bill ratio is a useful measure to gain insight of outlooks and demand in industries that are technology intensive. The ratio is calculated as the relationship between incoming orders and shipped and billed units. A book to bill ratio above one indicate excessive demand and positive outlooks.

Figure 7.2: Historical and projected book to bill ratio based on order intake
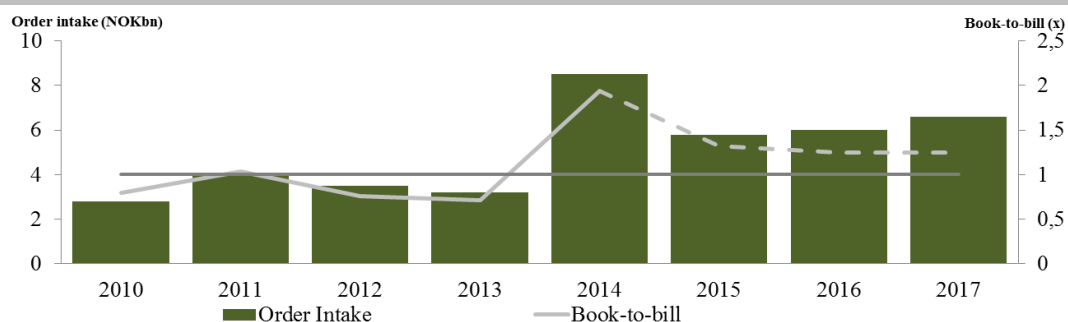
Source: Compiled by authors, Pareto (2014)

As Figure 7.2 provides useful insights to how the expected outlooks for KOG Defense's operations compared to recent years. In 2014, the group experienced a significant increase in order intake. This was mostly driven by the acquired Oman contract. Going forward, the orders are moderating to some extent, but are still significantly superior to previous years. The authors feel that the projected book-to-bill ratio is conservative given KOG's attractive product portfolio and the industry's positive outlook, ranging between 1.2 and 1.3.

Figure 7.3 presents the forecasted revenue growth of KOG Defense. Based on the calculated book-to-bill ratio the division's revenue is expected to improve significantly in the following years. It is expected that the high order intake during 2014 will provide positive accounting revenues during 2015-2016. Further, KOG Defense is well positioned for the industry's recovery due to the geopolitical tensions and the improved financial situation of key customers such as the US and countries in Western Europe. This will contribute to sustain the growth in the medium term. In the longer term the authors believe that the market will come down to normal levels and follow the weighted projected inflation rate of 3.02%. Additionally, the currency situation is very attractive for KOG as they have most of their costs in NOK and revenue in USD or EURO. Estimates suggest that the currency crosses between NOK/USD and the NOK/EUR will continue to remain attractive, which will support the growth in 2015-2016.

Figure 7.3: Forecast of KOG's Defense Segment

KOG Defence	2010	2011	2012	2013	2014	2015E	2016E	2017E	2018E	TV
Revenue Growth		-10,2%	-6,1%	-7,0%	-14,3%	7,5%	6,1%	10,0%	5,0%	3,0%
Revenue (NOKm)	8.693	7.805	7.330	6.817	5.842	6.280	6.663	7.330	7.696	7.929
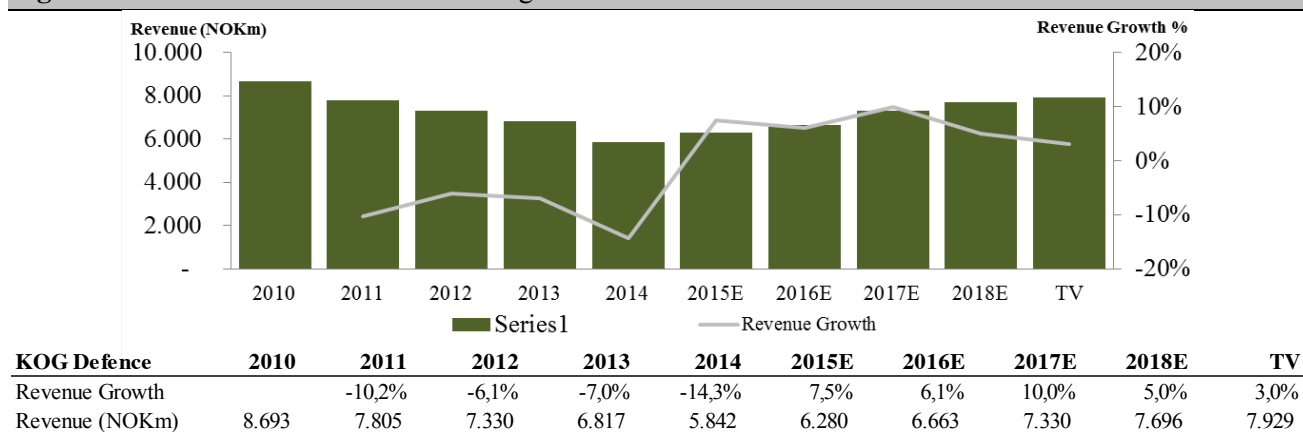
Source: Compiled by Authors

EBITDA-Margin

The historical EBITDA-margin has decreased from 16.44% in 2012 to 13.42% in2014. The negative trend is explained by extensive contracts with the Norwegian government. As the government contributes with significant financing of product development the group receives only low single digit margins on their sold units to the Norwegian Armed Forces. In the future the authors expect that the international customer base will increase as the NASAMS and NSM are contributing to a larger share of revenue. This will help the division in receiving higher margins on their products. Lastly, management has presented a companywide cost savings program (Delta One) to help sustain competitiveness in the market (KOG, 2014). It is budgeted that this initiative would help saving costs of approximately NOK 1 billion by 2017 on a Group basis.

Figure 7.4: Historical and projected EBITDA-Margin and Operating Expenses
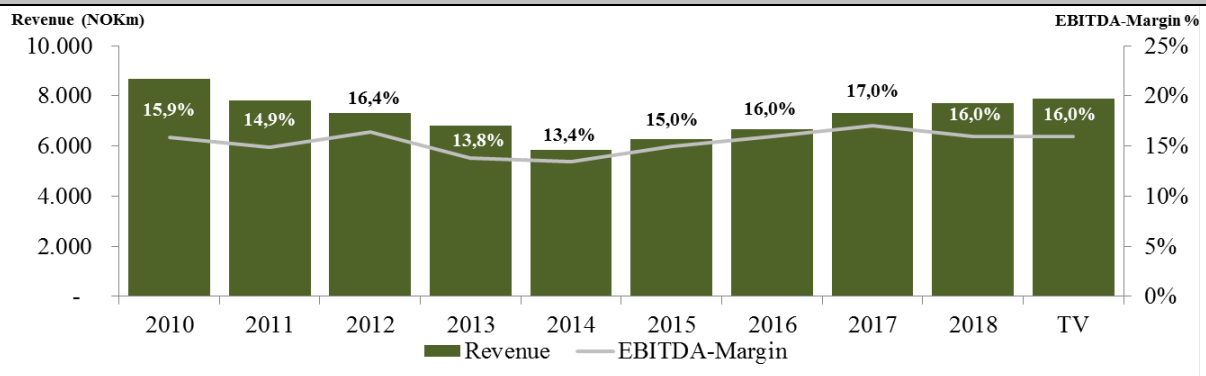
Source: Compiled by Authors

7.2.1. Forecasting of KOG's Maritime segment

Revenue Growth

KOG Maritime has experienced a strong growth over the past years, with a revenue growth from NOK 6.3billion in 2010 to NOK 10.7 billion in 2014. The main driver of this development has been high order activity in the offshore segment, as NOK 2.5 billion, or 89 percent of the revenue growth from 2010 to 2014 has stemmed from the offshore division (KOG, 2014). As described in the PESTEL analysis, the offshore segment is to a large extent driven by the development in spending among E&P companies. Additionally, KOG Maritime recognizes revenue relatively close to the final delivery of the vessels. Thus, current order books and backlogs give a fair estimate of the short-term development in revenue growth.

Figure 7.5: Development in Global E&P Spending and KOG's revenue growth
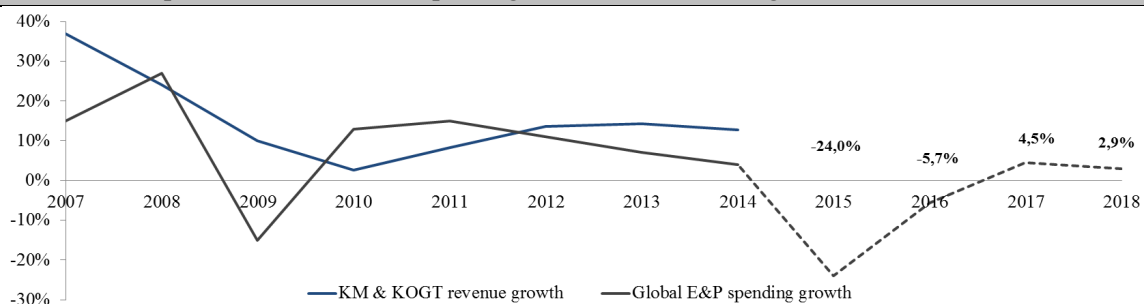
Source: Authors' own compilation Department of Commerce (2014), KOG (2015)

Figure 7.5 shows the relationship between the growth in E&P spending and KOG's maritime revenue growth and the forecasted E&P spending growth. The figure shows that the historical correlation between E&P spending growth and KOG's maritime revenue growth has been significant. However, it can also be seen from the graph that the fluctuations in KOG's maritime revenue growth is not as volatile as the E&P spending growth. There are two reasons for this. First, KOG's maritime operations more diversified and some of the revenues come from

other maritime segments. Secondly, approximately 30 percent of the revenues come from "lifecycle revenues" or after-sales (Pareto, 2015). The authors will therefore analyze the outlook for each maritime segment in order to forecast the revenue growth for KOG Maritime.

Based on the strategic analysis, the authors expect the offshore segment to be negatively affected by the poor outlook for E&P spending in the next years. The newbuild markets for OSV and Drillships are currently oversupplied, and although a significant share of older vessels may be scrapped, this oversupply implies reduced newbuilding activity in the upcoming years (Gjertsen, 2015). However, the maritime backlog, which can be seen in Appendix 28, implies that revenues from the offshore segment will stay at high levels throughout 2015. Figure 7.6 shows the global order book of OSVs and Drillships from 2000 to 2018 (Platou, 2015).

Figure 7.6: Development in OSV and Drillship orderbook
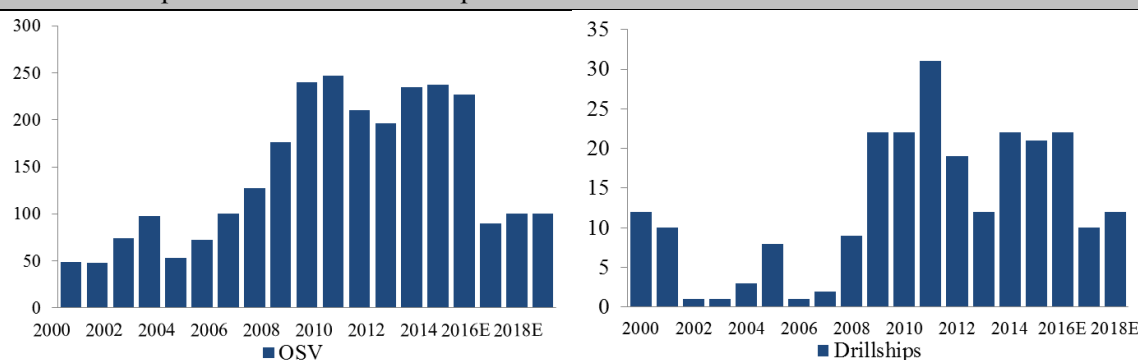
Source: Platou (2015), Pareto, (2015)

The current order book points to a large decrease in deliveries from 2016 and onwards, compared to historical levels. More specifically, deliveries of 211 OSV vessels and 33 Drillships are expected in 2015 and 74 OSV vessels and 18 Drillships are expected in 2016. There are limited data on scheduled deliveries of vessels beyond 2016 and the weak outlook in the E&P market could lead to some delays and cancellations of deliveries before that. The authors have therefore estimated three different scenarios from 2015E to 2018E (Appendix 28), based on the E&P spending outlook in Appendix 9. Our base case scenario assumes that revenues from newbuild activities will come down well below historical averages from 2016 to 2018. On the positive side, KOG has a very strong market position within the offshore segment and a large installed base. Consequently, life-cycle revenues for the installed base will increase as the newbuilds from 2014 and 2015 enters the market, which will dampen the revenue decline post 2016. An additional factor that may offset some of the negative development is opportunities within Offshore Wind Energy as discussed in the strategic analysis. It is hard to forecast the revenue potential of this opportunity as it is a segment with a very uncertain outlook, and we see limited potential for the short term. However, we do believe that KOG is favorably positioned in this movement as they

show strong focus on developing new technology to streamline these types of businesses, which the authors believe will have a positive revenue effect in the long-term.

When it comes to the Subsea sub-segment, the high investment level in the E&P sector in the last decade has also here resulted in high order activity. This development is to a large extent is driven by the ordering activity in subsea vessels, such as Multi-Service Vessels MSV and Maintenance Vessels. According to Pareto (2015), the ordering activity within these vessels is expected to come down significantly in the next two years on the back of the negative development in the E&P sector. KOG has communicated a growth in new orders of 25 percent in 2014 compared to 2013. We believe that this reflects a strong market position within MSVs, but we do not expect this growth to continue into 2015 as there are strong indications for reductions in exploration activities and many ongoing projects have been put on hold as a result of the low oil price (Pareto, 2015). For the longer term the authors estimate that the development in the subsea segment will follow the negative trend in the offshore sector as they are affected by many of the same factors. However, there are some positive signs as KOG also delivers AUVs (see section 4). These have after the release to the commercial subsea market outperformed its competition by being a lot more effective both in terms of time and costs (KOG, 2014). The authors believe that the development within this product line will have positive effects on subsea revenue growth in the medium- and longer term, as many E&P companies will look for more efficient cost saving technology.

Figure 7.9 shows that the last sub-segment, the merchant marine's revenue growth has been negative from 2010 to 2013. This is also confirmed in the strategic analysis, where the development in GDP during and after the financial crises resulted in low ordering activity and a generally weak shipping market in the years following. Figure 7.9 illustrates the ordering activity in the total merchant marine segment from 2005 to 2014.

Figure 7.8: Ordering activity in merchant marine segment 2005-2014
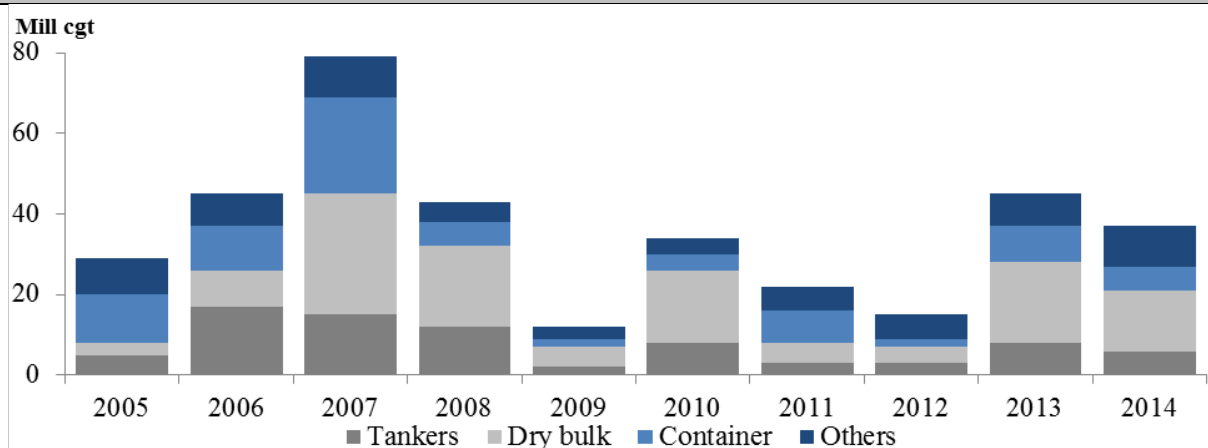
Source: Platou (2015)

It is clear that the ordering activity has picked up quite significantly in 2013 and 2014 and there are several factors indicating that the outlook for the merchant marine division is picking up. As the orders of new vessels have lead times of 1-3 years and KOG recognizes revenue close to final delivery, KOG has not been affected by this surge until late in 2014 where the segment experienced a revenue growth of 15%. Additionally, the merchant marine has experienced a growth in new orders of more than 50 percent in 2014 compared to 2013 even though the total orders in the market has come down moderately in the same period. The authors believe that this is due to their strong market position within automation systems as well as their focus on cross-selling as the market has showed an increased demand for integrated solutions. For the longer term we expect two additional factors to have a positive effect on the segment's revenue growth. Firstly, we see KOG's position as favorable with regards to new regulations on GHG emissions. When the new regulations enter the shipping markets with full effect we believe that KOG's strong focus on developing systems that offer functionality that helps reduce fuel consumption combined with their focus on developing full-picture solutions will pay off. Secondly, we believe that the already large and growing installed fleet base of more than 17,000 vessels will contribute to a stable revenue flow throughout the forecasting period.

Figure 7.9: Forecast of KOG's Maritime segment

Revenue growth	2010	2011	2012	2013	2014	2015E	2016E	2017E	2018E	TV
Offshore, Oil & Gas		16,1%	33,7%	19,4%	8,9%	7,5%	-8,0%	-6,0%	4,0%	3,0%
Subsea		7,3%	2,7%	10,4%	13,7%	9,0%	-6,0%	-3,0%	4,0%	3,0%
Merchant Marine		-7,2%	-26,7%	-4,4%	39,2%	15,0%	5,0%	4,0%	3,0%	3,0%
Kongsberg Maritime		**8,3%**	**13,6%**	**14,2%**	**13,3%**	**8,9%**	**-5,7%**	**-3,7%**	**3,8%**	**3,0%**
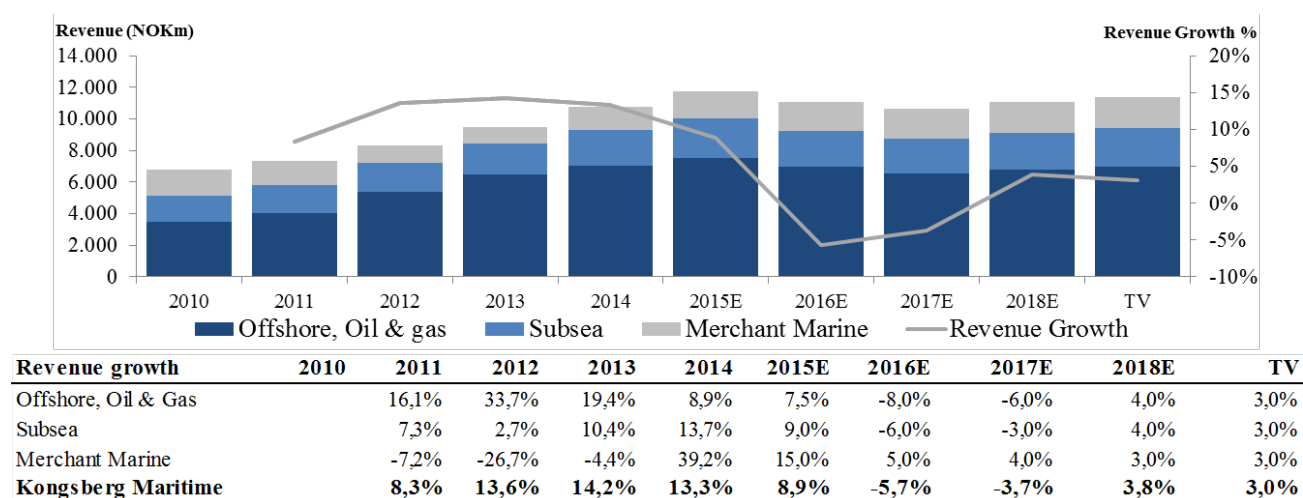
Source: Authors' own compilation

Figure 7.9, illustrates KOG's total revenue growth forecast. Revenue growth in 2015 is based on the current backlog and scheduled deliveries in 2015, which indicates a revenue growth of 8.9%. For the medium-term (2017-2018) we expect revenue growth of -5.7 and -3.7 percent respectively, where negative contributions from the offshore, oil &gas, and subsea will dominate in 2016 and 2017. However, the negative trend will be dampened by lifecycle revenues and positive contributions from the merchant marine. The oil price is expected

to pick up from 2017 an onwards, which supports positive growth in the offshore, oil & gas and the subsea segment from 2018. The revenue growth has therefore been estimated to 3.8% in 2018. In the terminal period, the growth is set equal to the weighted inflation rate of 3,02%.

EBITDA-Margin

KOG Maritime has received an average EBITDA-margin of 14.1% over the last five years. However, as described in the financial analysis, the payroll expenses have grown faster than revenue. As a result, the EBITDA-margin has declined from 16.3% in 2010 to 11.9% in 2014. The company has communicated a goal to maintain a total EBITDA-margin above 10% for the next five years. The authors expect the maritime division to marginally achieve this goal in the forecasting period. As stated in the strategic analysis, the division has been quite disciplined in their pricing strategy compared to peers, which has made the threat of new entrants and price wars in the industry low. The favorable currency situation described in the strategic analysis is also expected to support a preservation of a double digit EBITDA-margin. On the other hand, the authors expect a moderate negative impact from lower activity in the offshore, oil & gas and subsea segment. Consequently, we estimate EBITDA-margins of 11.5% in 2015, 11% in 2016 and 10.5% in 2017. For 2018 and the steady rate the authors expect the EBITDA-margins to come back up to 11% as the activity levels are expected to increase somewhat from 2018 and onwards.

Figure 7.10: Development in KOG's Maritime EBITDA-margin
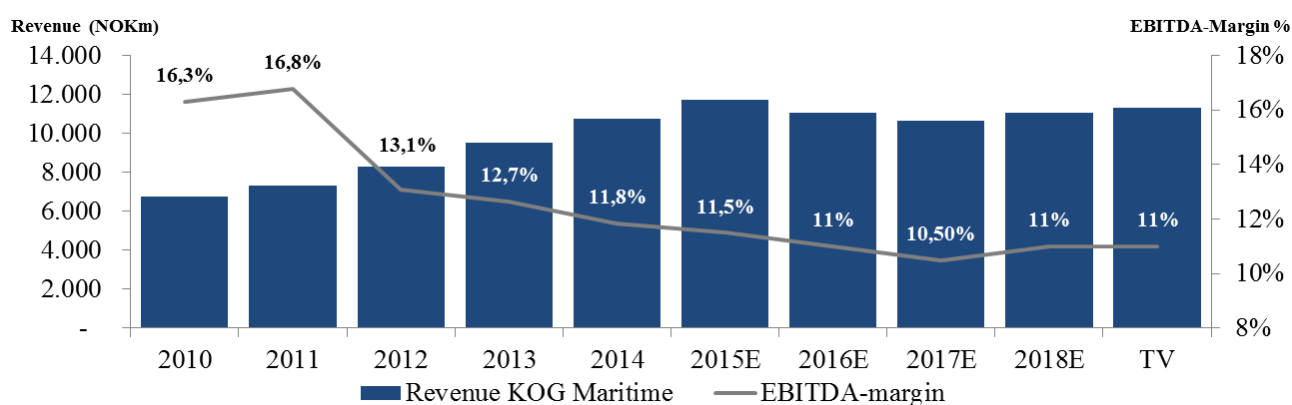
Source: Authors' own compilation

Quality of Estimates in the Forecast

In order to evaluate the validity of the forecast it is essential to compare the projected performance with the historical returns. The 'Economic Profit as a percentage' of revenue has been established for historical and forecasted returns in this regard. The analysis of the quality of the estimates in this section is provided in Appendix 31.

8. Cost of Capital

To estimate the enterprise value of KOG Defense and KOG Maritime, the authors must estimate an appropriate discount rate for each segment, commonly referred to as WACC. Both equity and debt holders demand a return on their investment. Consequently, the WACC should represent a weighted average of the demanded rate of return from these two groups of investors.

Consolidated versus Separated Cost of Capital

As the defense industry and the maritime industry face different levels of risk and growth projections it is necessary to compute two discount rates for each of the two divisions. Some may argue that using consolidated firm figures will reflect the weighted average of the two divisions, and technically this is correct. However, as the weights are reflected in current values of the two segments, these weights may change over time if the two divisions grow at different paces (Damodaran, 2009). If the defense segment grows 15% relative to the maritime segment over the next five years the consolidated company's risk will change as the exposure to risks related to defense operations increase. Hence, the weights will not be static.

WACC

To determine the proper WACC for KOG' divisions, numerous factors and assumptions have to be made about the after tax cost of debt (Rd) cost of equity (R_e), and the target capital structure. The general formula for WACC is shown in Equation 8.1(Petersen & Plenborg, 2012, p. 246):

Eq. 8.1 $$\textbf{WACC} = \frac{D}{D+E} \times \text{After tax } R_d + \frac{E}{D+E} \times R_e$$

Cost of equity (R_e)

Most financial literature recommends that the CAPM model should be used when calculating the cost of equity. This model was introduced by Sharpe & Lintner in 1964, but has received criticism related to its precision where researchers like Fama & French (1966) have attempted to improve the model. More specifically, the criticism has often pointed towards the impact of price-momentum and company size. On the contrary, there has been more recent research contradicting the criticism by pointing to the fact that the returns and ratios change into normal values over a business cycle (Chung, Herb & Schill, 2004). Consequently, the authors acknowledge the fact that the model is based on theoretical assumptions and assume that it is a reliable estimate of the required rate of return for the marginal investor. CAPM is calculated as:

Eq. 8.2 $$\textbf{R}_e = R_f + \beta_e \times (R_m - R_f)$$

The expected return on a stock equals the risk-free rate plus, the systematic risk of the stock multiplied by the expected market excess return.

Risk free rate (R_f)

The risk free rate is defined as an asset's expected return with certainty. To satisfy this condition the asset must have no default or reinvestment risk. However, as it is challenging to imitate such an asset it is common to use a highly liquid long-term government security (10-30 years) as a proxy. To account for inflation issues it is essential that the security is denoted in the same currency as the underlying cash flow (Petersen & Plenborg, 2012, p. 249). Much of KOG's revenue is generated abroad, but is measured and reported in NOK. Norway is currently rated AAA by S&P, Moody's and Fitch, and is recognized as one of the most solvent nations in the world (Country Economy, 2014). The authors therefore consider there to be zero default risk in the country's treasury bonds. In terms of time horizon, 30 years bond are likely to suffer from liquidity premiums and are thus not preferred (Petersen & Plenborg, 2012, p. 251). On the cut-off date (14.04.2015) the interest rate of a 10-year treasury bond was 1.43% (Norges Bank, 2015a) and this will be applied as the risk free rate in our CAPM for both divisions.

Systematic risk – Beta

Beta measures a businesses' systematic risk. It is calculated as the covariance between the stock return and the market return, divided by the variance in market returns (Petersen & Plenborg, 2012, p.251).

Eq. 8.3 $$\beta = \frac{COV(R_i R_m)}{VAR(R_m)}$$

The division's operations differ a lot and it's hard to believe that the systematic risks are the same. Thus, two different betas must be calculated. The beta can be estimated in many ways and one of the most typical ways is to regress the monthly returns of the stock against the return on the market. As the stock is traded based on a consolidation of the two segments there is no available information in terms of market value of equity for the two divisions separately, which makes it impossible to derive a beta estimate based on a regular regression method. An alternative method of calculating the beta is through comparable peers (Petersen & Plenborg, 2012, p. 254). The refined groups of peers from section 5 have been used for this purpose. The calculations are based on five-year monthly historical returns of the peer groups and MSCI World Index is used as the market proxy. The betas are adjusted based on the historical capital structure, and then re-levered using the target capital structure of the divisions. The target capital structure will be elaborated on later in this section.

Eq. 8.4 $$\beta_e = \beta_u \times \left(1 + \frac{D}{E}\right)$$ 　　　 Eq. 8.5 $$\beta_u = \frac{\beta_e}{\left(1 + (1-t) \times \frac{D}{E}\right)}$$

Figure 8.1: KOG Maritime and KOG Defense's betas calculated based on comparable firms

Maritime Peers		Defense Peers	
Rolls Royce	0,32	Lockheed Martin	0,43
Halliburton	0,28	Raytheon	0,36
Cameron	0,27	General Dynamics	0,44
Aker solutions	N/A	Northrop Grumman	0,47
Average Beta	*0,29*	*Average Beta*	*0,41*
Unlevered	0,33	Unlevered	0,44
Re-Levered	**0,30**	**Re-Levered**	**0,42**

Source: Compiled by Authors

When estimating beta through comparable peers it is very important to understand that the procedure heavily relies on the assumption that the companies have the same risk-profile. As the peers of KOG Defense and KOG Maritime are a lot larger and more diversified it is largely questionable if this assumption is realistic in terms of systematic risk for the two divisions. For a detailed peer group beta analysis, see Appendix 33.

In the case of KOG, where the purpose is to value two separated divisions, it could be argued that it is more appropriate to use an un-levered industry derived beta and then re-lever this beta in accordance with the firm's target capital structure (Koller et al. 2010, Damodaran , 2009). Damodaran's reports on updated beta values of different regions and industries can be used for this purpose. Furthermore, to create an as credible as possible estimate of the beta for KOG Defense and Maritime a smoothening technique performed by Bloomberg is applied. The rationale behind the smoothening procedure is that betas tend to revert to the mean and smoothening will therefore give a smaller estimation error (Blume, 1975). The adjusted beta has been calculated in the following way (Koller et al. 2010, p.253):

Eq. 8.6 $\qquad \beta_{adj} = \frac{1}{3} + \frac{2}{3} \times \beta_{raw}$

Figure 8.2: Damodaran's industry betas – Unlevered, Re-Levered & Adjusted

	# Companies	Levered	Unlevered	Re-Levered	Adjusted
Aerospace & Defense	93	1,16	1,21	1,14	1,09
Maritime Supplies*	116	1,22	1,32	1,18	1,12

Source: Compiled by Authors

Compared to the beta estimated from the peer based regression analysis, the industry average estimation is based on a much larger sample size and is therefore likely to contain fewer sourcing errors (Damodaran, 2015a). The authors argue that the most representative estimate of beta for the two divisions should be based on industry averages. Hence, these will be used in the ongoing WACC analysis.

Market risk premium (R_m-R_f)

According to Petersen & Petersen (2012, p.262), the most common way to estimate the market risk premium (MRP) is with reference to prior research. The main source for the purpose of calculating the MRP for KOG is therefore Damodaran (2015b). He has written a thorough analysis about the valuation of segregated companies, and he publishes MRP estimates for different countries on a frequent basis (Damodaran, 2009). Optimally, the MRP should measure the level of risk met in every operating country and should be included in the Re through a weighting of the different MRPs found for each country based on revenue contribution (Damodaran, 2009). KOG only segment revenue by region on a consolidated basis and the authors are therefore not able to come up with separate market premiums for each of KOG's divisions. However, the key regions and markets in both of KOG's divisions are developed countries, and only minor parts of the operations can be attributed to emerging markets. Hence, the country specific risk is assumed to be quite similar and the consolidation of this parameter is not likely to yield significant bias. The market risk premium on a consolidated basis is applied in the WACC calculation for both divisions and is calculated to 7.7%. See Appendix 34 for details.

Liquidity premium

Some argue that an additional risk premium should be added to smaller and less liquid shares to account for the additional spread. Plenborg & Petersen (2012, p. 265) suggest a liquidity premium of 3-5%. However, the authors argue that the lack of liquidity is a direct consequence of state ownership and the use of a premium in WACC calculations might therefore alter the conclusions.

The final calculation of R_e for KOG Defense and KOG Maritime is illustrated in the equations below:

Defense: $\mathbf{R_E} = 1.43\% + 1.09 \times (7.7\% - 1.43\%) = 8.29\%$

Maritime $\mathbf{R_E} = 1.43\% + 1.12 \times (7.7\% - 1.43\%) = 8.46\%$

Cost of debt (Rd) – After tax

The cost of debt is obtained by adding the credit spread to the after-tax risk free rate. The credit spread reflects the creditor's required premium for lending funds to the company.

Eq. 8.7 $\mathbf{R_d} = (R_f + R_s) \times (1 - t)$

It is recommended to use the company's after-tax yield to maturity (YTM) from the most recently issued bond's price in the calculation of the credit spread (Petersen & Plenborg, p.265).

Eq. 8.8 $\mathbf{Price} = \dfrac{\text{Coupon}}{(1+\text{YTM})} + \dfrac{\text{Coupon}}{(1+\text{YTM})^2} + \cdots + \dfrac{\text{Coupon}}{(1+\text{YTM})^n}$

Since both divisions have strong balance sheets and are profitable, it is reasonable to assume that the two entities would face the same cost of debt, being part of the same company (Damodaran, 2009). Consequently, in order to calculate the credit spread, the authors have calculated the YTM on the bond; KOG 07 (11.09.2012), which is the latest bond issue of KOG. This will be the most appropriate estimate of the company's cost of debt, as it is the latest data from the market (Oslo Stock Exchange, 2015). The current market price of the bond is 111.10 with a fixed coupon rate of 4.80% and 7 years-to-maturity. Solving for the YTM yields 3.02%, representing a credit spread of 1.59% after subtracting the risk free rate of 1.43%. A cost of debt equal to 3.02% will therefore be applied on both divisions. The credit analysis performed in Appendix 25 confirms this calculation.

Corporate tax rate

Since the free cash flow to the firm FCFF is calculated after tax, it must be incorporated that the interest costs are deductible, thus the cost of capital has to be adjusted. For this purpose we will use the average effective tax rate (28.4%) calculated in section 5 for both the divisions.

$$\textbf{After tax } \mathbf{R_D} = (1.43\% + 1.59\%) \times (1 - 28.43\%) = 2.16\%$$

Capital structure

The last parameter that needs to be determined in order to calculate the appropriate WACC for the two divisions is the capital structure. One way to do this is to estimate a target debt ratio for each division, by subtracting the current value of debt from the enterprise value to get equity value, which is then used to calculate the debt ratio. This target debt ratio calculated based on current market values can be used to calculate WACC. It is assumed that this is the known correct target debt ratio. Solving for equity value using the above described method would yield the correct equity value if and only if, one has the correct target debt ratio. In other words, today's capital structure is the true target capital structure going forward (Larkin, 2011). The intuition behind this is that if one reached a conclusion that the equity was undervalued compared to today's quoted marked value of equity, the firm would borrow money to increase its debt ratio and pay out the proceeds directly to its shareholders. This is common in leveraged buyout transactions where the investors base their valuation on how much debt the target firm can carry. However in a situation with a marginal investor it is unlikely that he/she would be able to alter the company's capital structure. Thus, the assumption of a known target capital structure does not hold, and the estimate of fundamental equity value is false (Larkin, 2011).

As the authors analyze the impact of state ownership from a marginal investor's perspective the above mentioned method is not appropriate. Furthermore, assuming that firms adjust leverage in response to fluctuating stock prices seems implausible unless market efficiency is assumed. It seems more plausible that managers set target debt ratios in relation to their estimates of intrinsic values, which are driven by estimates of future cash

flows. Applying the intrinsic value of equity results in circularity: the analyst must know the value of equity to know the target debt ratio and the WACC, and he must know the WACC to know firm and equity value (Larkin, 2011). To correct for circularity an iterative procedure suggested by Larkin (2011) will be performed.

According to the procedure, the market value of debt should be calculated and applied in the formula. However, in KOG's case only a small fraction of debt is publicly traded and the annual report disclose little information about the market value of debt. Since the publicly traded debt currently trades close to par value, the authors argue that the book value of debt is the best estimate. The other input parameters to WACC are estimated in the previous sections, and are applied in the iterative process. The first step in the iterative process is to calculate the current capital structure in the WACC based on observed market value of equity and debt. Changes in the capital structure will affect the required return on equity and the WACC. The next step is to apply the estimated equity value in a new calculation of WACC as the estimated value of equity implies a new debt ratio. By applying the new ratio, a new WACC and equity value is derived. This process is repeated until the estimated equity value is equal to the value applied in the WACC. The outcome is provided in Figure 8.3, for details see Appendix 36.

Figure 8.3: Iteration outcome and calculation of WACC for the two divisions

						KOG Defense (WACC)		
Atempt	Beta UL	Beta Re-L	Beta adj.	Re	WACC	Begining VE	FCF Firm Value	FCFF Equity value
1	1,234	1,131	1,087	8,25%	8,80%	9000,000	12103,753	12856,753
2	1,211	1,140	1,093	8,28%	8,67%	12856,753	12423,056	13176,056
3	1,209	1,140	1,094	8,29%	8,66%	13176,056	12441,165	13194,165
4	1,209	1,140	1,094	8,29%	8,66%	13194,165	12442,166	13195,166
5	1,209	1,140	1,094	8,29%	8,66%	13195,166	12442,221	13195,221
6	1,209	1,140	1,094	8,29%	8,66%	13195,221	12442,224	13195,224
7	**1,209**	**1,140**	**1,094**	**8,29%**	**8,66%**	**13195,224**	**12442,224**	**13195,224**
8	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224
9	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224
10	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224
						KOG Maritime (WACC)		
Atempt	Beta UL	Beta Re-L	Beta adj.	Re	WACC	Begining VE	FCF Firm Value	FCFF Equity value
1	1,352	1,168	1,112	8,40%	9,25%	9000,000	10936,049	12160,049
2	1,315	1,182	1,122	8,46%	9,17%	12160,049	11067,551	12291,551
3	1,314	1,183	1,122	8,46%	9,16%	12291,551	11078,080	12302,080
4	1,314	1,183	1,122	8,46%	9,16%	12302,080	11078,913	12302,913
5	1,314	1,183	1,122	8,46%	9,16%	12302,913	11078,979	12302,979
6	1,314	1,183	1,122	8,46%	9,16%	12302,979	11078,984	12302,984
7	**1,314**	**1,183**	**1,122**	**8,46%**	**9,16%**	**12302,984**	**11078,985**	**12302,985**
8	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985
9	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985
10	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985

Source: Compiled by Authors, Larkin (2011)

Defense: $\text{WACC} = \frac{-776}{12442} \times 2.16\% + \frac{13195}{12442} \times 8.28\% = 8.66\%$

Maritime: $\text{WACC} = \frac{-1224}{11079} \times 2.16\% + \frac{12303}{11079} \times 8.46\% = 9.16\%$

9. Valuation

After having provided a thorough strategic and financial analysis, forecasted the segments' pro forma statements and calculated the respective segment's cost of capital the authors have all the inputs necessary to perform the SOTP-valuation. Since the Group's two segments operate in completely different industries, a SOTP valuation approach is appropriate as the economics clearly differ (Damodaran, 2009).

Through the SOTP-valuation the authors are able to value KOG Defense and Maritime separately by combining the estimate of the two division's fundamental values, calculated as their contribution to the KOG's enterprise value (Damodaran, 2009). When the EV from the two divisions is estimated, their respective NIBD is subtracted to get an estimate of the market value of equity for each individual division. Furthermore, these two values are added together to calculate KOG's equity value on a group level. Lastly, by dividing the estimated equity values by the number of shares outstanding, the theoretical share price can be calculated both on an aggregate level and for each individual segment. The EV values will be derived using a DCF and EVA approach. The results will provide an answer to the relative and combined value of the two segments and to whether a state ownership discount exists. A relative valuation of the two segments will also be carried out in order to conduct a sanity check of the presented DCF/EVA model.

Valuation Method

Different valuation methods hold different advantages and weaknesses. It is therefore important to select the approach that fits the valuation object best. According to Damodaran (2006) there are four main ways to value a company; the present value-, relative-, liquidation- and contingent claim approach. The goal of any valuation is precision, realistic assumptions and understandable outputs (Petersen & Plenborg, 2012, p. 212). All present value methods stem from the "dividend discount model". The model rely on some assumptions besides the ones made with regards to the forecasted cash flows and in terms of this thesis the most important assumption is that cash surplus is reinvested or paid out as dividends (Petersen & Plenborg, 2012, p 218). Historically the company has not paid dividends except for an extraordinary dividend in 2015. This is in accordance with the empirical review of state ownership characteristics. The authors argue that the lack of dividend payments is a direct consequence of the Norwegian Government's soft budget constraints. By assuming that the cash surplus would be paid out as dividends the authors are more likely to reach the objective of answering whether the current stock price is traded at a discount due to the state ownership. This suggests that the model provide unbiased estimates, given perfect forecast assumptions. It is therefore viewed as an attractive model (Petersen & Plenborg, 2012, p. 213).

Discounted Cash Flow Model

The model estimates the intrinsic value of the company and is only affected by the projected cash flows and the estimated cost of capital. The EV of the company is therefore calculated based on the forecasted FCFF, which is discounted by the WACC to the present value. As this would be the theoretical share price as of 31.12.2014 the WACC is used to find the theoretical share price as of April 14th 2015, by solving for future value (Petersen & Plenborg, 2012, p. 216):

Eq. 9.1 $FCFF = NOPAT + Depreciation \pm \Delta NWC \pm \Delta Non\ Current\ Libilities \pm \Delta CAPEX$

After the FCFF and WACC have been estimated, the EV is calculated by using the following formula (Petersen & Plenborg, 2012, p. 216):

Eq. 9.2 $Enterprise\ Value\ EV_0 = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{WACC-g} \times \frac{1}{(1+WACC)^n}$

Economic Value Added Model

According to the EVA model the enterprise value is determined by the present value of all future EVAs plus the initial invested capital. EVA is calculated through the following formula (Petersen & Plenborg, 2012, p. 220):

Eq. 9.3 $EVA_t = NOPAT_t - (WACC \times Invested\ Capital_{t-1})$

Petersen & Plenborg (2012, p. 220) calculate the EVA model according to the following two-stage formula:

Eq. 9.4 $Enterprise\ Value\ EV_0 = Invested\ Capital_0 \sum_{t=1}^{n} \frac{EVA_t}{(1+WACC)^t} + \frac{EVA_{n+1}}{WACC-g} \times \frac{1}{(1+WACC)^n}$

As mentioned above, the two present value approaches are deduced from the same model and yield identical values. However, it is therefore important to acknowledge that the model is heavily dependent on reliable forecast assumptions. The authors have had a strong focus on a comprehensive analysis in the forecasts and assumptions in the previous sections. The models are therefore assumed to be credible. Nevertheless, the authors have conducted a sensitivity analysis in the next section in order to help the reader understand how the assumptions may impact the estimated values.

Aggregated and Segmented DCF Valuation of KOG Defense and KOG Maritime

The future FCFF of the respective segments has been derived based on the key value drivers presented in Section 7. When discounting these forecasts to their respective estimated WACC yields estimated present values presented in Figure 9.1 below. The full valuation process could be found in Appendix 38.

Figure 9.1: DCF valuation of KOG Defense and KOG Maritime – Including aggregated Group share price

Defense					
DCF model (NOKm)	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
FCFF	-403	703	797	821	863
WACC	8,66%	8,66%	8,66%	8,66%	8,66%
Discount Factor	0,92	0,85	0,78	0,72	0,66
PV FCFF	**-371**	**596**	**621**	**589**	**570**
PV of FCFF (Forecast Period)	1.434				
PV of FCFF (Terminal Period)	11.008		WACC	8,66%	
Estimated Enterprise Value	**12.442**		TV Growth	3,03%	
Net Interest Bearing Debt	-753				
Estimated Market Value of Equity	**13.195**				
Shares Outstanding million	120				
Theoretical Share Price 31.12.14	*109,96*				
Theoretical Share Price 14.04.15	**112,34**				

Maritime					
DCF model (NOKm)	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
FCFF	1.264	987	870	620	695
WACC	9,16%	9,16%	9,16%	9,16%	9,16%
Discount Factor	0,92	0,84	0,77	0,70	0,65
PV FCFF	**1.158**	**829**	**669**	**436**	**449**
PV of FCFF (Forecast Period)	3.092				
PV of FCFF (Terminal Period)	7.987		WACC	9,16%	
Estimated Enterprise Value	**11.079**		TV Growth	3,03%	
Net Interest Bearing Debt	-1.224				
Estimated Market Value of Equity	**12.303**				
Shares Outstanding million	120				
Theoretical Share Price 31.12.2014	*102,53*				
Theoretical Share Price 14.04.15	**104,87**				

Theoretical share Price Group	**14.04.2015**	**217,21**	
Current Share Price Group	14.04.2015	165,00	
"State Ownership" Discount		**24,03%**	

Source: *Compiled by Authors*

Benchmarking DCF Valuation with Relative Multiple Valuation

To increase confidence in the DCF valuation, a relative valuation of the two segments is conducted based on the average multiples derived from the appropriate peer group. In Section 5.2 the authors determined that EV/EBITDA is the best multiple for valuing companies. Hence, the multiple is used in this particular benchmarking procedure. Conducting relative valuations application of forward multiples and future earnings estimates yields more accurate estimates of value relative to current and trailing (Petersen & Plenborg, 2012, p. 233). The below calculations are conducted based on EV/EBITDA 17E, as this lies in the middle of the forecasting period. The estimated enterprise values are presented in Figure 9.2:

Figure 9.2: Multiple Valuation – Aggregated for KOGs Segments

Multiple valuation	Multiple	X	EBITDA 2017E	EV (NOKm)
KOG Defense	EV/EBITDA	8,4	1.246	10.466
KOG Maritime	EV/EBITDA	10,5	1.130	11.865
Estimated Enterprise Value				**22.331**

Source: Compiled by Authors

Comparing the results from the DCF and EVA model and relative valuation method reveals that there is some difference (6.9%). However it should be noted that the approaches are based on different assumption, thus it provides confidence that the DCF valuation yield a reliable estimate of the two divisions. The defense segments is the main cause of variation, which suggests that the fundamental analysis determining the forecasted FCFF of KOG is more positive than what the market anticipate on average for the refined peer group. Figure 9.3 provide a comparison of the deviations.

Figure 9.3: DCF Valuation versus Multiple Valuation
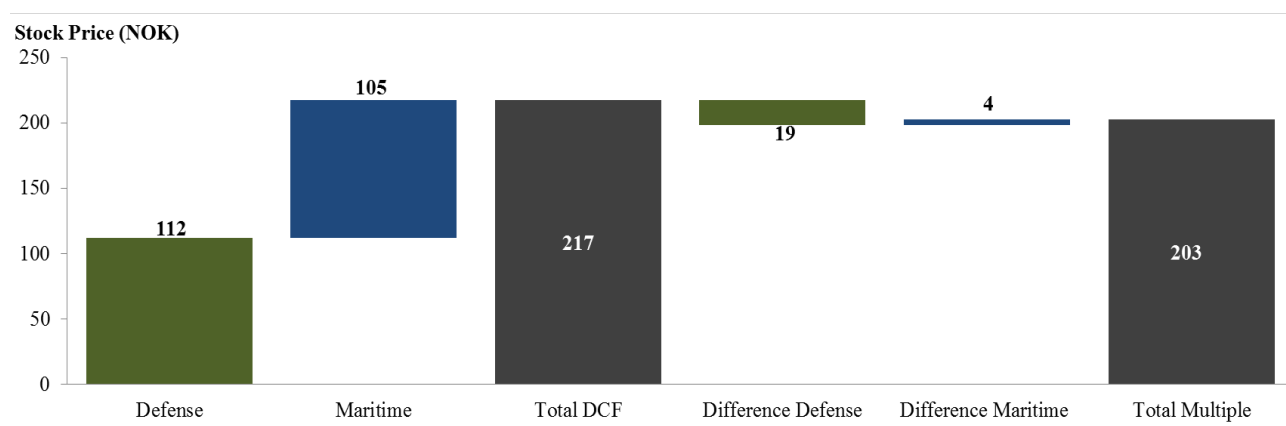
Source: Compiled by Authors

The state ownership discount

Figure 9.4 a discount of 24.03% relative to the theoretical share price estimated by the DCF model. This is an interesting finding that further confirms the authors' hypothesis that state ownership has a negative impact on company valuation. However, as the debate regarding ownership in KOG is complex, it is interesting to address how this discount corresponds to the two segments respectively. As the market price of the stock is quoted on a group level, it is not be possible to derive the respective discounts by comparing the two division's theoretical contribution to the stock price to the quoted share price. If multiples are used instead, it is possible to derive the discount for each business unit. One should note that this is the discount relative to peers. Figure 9.4 illustrates the two segments' historical discount to peers in terms of EV/EBITDA 36M FORWARD.

Figure 9.4: Segments historical discount to peers
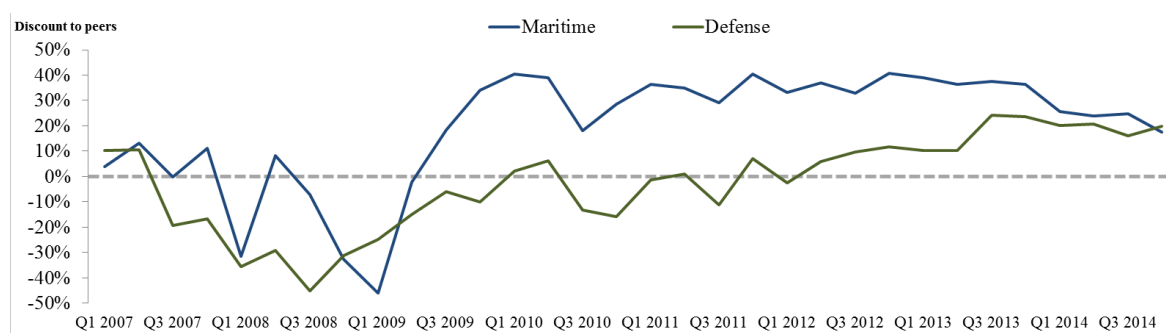
Source: Compiled by Authors, DataStream (2015a)

It is apparent that both segments have experienced discounts relative to peers over the last years. The exception is the period between late 2007 and early 2009. During this period KOG Defense had success with its Protector product and the financial crisis struck. Norway was not struck as hard as other countries during the financial crisis which also contributes to the explanation of why the stock traded above peers during this period. It is apparent that the discount is larger for the maritime division. This may suggest that state ownership is more disadvantageous for the maritime segment than it is for the defense segment. The strategic analysis explained how the Defense division's close relationship with the government was valuable, both in terms of project financing for developing defense systems, the practice of using repos within the industry and that the Norwegian Armed forces is one of the most important defense customers. It is hard to find any comparable advantages for the maritime segment. Furthermore, the investigation of research on the issue of state ownership concluded that private ownership is superior to state ownership, and the interviewed analysts pointed out particular issues regarding KOG's situation. These findings may provide explanation for why the authors find that the maritime segment has experienced a higher discount to peers historically.

10. Sensitivity Analysis

Throughout the thesis the authors have strived to minimize misinterpertations and miscalculations, and the forecasting section was condcted applying relatively conservative assumptions. Nevertheless, the conclusions that the authors may arrive at regarding the existence and significance of a state ownership discount heavily depends on these assumptions, and this section is provided to help the reader make own assumptions.

The WACC and the prepetuity growth rate are the most critical asumption when determinig the value of the two segments. The terminal term is responsible for 83% and 65% of the enterprise value for KOG Defense and Maritime respectively. Beta is the most variable input in the WACC calculation and it was argued that adjusted industry betas yields the most realistic values. On the other hand, if an average of peer betas was applied, the WACC would have been considerably lower, which would result in a higher valuation.

Figure 10.1 shows that the stock price contribution would differ if other inputs were used. In the most extreme cases the variation lies between NOK 83 – 165 and 84 – 138 respectively. The relative difference in the two ranges is explaind by the importance of the terminal period for each business' estimated value. However, the base range found, yields an aggregated stock price between NOK 194 – 234, which implies a discount of 14.9% - 29.5%. Not even in the most pessimistic cases will the discount be eliminated on an aggregated basis.

Figure 10.1: Sensitivity of segments contribution to stock price given changes* in WACC and prepetuity growth

Perpetuity Growth		Pessimistic		Base			Optimistic	
WACC		2,0%	2,4%	2,7%	3,0%	3,4%	3,7%	4,0%
Optimistic	7,7%	113,8	119,7	126,4	134,1	142,9	153,2	165,4
	8,0%	107,3	112,5	118,3	125,0	132,5	141,3	151,5
Base	8,3%	101,5	106,1	111,2	117,0	123,5	131,0	139,7
	8,7%	96,2	100,3	104,9	110,0	115,7	122,1	129,5
	9,0%	91,5	95,2	99,2	103,7	108,7	114,4	120,8
Pessimistic	9,3%	87,2	90,5	94,1	98,1	102,6	107,5	113,1
	9,6%	83,3	86,3	89,5	93,1	97,0	101,4	106,3
Perpetuity Growth		Pessimistic		Base			Optimistic	
WACC		2,0%	2,4%	2,7%	3,0%	3,4%	3,7%	4,0%
Optimistic	8,2%	105,5	109,4	113,8	118,8	124,4	130,9	138,4
	8,5%	101,0	104,5	108,4	112,7	117,6	123,2	129,6
Base	8,8%	97,0	100,1	103,5	107,3	111,6	116,5	122,0
	9,2%	93,3	96,1	99,1	102,5	106,3	110,6	115,3
	9,5%	89,9	92,4	95,2	98,2	101,6	105,3	109,5
Pessimistic	9,8%	86,8	89,1	91,6	94,3	97,3	100,6	104,3
	10,2%	84,0	86,1	88,3	90,8	93,4	96,4	99,7

* The sensitivity variables are calculated based on a 0.33% change to applied perpetuity growth rate and WACC respectively

Source: Compiled by Authors

11. Scenario Analysis

So far the thesis has concluded that a state ownership discount exists in terms of KOG's market value of equity. This section will seek to answer if there is reason to believe that a marginal investor would be better off if the state divested its ownership stake in the maritime segment. It is not the purpose to analyze how a potential transaction should be structured, but rather the positive and negative elements regarding a consolidated company versus the segments being separated.

11.1. Scenario I: Keep the company consolidated

The current situation is based on a dual-use strategy proposition. This is common among defense contractors and the main focus of the company is technological excellence. Competitors like Thales and Finmeccanica apply the same strategy. The management argues that by developing revolutionary technology they can pursue growth opportunities both within the defense industry and the civilian markets. They believe that their product development capabilities serve as a sustainable competitive advantage that distinguishes them from competitors in terms of quality. Therefore they do not need to compete in terms of price. It is easy to recognize that this as a valid argument if one considers the impact product development within defense throughout history. Internet, mobile communication and satellites are all results of innovation for military purposes. That being said, it was pointed out in section 3 that industry experts argue that the contractor's business models have become too complex, and that management within the industry should focus on their core expertise when constructing future strategies. KOG started out as a pure defense contractor many years ago and have since then expanded into civilian markets as growth opportunities were presented. The question is therefore whether the management and board holds the relevant capabilities to make the right strategic decisions in terms of operations within two extremely different, complex and rapidly evolving industries.

To justify this, KOG's management has argued that there exist extensive synergies between the two segments. It is beyond the scope of this thesis to evaluate or value these potential synergies. However, it is necessary to discuss them. It is in the authors understanding that most of these synergies are related to product development. It is possible to imagine that some of the software systems used within the maritime segment is applicable to the defense segment and vice versa (Gjertsen, 2015). On the other hand it should be noted that intellectual property rights could be traded among separate companies and it is likely that the in-house advantages of being a consolidated unit could be replicated through a partnership or licensing arrangement (Lunde, 2015). Further, the suggested synergies are hard to quantify, technology is one of the most important competitive parameters within the industries and information about it is regarded company secrets. This makes public information almost impossible to retrieve. The current situation therefore corresponds to an asymmetric information problem between the owners and management, where management is able to be very discrete and secretive about the

relevant synergies. Having more than one market to lean on is comfortable for the management, but it raises the risk of a potential type I principal – agent problem, where the management is likely to care more about their own utility function, rather than acting in the interest of investors. The intuition is that by having two different divisions to rely on, managers have the possibility of pursuing investments with negative present values, or refusing to divest unprofitable units as control over a diversified company provides safety when there is a down-turn in one market, as this could be offset by an upturn in the other market (Thomsen & Conyon, 2012, pp.46-60).

It should be noted that these arguments are discussions of risks rather than conclusions, and it could very well be that the value of the synergies of holding the company consolidated exceeds the benefit of separating the business segments.

As the two segments operate in completely different industries the strategy could be comparable to the corporate diversification of conglomerates. During the 1960s there was a large conglomeration wave and researchers asked why firms choose to diversify. Scholars presented several theories and empirical studies and reached conclusions. One proposition is that the consolidated firm achieves competitive advantages through transfer pricing which allows them to adopt predatory pricing strategies, and ultimately achieve significant market power in several segments (Sudarsanam, 2003). In the case of KOG this could serve as an explanation for their pricing strategy within the maritime segment. The division has kept their margins low to prevent intruders to enter the market. This strategy has served them with an extensive market power within certain product segments such as DP, where they enjoy a market share around 70-100 percent within high-end offshore vessels (Gjertsen, 2015). Another proposition is that the divisions could enjoy financial synergies by being a single unit. Different businesses within the same organization could enjoy less volatility in their revenue streams. Higher volatility increases the segments credit risks and therefore their financing costs. A consolidated firm that jointly issues debt and equity it could therefore retrieve financial costs synergies in terms of capital costs. Also, being a consolidated unit offer a greater exploitation of cost savings in terms of cash management. However, the financial synergies of keeping the company consolidated must exceed the losses from inefficient state ownership. This thesis finds that the company's stock is currently being discounted 24.03%, which is in line with the historical discount of approximately 20%. To justify a consolidation in the eyes of a marginal investor based on financial synergies these synergies must have a positive contribution to the stock price that exceeds the discount from state ownership. Given the significant discount level the authors argue that this is unlikely.

To summarize, it is the overall impression of the authors that strategic decision making becomes more challenging when a dual-use strategy is applied. The dual-use synergies of keeping the company consolidated

should therefore be extensive enough to justify this strategic choice. As the proposed synergies suggested by management corresponds to product development, it is hard to quantify and value them. It is therefore highlighted that the current situation of one consolidated unit presents risks in terms of type I agency problems. The authors identify that the maritime segment could achieve strategic advantages through transfer pricing by being kept under the current organizational structure. Also, it is shown in the thesis that the discount evaporated during the financial crisis. It was argued that the deviation was caused by strong revenue generation within the defense segment, and that Norway as a financial market was not struck as hard as the rest of the world during the financial crisis. However, it could also be that the ownership situation had a positive effect during challenging market conditions. A potential argument could be that investors saw the state's ownership position as a strength, as the government is probably more likely to bailout one of its strategic investments if default is a threat.

11.2 Scenario II: The Norwegian Government Divests KOG Maritime

Section 9 illustrated that KOG has been traded at a discount relative to peers over a long period of time. It also displayed that the discount related to the maritime segment have been more significant than the discount related to the defense segment historically. Findings in the previous sections provide indications that this development is likely due to the Norwegian Government's majority ownership in the company and the effects coming from this characteristic.

First of all, the empirical analysis in section 2 explained how state ownership could have negative effects for the marginal investor. It displayed how the state could use its strong position as a majority owner in order to pursue political goals and thereby create agency type II problems where there is a misalignment of interests between the Norwegian Government and the marginal investor (Thomson & Conyon, 2012, pp.46-60). Furthermore, it became clear that in most cases increased privatization has led to stronger incentives for the management and reduction of agency type II problems. This was especially apparent in technological firms where the management should have strong incentives to innovate (Hart, 1995). Lastly, the regression analysis showed that there was a negative relationship between the Norwegian Government's ownership on the OSEBX and firm performance.

However, in the strategic analysis it became clear that KOG's relationship with the Norwegian Government had several positive effects. It seems to be a valuable asset for the company when developing defense systems in cooperation with the Norwegian Army and when military equipment is purchased from foreign contractors. Furthermore, the fact that the Norwegian Army is one of the most important customers underlines the importance of the relationship. Nonetheless, all these effects are related to KOG Defense, and the authors have

not been able to find any significant positive effects of the state-ownership for KOG Maritime, except for the findings related to transfer pricing explained in Scenario I.

The interviewed analysts pointed out a few interesting characteristics among state-owned firms in Norway, and a too conservative capital structure was an aspect in which all analysts agreed was a direct effect of the Norwegian Government's ownership. More specifically, state-ownership in Norway leads to a sub-optimal capital structure where the state-owned companies often have less gearing and excessive cash on their balance sheet.

There are several reasons for this. Firstly, a state-owned company like KOG cannot go out in the open market to raise capital for major acquisitions in the same way as a privately owned company. As the government represents the community, all information regarding the respective equity funding must be public, as the state representatives act on behalf on the entire community. This is usually not compatible with traditional M&A procedures, where secrecy and discretion can be critical in order to reach an efficient outcome for the respective parties. State-owned firms are therefore forced to keep excessive amounts of cash for the purpose of financing of larger projects or minor acquisitions. Secondly, it is in the authors' opinion that the state is mostly involved with the political aspect of KOG's operations and is relatively passive when it comes to the more strategic questions like capital structure or acquisition targets. Consequently, limited pressure and requirements by the owners may provide the management with few incentives for inorganic growth and a more aggressive capital structure, as it is quite comfortable for them to have negative net debt and a large cash amount on the balance sheet. This situation is commonly referred to as a soft budget constraint (Boubakri et al. 2011). This also became evident in the financial analysis when KOG Maritime's peers were analyzed, as all peers had a lot more aggressive capital structures. In addition, the company has, despite its profitability, only distributed dividends to its shareholders once historically (in 2014), which provides further indications of the misalignment of interests between the government and the minority investors. However, this is partly explained by the fact that over 50 percent of potential dividends would have gone straight to the government. Lastly, it was illustrated in the SOTP valuation that the characteristics discussed above may have a negative effect on each segment's valuation, which in turn will compromise the marginal investor.

The strategic analysis displayed how large players in the Marine Supplies industry have benefited from strategic acquisitions in the years following the financial crisis in order to overcome the tough market conditions. Now that the offshore market presents new challenges, a potential strategy for KOG Maritime could be to engage in the M&A market in order to expand operations in the Subsea and Merchant marine sub-segments where the division's position is less apparent. However, this is a tough strategy to pursue when the state is the majority owner, as the need for equity funding in large transactions is inevitable.

The described negative effect is likely to be somewhat offset by the positive elements of state-ownership when it comes to KOG Defense. However, for KOG Maritime there are very few significant benefits of the heavily concentrated state ownership, and the illiquidity in the stock presents a disadvantage when investors are comparing the investment potential in KOG's stock relative to peers.

The Government has used the argument that they want to keep ownership in Norway as it secures employment and economic development in Norway (Det kongelige nærings- og fiskeridepartementet, 2014). This requires that at least negative control (34 percent ownership) is maintained. However, this argument is not valid with regards to the perspective of this thesis. The purpose of this thesis is to look at the state-ownership through the eyes of the marginal investor. Moreover, the goal of the marginal investor is to maximize the return on his/her investment. The geographical location of the company is therefore irrelevant for him/her as long as it is in the best interest of maximizing returns.

The discussion above provides the authors with confidence that the effects coming from the state ownership has an especially negative impact on KOG Maritime.

Scenario I versus Scenario II

The authors feel that the company stands before a historical cross-road in terms of being a consolidated firm going forward. Defense operations have been the spine of the company for over 200 years, but operations within the civilian markets has both been acquired and divested. Before the IPO of the company in 1993 the company sold the Maritime division and other operations in civilian market, after a few years KOG Maritime was reacquired. This investment has been successful and the segment has provided the group with income for more than 20 years. However, as time has passed the segment has grown, and the management, board and owners must consider the question if the segment would be better off as a separated unit. After reviewing the pros and cons of state-ownership and assessing the consequences of the Norwegian Government's ownership of KOG, there are strong reasons to believe that the discount of KOG Maritime found in Section 9 can be explained by the negative effects from state-ownership. Consequently, the authors believe that the most attractive scenario for the marginal investor is for the Government to divest KOG Maritime. This could in turn lead to elimination of the presented agency problems and create stronger incentives for the management. Furthermore, it could simplify the process of M&A procedures, which seems to be more complex and disadvantageous when the government is the majority owner. A potential divestment could be beneficial in terms of the company's dividend policy as the arguments for generating excessive cash holdings are no longer be valid. Lastly, it would also increase the trade flow in the stock, which could contribute to a higher valuation as the stock would become more liquid.

12. Conclusion

The authors started out seeking to provide an answer to how and if the Norwegian Government's majority ownership stake affects the valuation of KOG. It was established early that KOG's stock price has traded at a discount relative to peers historically, even though the company has been profitable in the same period. Therefore, the overall purpose of this thesis has been to combine a thorough analysis of state ownership and its impact on KOG. Further, a hypothesis that the marginal investor could benefit from a divestment of the maritime segment was also established. In this regard, it was necessary to calculate a credible estimate of the company's stock price as of 14 April 2015, and determine if a state ownership discount currently exists. The fundamental analysis leading up to a SOTP valuation of KOG resulted in a theoretical stock price of NOK 204.17. Compared to the stock price quoted in the market the cut-off date, NOK 165.00, a discount of 19.18% was found.

Before investigating whether state ownership could explain the discount of the stock, a comprehensive understanding of state ownership was in order. Reviewing ownership theory and empirical research conducted on the issue made it clear that scholars agree that private ownership is superior to state ownership. The same was confirmed when a regression analysis on the Norwegian market was performed. After interviewing financial analysts, it was evident that the ownership situation in KOG carried negative implications such as suboptimal capital structure, low liquidity, conservative dividend policies and soft budget constraints. Some of the analysts also indicated that a divestment of the maritime division was something that had been discussed among investors and analysts for several years.

Before conducting the SOTP valuation the authors performed an analysis addressing the external and internal factors that are projected to affect the future cash flow of the respective segments. The analysis revealed a quite positive outlook for the defense segment, while the future looks more challenging for the maritime segment. The defense segment is likely to capitalize on an industry recovery as they hold an innovative and well positioned product portfolio. Reduction in E&P spending due to the negative development in oil price is the main issue of the maritime business.

In terms of the internal factors, sustainable competitive advantages were detected. Being owned and therefore associated with the Norwegian state provides advantages through repos and legitimacy when competing within the defense segment. The company develops cutting-edge technology which allows them to produce systems very few other suppliers in the world are capable of within both segments. At last, the maritime division has gained advantages through integrating their systems, which enables the division to offer unique solutions.

The recent financial performance of the two segments has differed historically. The defense segment has experienced double-digit profit margins with a slight decline recently as the division has carried out a fully

funded development process of RWSs. As many of the segments projects are financed by link-up organizations such as FFI, the segment enjoys lower invested capital than its peers and thus a higher economic profit. The maritime segment has also experienced a negative trend in profit margin. Their invested capital is similar to peers, and the economic profit has not been as satisfactory as the defense division. It was also evident that the company has a strong financial position with limited liquidity risk.

The above considerations were put together to estimate the separate and combined value in a SOTP valuation of the two segments. The defense and the maritime division's projected free cash flows were discounted using estimated WACCs of 8.57% and 9.03% respectively. Consequently, the model yielded an aggregated theoretical share price of NOK 204.17 as of April 14th 2015. The current stock price at this date was NOK 165.00, which indicates a state ownership discount of 19.18%. The perpetuity growth rate and WACC are the most sensitive input parameters of the estimated free cash flows. Hence, a sensitivity analysis was conducted. The analysis revealed that the discount was erupted only in the most pessimistic deviation scenarios compared to the base case. This provided the authors with confidence with regards to the existence of a state ownership discount.

The thesis also sought out to address whether a divestment of the maritime segment by the Norwegian government could benefit the marginal investor. First and foremost, it is evident that the current ownership situation is disadvantageous for the minority shareholders. The structure is likely to create both type I and type II agency problems, and the current majority owner's characteristics have carried issues such as suboptimal capital structure, conservative dividend policy, low stock liquidity and soft budget constraints. Moreover, the investigation of the discount has revealed some interesting findings regarding the current company structure. Through the historical analysis the authors learned that the discount has been strongest compared to maritime peers. The authors suggest that this finding could be explained by the fact that the identified advantages of state ownership do not correspond to the maritime segment to a significant extent, and that the current ownership situation rather serves as a limitation for the segment. For instance, when market conditions lead to attractive M&A opportunities, the maritime segment might have to pass as they are not able to retrieve equity funding in the financial markets without being open about their intentions. Another argument is that the current Norwegian government wishes to reduce their stake in the domestic market. A divestment of the maritime segment could help them achieve this goal. Furthermore, a divestment decision could create a substantial upside potential for current investors. Whether the gains would be realized immediately depends on the structure of the chosen transaction with regards to the divestment. However, it is reasonable to assume that private owners would change the capital structure rather quickly and that the liquidity would improve immediately. The authors leave these questions for future research and analysis.

13. Thesis in Perspective

When writing this thesis the authors have analyzed the impact of state ownership in terms of Kongsberg Gruppen on a case basis, and this is thus a contribution to the Norwegian Ownership Debate. As the Norwegian state has ownership stakes in numerous Norwegian companies it should be noted that the implications of the ownership stakes should be analyzed on a case by case basis and that generalization is hard to achieve.

This thesis' objective was to determine the current ownership situations impact on the valuation of the stock from a perspective of a marginal investor. It was determined that a marginal investor would benefit if the Norwegian state decided to divest KOG maritime. However, it should be noted that the degree of ownership is not taken into account and it would be interesting to analyze how a reduction of state ownership would affect the valuation given that the company is kept consolidated in the future. This could add value to the debate if legislation that ensured that the sensitive defense technology did not end up in the wrong hands is put forward.

Further, by limiting the problem statement to only focus on gains and losses of a marginal investor the thesis ignores potential social welfare gains and losses given a potential divestment of the Maritime segment. The thesis' empirical review addressed several case studies in terms of previous state owned enterprises that later had been privatized. The conclusions were ambiguous in terms of social welfare impact. However, evidence of technological intensive firms exhibiting social welfare gains after being privatized was presented. It is often hard to predict these effects before the process is over, but it would be a valuable contribution to the debate regarding Kongsberg Gruppen as the opposition of increased privatization often use potential social welfare losses as an argument.

The thesis leaves two important questions for further research: *1) What is the value of operational and financial synergies between the two segments? 2) If Norwegian Government decided to divest the Maritime division, how should the transaction be structured and given this structure what is the fair price of the Maritime segment?* The first question is essential as this thesis do not make a thorough analysis of the potential synergies. It is vital that a robust estimate of the synergies' value is produced in order to form a sound decision fundament in terms of a divestment. Further, it is important to answer how such a transaction should be structured. The two obvious alternatives are either through an IPO, where the government's shares are offered to the market, or the unit could be sold to a strategic investor. The two processes are somewhat different in determining the fair value of the segment. Through an IPO the segment would typically be evaluated on a stand-alone basis, whereas a sale to a competitor would lead to all shares being sold and include a premium. This premium will reflect the value of the synergies achieved by merging the Maritime segment and the acquirer.

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Appendices

A.1. Key Personnel

The highest authority in KOG ASA is the board of directors. Their general responsibilities are to construct the company's strategy going forward, ensure proper financial management and actively monitor the groups day-to day operations. The members of the board are either elected by the shareholders of the company, or by the employees, they are appointed to act on the behalf of shareholders, employees, creditors and other stakeholders (KOG, 2014).

Empirical research suggests that the composition of board of directors has a significant impact on firm value. Studies by Coles et al. (2008) show that complex firms like KOG ASA could benefit from having the right board composition. There is no conclusion to what the "right" composition looks like, but diversified, large boards with more outside directors is found to be preferable (Coles, Naveen & Naceen, 2008).

The board of KOG consists of eight members, five elected by the shareholders and three elected by the employees. The board is diversified to some degree when it comes to gender and background. The majority of expertise is within engineering. The board consists of more insiders than outsiders, which is not what is preferable according to governance theory in complex firms. The chairman of the board (Finn Jebsen) has extensive experience from managing large Norwegian companies. Finn Jebsen has previously been the CEO of Orkla and holds board positions in Kavli, KLP Forsikring, Awillhemsen Management, Norsk Hydro and Norfund. Anne-Grete Strøm-Erichesen also serves as a chair to the board. She has had a long political career and was previously the Norwegian Minister of Defense and serves as a representative of the state given their ownership stake. The directors, Iren Waage Basili, Morten Henriksen and Jarle Roth all hold prominent positions in significant Norwegian companies and hold experience form shipping, oil & gas, utilities and electric power. The members elected by the employees all have long experience within KOG (KOG ASA, 2014).

The executive board consists of directors appointed to act on behalf of, and within the powers granted to them, by board of directors. The executive board consists of nine members, including; CEO, CFO, CAO, President of Business Development, President of Public Affairs, President of Kongsberg Maritime, President of Kongsberg Defense Systems, President of Protech Systems, President of Kongsberg Oil & Gas Technologies.

A.2. Description of divisions – KOGs segmentation

Kongsberg Maritime

Kongsberg Maritime is the largest segment in KOG with approximately 57% of total 2013 revenues. They provide positioning, surveillance, navigation and automation systems for merchant vessels and the offshore industry. The business area is a market leader in dynamic positioning, automation and surveillance systems, process automation, fisheries, satellite navigation and hydro acoustics, as well as material handling equipment for use on deck for offshore vessels. Key markets are countries with large offshore, shipyard and energy exploration & production industries.

Kongsberg Oil & Gas Technologies

The Oil & Gas subsidiary delivers solutions for oil and gas operations and was established to strengthen KOG's position in the oil and gas sector in 2010. It is the smallest segment in KOG with approximately 6% of total revenues in 2013. They deliver solutions for oil and gas operations, including drilling, production and subsea development projects. KOGT's growth has so far been driven by smaller acquisitions like Advali, Apply Nemo, Havtroll, Odfjell Consulting and Seagear. The division consists of 3 key segments: Engineering and operational support, software and related services, and subsea products and solutions.

Kongsberg Defense Systems

Kongsberg Defense Systems contributed with 27% of total revenue in 2013 and is Norway's premier supplier of defense and aerospace-related systems. Its portfolio comprises products and systems for command and control, weapons guidance and surveillance, communications solutions and missiles. The division has expertise and production equipment to make composite and engineering products for the aircraft, offshore and helicopter markets. The Norwegian Armed Forces is the biggest customer, but the international customer portfolio has grown in the recent years, including contracts with the US Army, the Polish army, and Oman.

Kongsberg Protech Systems

Kongsberg Protech Systems is one of the world's leading suppliers of remotely controlled weapons systems and contributed with 14% of the total revenue for KOG in 2013. The business area's main products are the Protector Remote Weapon Station weapons control system (RWS). It is the market leader within RWS and has since the beginning of 2001 delivered 17.000 systems to 17 nations. An important driver behind KPS' historical success has been the Common Remotely Operated Weapon Station (CROWS II) program for the U.S. Army, to which KPS has delivered in excess of 10.000 units since 2007.

Source: KOG, 2014

A.3. KOGs History

1814-1900: The beginning

Kongsberg Gruppen was established in 1814. 1814 was also the year that Norway penned its constitution and released itself from the Danish union. The weapon factory was one of the first industrial factories in the history of Norway and can therefore also be seen in the context of the desire for national independence.

Kongsberg Våpenfabrikk started manufacturing rifles for the Norwegian Armed Forces and in 1892 their pioneering spirit achieved international recognition thanks to the Krag-Jørgensen rifle. The rifle won a competition against 53 other rifle models, to be the US army's new weapon of choice. The US army adopted the rifle as its lead weapon for nine years, during which time 500,000 were produced in the US alone. The Krag-Jørgensen was a demonstration of the company's focus on technology. "The Krag" became Norway's first large-scale industrial export and helped establish an important relationship with the US Armed Forces that still endures today.

1900-1945: Modern Times

The Krag-Jørgensen rifle dominated manufacturing operations at Kongsberg Våpenfabrikk up until the end of the First World War in 1918. As the years following the war was characterized by optimism and decreased military spending, the company needed to look for other business opportunities and was granted a license to produce civilian weapons, tools and components for the shipping industry and the whaling fleet.

 In the 1930s the threat of war became apparent once again and the Spanish Civil War demonstrated the type of destruction that could be caused by aerial bombing. The Norwegian authorities, who were in control of the factory, ordered the production of anti-aircraft guns. Some of these guns were involved in the battles when Nazi Germany invaded Norway on 9 April 1940.

During the Second World War the factory was under German control. In this period the factory manufactured 40 mm Bofors guns, rifles, medium machine guns and pistols. Production, however, never grew to the level that the Germans wanted. This was partly due to limited access to raw materials, but also resistance among factory workers.

1945-1960: Industrial Locomotive

In the aftermath of WWII, Kongsberg Våpenfabrikk emerged as a driving force in the restructuring and development of the Norwegian industry. The factory was no longer under military control and in 1953 the Norwegian Government decided to initiate a large-scale modernization of the company. The decision was

mainly based on the desire to develop a high-tech national defense industry which could meet the requirements of the Norwegian Armed Forces and provide NATO with technological assistance.

In 1947 the government also founded the Defense Research Institute in Kjeller, Norway. The authorities believed that it would be an advantage if the Armed Forces had a national industrial partner that could put the research and technology into "real-life". From 1950 and up until present this cooperation has developed a number of defense systems, including the Penguin Missile, the NASAMS air defense system, the HUGIN autonomous underwater vehicle and the Naval Strike Missile.

1960-1987: Innovative Breakthroughs

Kongsberg Våpenfabrikk's focus on the maritime industry began in the 1970s and coincided with the discovery of oil in the North Sea. Companies that was acquired by the Kongsberg Group such as, Simrad and Norcontrol, had already supplied echo sounders and automation systems to the fishing industry and the merchant navy for several years. Dynamic positioning and underwater installations were revolutionary technology which provided Kongsberg with a technological edge that they still have today.

1987-2015: Rebirth

In 1987, Kongsberg Våpenfabrikk experienced a turning point. The company was split up into manufacturing divisions for automotive components, aircraft components, gas turbines, oil installations, maritime equipment, drawing machines and defence equipment. They were excelling in innovation, but they could not turn the technology into profitability and started to struggle financially. As a consequence, the state, which owned all the shares in the company, decided to sell everything apart from the Defense Division which continued under the name Norsk Forsvarsteknologi (Norwegian Defence Technology).

In 1993 the company was listed on the Oslo Stock Exhchange and by 1995 the company became known as the Kongsberg Group. This was followed by many acquisitions, including the re-acquisition of the Maritime Division. In 1997 Kongsberg gathered its operations of its subsidiaries, Kongsberg Maritime AS and Kongsberg Defence & Aerospace AS.

In 2000 the company saw a new opportunity when a demand for remotely controlled weapons station for wheeled vehicles emerged. Kongsberg's solution demonstrated to be so effective that the US Armed Forces soon became a considerable customer. By 2008, these operations had grown considerably and were separated out into a separate business segment under the name Kongsberg Protech Systems. The other defense activities which supplies anti-aircraft missiles, command and control systems, aircraft components and communications equipment continued under the name Kongsberg Defense Systems. Subsequently, the operational units at

Kongsberg Maritime, which had been working on oil & gas simulation technology were reorganized under new management and continued under the name Kongsberg Oil & Gas Technologies. In just a couple of years, Kongsberg Oil & Gas Technologies expanded its operations to include subsea hardware solutions, well-drilling software and decision making support services.

At the beginning of 2014 Kongsberg has a turnover of MNOK 16,323 and 7,493 employees in more than 25 different countries. Kongsberg currently consist of four business segments: Kongsberg Maritime, Kongsberg Defence Systems, Kongsberg Protech Systems and Kongsberg Oil & Gas Technologies.

Source: KOG(2015)

A.4. KOG – Ownership Structure

The 10 largest shareholders as of 31.12.2014 are accountable for approximately 77.5% of the capital in KOG. The majority of stake of this is held by the Norwegian government through Nærings og Fiskeridepertementet and Folketrygdfondet.

The 10 largest shareholders of KOG ASA as of 31.12.2015

#	Shareholder	Type	% of total Capital
1	Nærings og Fiskeridepartementet	State	50,0
2	Arendals Fossekompani ASA	Institution	8,0
3	Folketrygdfondet	State	6,0
4	MP Pensjon PK	Institution	3,8
5	The Northern Trust Co.	Nominee	2,3
6	J.P. Morgan Chase Bank N.A. London	Nominee	2,2
7	Danske Invest Norske Instit. II.	Institution	1,5
8	Commerzbank AG	Institution	1,4
9	Odin Norden	Institution	1,3
10	Odin Norge	Institution	1,1
			77,5

Source: Compiled by Authors based on KOG (2014)

Nærings og Fiskeriedepartemented is the department that administrates all the equity stakes hold by the Norwegian state and controls approximately 37% of the available equity capital at Oslo Stock Exchange. They are majority owner I companies like Telenor, DNB and Statoil. The current minister in charge Monica Mæland is responsible for the strategy and politics of the department.

KOG has one class of shares, and each share carries one vote Shareholders are entitled to vote by proxy or direct vote in advance online. With regard to nominee accounts, these are not entitled to vote unless they identify themselves publicly. The theory around ownership and state ownership in particular is included in the thesis.

A.5. Empirical Review

Recent Empirical studies on Public VS Private Ownership

Authors	Method	Result
Boardman and Vining 1989	Examines economic performance of 500 largest non-Us firms in 1983 classified by ownership structure as SOE, private or mixed (ME). Employs 4 profitability ratios and 2 measures of efficiency.	SOEs and MEs are significantly less profitable and productive than private firms. MEs are no more profitable than pure SOEs – so full private ownership is required to gain efficiency.
Vining and Boardman 1992	Asks whether ownership matters in determining efficiency of SOEs, or if only the degree of competition is important. Estimates performance model using 1956 data from largest nonfinancial Canadian firms, including 12 SOEs and 93 MEs.	After controlling for size market share and other factors, private firms are significantly more profitable and efficient than MEs and SOEs, though now find that MEs outperform SOEs. Thus ownership has an effect separable form competition alone.
Pinto, Belka and Karjewski 1993	Tests whether privatization is required to improve performance of SOEs by examining how Polish state sector responded in the 3 years after "Big Bang" reforms of Jan 1990, which liberalized prices, tightened fiscal/monetary policy and introduced competition without privatization	Significant performance improvement due to macro-economic stabilization package, even without privatization; mostly due to hard budgets constraints, tight bank lending policies, enhanced credibility of governments "no bailout" pledge.
Ehrlich, Gallais-Hamonno, Liu Lutter 1994	Examines impact of state ownership on long run rate of productivity growth and/or cost decline for 23 international airlines during 1973-83.	State ownership can lower long-run annual rate of productivity growth by 1.6-2.0% and rate of unit cost by 1.7-1,9%. Ownership effect not affected by degree of competition.
Majumdar 1996	Using Industry level survey data compares performance of SOEs, MEs and private Indian firms for 1973-1989. SOEs and MEs account for 37% of employment and 66% if capital investment in India in 1989.	Documents efficiency scores averaging 0,975 for private firms, significantly higher than average of 0,912 for MEs and 0,638 for SOES. State sector efficiency improves during "efficiency drivers" but declines afterwards.
Kole and Mulherin 1997	Tests whether postwar performance of 17 firms partly owned by US government due to seizure of "enemy" property during WWII differs significantly form performance of US firms.	Though these firms experience abnormally high turn-over among boards of directors, manager tenure is stable, and SOE performance is not significantly different from private firms.

LaPorta, Lopez de Silanes and Shleifer 2000	Using data form 92 countries, examines whether state ownership of banks impacts financial system development and growth rates of economy and productivity.	Extensive state ownership, especially in poorest countries retards financial system development and restricts economic growth rates, mostly due to impact on productivity.
Tian 2000	Studies relation between state shareholding and firm performance of 825 publicly traded Chinese firms in 1998. 413 had sine government ownership 312 had none.	Performance of private enterprises significantly superior to "mixed" enterprises. Corporate value generally declines with state ownership, and then increases after state share passes 45%.
Cornette et al. 2005	Examine performance differences between private owned and state owned banks in sixteen Far East countries from 1989 through 1998	They find that state owned banks are significantly less profitable than private owned banks due to state banks lower capital ratios, lower liquidity, greater credit risk and lower management efficiency.
Wolf 2009	Compares national oil companies and privately own international companies to investigate differences in performance and efficiency. The data set includes 1001 firms with observations from 1987-2006. Panel data is used in the regressions.	He finds that national oil companies significantly underperform towards state companies in terms of efficiency and profitability. The paper suggests that a political preference usually comes at an economic cost within the oil industry.
Megginson, Ullah and Wei 2014	Use the former state owned companies in China to assess whether soft budget constraints lead to agency problems from 2000-2012. They use cash holdings to determine if the firms hold less liquid assets when the state is still a majority shareholder compared to if there is zero state ownership.	They find that cash holdings and state ownership is negatively correlated on a significant level. We attribute this negative relation to the SBC effect inherent in state ownership.

Case studies, country and industry specific empirical studies: Non transition economies

Authors	Method	Results
Galal, Jones, Tandon and Vogelsang 1994	Compares actual post privatization performance of 12 large firms (mostly airlines and regulated utilities) in UK, Chile, Malaysia Mexico to predict performance if the firm remained SOEs	Documents net welfare gains in 11 of the 12 cases which equal, on average, 265 of the firm's pre divesture sales. Find no cases where workers were made worse off and 3 cases where workers were made significantly better off.
Ramamurti 1996	Surveys studies of 4 telecom, airline and 1 toll-road privatization programs in Latin America during 1987-91. Discusses political economic issues, methods used to overcome bureaucratic/ideological opposition to divestiture.	Concludes privatization very positive for telecoms, partly due to scope of technology, capital investments, and attractiveness of offer terms. Much less scope for productivity improvements for airlines and roads, and little improvement in social welfare observed.
Boles de Boer and Evans 1996	Estimates impact of 1987 deregulation and 1990 privatization of Telecom New Zealand on price and quality of telephone services. Examines whether investors benefited.	Documents significant declines in price of phone services, due mostly to productivity growth that cut costs at a 5.6% annual rate, and significant improvement in service levels. Shareholders also benefited significantly.
Petrazzini and Clark 1996	Using International Telecommunications Union (ITU) data through 1994, tests whether deregulation and privatization impact level and growth in tele density (main lines per 100 people), prices, service quality and employment by telecoms in 26 countries.	Deregulation and privatization both are associated with significant improvements in level and growth in tele density, but have no consistent impact on service quality and employment by; privatization has the opposite effect.
Ramamurti 1997	Examines restructuring and privatization of Ferrocarilla Agentinos, the national railroad in 1990. Tests whether productivity employment and need for operating subsidies (equal to 1% of GDP in 1990) change significantly after divestiture.	Documents a 370% improvement in labor productivity and 7.7% decline in employment (from 92000 to 19682). Services were expanded and improved, and delivered at lower cost to consumers. Need for operating subsidies largely eliminated.

Newberry and Pollitt1997	Performs cost benefit analysis of the 1990 restructuring and privatization of the Central Electricity Generating Board (CEGB). Compares actual performance of privatized firms to a counterfactual assuming CEGB remained state-owned.	Restructuring and privatization of CEGB resulted in permanent cost reduction of 5% per year. Producers and shareholders capture all this benefit and more. Consumers and government lose. Shows that alternative fuel purchases involve unnecessarily high costs and wealth flows out of country.
ROS 1999	Use ITU data and panel data regression methodology to examine effects of privatization and competition on network expansion and efficiency in 100 countries over 1986-95.	Counties with at least 50% private ownership of main telecom firm have significantly higher tele density levels and growth rates. Both privatization and competition increase efficiency, but only privatization is positively associated with network expansion.
Otchere and Chan 2003	Perform a clinical analysis (case study) of the impact that Commonwealth Bank of Australia's (CBA's) privatization had on the bank itself as well as on its domestic rivals. The initial sale of CBA was executed in 1991, and the bank was fully divested in 1996	Find that (1) the stock prices of major rival banks reacted negatively to CBA's sales, with especially negative reactions to the initial and final sales; (2) CBA's long-run stock price performance is significantly positive, and increases steadily as the government's ownership stake declines; (3) the financial and operating performance of CBA improves significantly after privatization, and surpasses that of its major rivals

Empirical studies on performance changes for firms privatized via public share offerings: Non transition economies

Authors	Method	Results
Megginson nash van randenborgh 1994	Compare 3 year average post privatization performance ratios to 3 year pre privatization values for 61 firms form 18 countries and 32 industries 1961-1989.	Documents economical and statistical post privatization increases in output, operating efficiency profitability capital investment spending and dividend payments. Significant decrease in leverage.
Macqureira and zurita 1996	Compares pre versus post privatization performance of 22 Chilean firms privatized over 1984-1989. Uses Megginson, Nash and van Randenborgh method to analyze.	Identical results to MNR significant increases in output, profitability investments dividend payments leverage increases significant.
Boubakri and Cosset 1998	Compare 3 year average post privatization performance ratios to 3 year pre privatization values for 79 firms form 21 developing countries and 32 industries 1980-1992.	Documents significant post privatization measures in output operating efficiency profitability capital investments dividend payments employment significant decreases in leverage the performance improvements are generally larger than those documented by MNR
D souza and Megginson 1998	Documents offering terms sale methods and ownership structure resulting from privatization of 78 firms from 10 developing and 15 developed countries over 1990-94. Compares 3 year average post privatization ratios to 3 year pre privatization	Documents significant increases in output operating efficiency and significant decreases in leverage. Capital investment spending increases insignificantly. Most of the firms privatized in 19990s are form telecoms and other regulated industries
Verbrugge Megginson Owens 2000	Study offering terms and share ownership results for 65 banks fully or partly privatized from 1981 to 1996. Then compare pre and post privatization performance changes.	Ratios improving for profitability and positive initial returns to IPO investors

Boubakri and Closset 1999	Examine pre versus post privatization performance of 16 African firms through public share offering during 1989-1996 also summarize finding of three other studies on developing countries	Only significant changes in capital spending - increase
D Souza and Megginson 2000	Examines pre versus post privatization performance changes for 17 national telecom companies privatized through share offerings during 1981-94.	Leverage declines, profitability increases out efficiency capital spending increases
Dewnter and Malatesa 2001	Compare pre versus post privatization performance of 63 large high information companies divested during 1981-1994 over both short-term 1-3 year and long term 1-5. Examines long run stock returns of privatized companies 1500 firm years during 1975-1985 and 1995	Significant increase in profitability decrease in leverage over long and short term. Operating profits increase prior to privatization but not after. Results strongly suggest that private firms outperform state
Boardman Laurin and vining 2000	Compares 3 year post privatization performance ratios to 5 year pre privatization ratios for 9 Canadian firms privatized during 1988-95. Computes long ruin stock returns for divested firms.'	Profitability, measured as return on sales or assets more than doubles after privatization efficiency and sales increase significantly Leverage decline Capital spending increase Private significantly outperforms state
Beck et al. 2005	Examines the effect of privatization on performance using an unbalanced panel of 69 banks with annual data for the Period, 1990–2001. The authors focus on the nine banks that were completely privatized during this period	Document a significantly positive impact from privatization, even in a macroeconomic and regulatory environment that was inhospitable to financial intermediation. Privatization helped close the very wide gap between the performance of state-owned banks and private banks in Nigeria, though the performance of divested firms never surpassed that of private banks.

Mathur and Banchuenvijit 2006	Our study examines changes in the financial and operating performance of 103 firms worldwide that were privatized through public share offerings during 1993–2003 in both emerging markets and developed countries.	The empirical results from the Wilcoxon and proportion tests show increases in profitability, operating efficiency, capital spending, output, and dividend payments as well as decreases in leverage and total employment.

A.6. Cases where the Government argue State Ownership is preferred

The Norwegian Government has identified four categories where they argue that state ownership is preferable to private ownership. The table below provides a description of these categories:

Category	Financially motivated ownership	Financially motivated ownership, and preferred domestic anchoring of HQ	Financially motivated ownership and other specific defined goals	Sector-politically motivated ownership
Characteristics	The government only holds financial motivation for the ownership. They consistently look for opportunities to maximize the value of their investment. There is an ongoing evaluation whether the state should remain a shareholder in these companies	The government holds financial motivation for the ownership. The ownership is also strategically motivated to anchor the HQ of these companies in Norway and their associated departments. Ownership of 34% and above secures this.	The government holds financial motivation for the ownership. Some of these companies are similar to the ones in category 2. While in other regulations, licenses and transactions with the state are needed to safeguard sector political goals.	The state's ownership in these companies is solely sector-political. The state's involvement is determined on a case to case basis to make sure that they fulfill their sector-political responsibilities as efficient as possible.
Examples	SAS AB Mesta AS Flytoget AS	Kongsberg Gruppen ASA DNB ASA Telenor ASA	Statkraft SF NSB AS Posten Norge AS	Avinor AS Norsk Tipping AS Petoro AS

A.7. State Ownership Dataset – Oslo Stock Exchange			
Observation (#)	**Ticker**	**Tobin's Q**	**State ownership - Dummy**
1	AKSO	1,2027	1
2	BWLPG	1,5878	1
3	DETNOR	1,0143	1
4	DNB	1,2645	1
5	DNO	1,4085	1
6	FOE	1,2896	1
7	GJF	1,3748	1
8	GOGL	1,4146	1
9	MHG	1,262	1
10	NAS	0,8716	1
11	NHY	2,1674	1
12	OPERA	1,3358	1
13	ORK	1,1312	1
14	PGS	1,082	1
15	RCL	2,345	1
16	REC	1,3456	1
17	SCH	1,4413	1
18	SDRL	0,9878	1
19	STB	1,1262	1
20	STL	0,985	1
21	SUBC	1,8064	1
22	TEL	1,8122	1
23	TGS	1,207	1
24	YAR	1,7645	1
25	AFG	1,7619	1
26	AGA	1,121	1
27	AKER	1,0329	1
28	AKVA	1,1217	1
29	AMSC	2,7687	1
30	AQUA	0,9105	1
31	ARCHER	1,3503	1
32	ASC	2,9874	1
33	ATEA	0,9941	1
34	AUSS	0,9945	1
35	AVANCE	0,5379	1
36	AVM	1,7817	1
37	BAKKA	0,8653	1
38	BEL	3,1608	1
39	BIOTEC	2,5469	1
40	BIRD	0,909	1

41	BON	1,3664	1
42	BOR	1,3295	1
43	BRG	0,9088	1
44	BWO	2,2027	1
45	COV	0,96	1
46	DESSC	1,0043	1
47	DOF	1,0399	1
48	DOLP	1,138	1
49	ECHEM	0,7882	1
50	EIOF	1,7403	1
51	EKO	1,4322	1
52	ELT	0,8344	1
53	EMAS	1,7311	1
54	EMGS	6,1453	1
55	ENTRA	0,7774	1
56	EVRY	0,9036	1
57	FAR	1,2563	1
58	FRO	2,7524	1
59	FUNCOM	0,865	1
60	GOD	0,9003	1
61	GRO	1,1561	1
62	GSF	4,4494	1
63	HEX	1,1156	1
64	HFISK	1,1375	1
65	HLNG	1,1214	1
66	HRG	1,2467	1
67	HYARD	2,1004	1
68	IOX	0,9826	1
69	ITX	0,9456	1
70	JIN	1,1296	1
71	KOA	1,4957	1
72	KOG	1,0746	1
73	KVAER	1,2089	1
74	LSG	0,3959	1
75	NAUR	1,0023	1
76	NAVA	0,5777	1
77	NMG	0,9145	1
78	NOD	1,1341	1
79	NOF	0,868	1
80	NOR	0,9289	1

81	NPRO	1,3882	1
82	NRS	0,9127	1
83	NSG	1,0383	1
84	OCY	1,0237	1
85	ODL	0,9576	1
86	OLT	0,6984	1
87	OTS	0,6282	1
88	PDR	0,9974	1
89	PEN	1,924	1
90	PHO	0,8966	1
91	PLCS	1,1849	1
92	PROTCT	1,6657	1
93	PRS	1,3863	1
94	QEC	1,5232	1
95	QFR	0,5977	1
96	RAKP	1,5915	1
97	REACH	1,6951	1
98	RECSOL	0,7428	1
99	RGT	1,359	1
100	SALM	1,1196	1
101	SAS NOK	0,9032	1
102	SBO	0,8489	1
103	SBX	0,83	1
104	SCI	1,5665	1
105	SEVAN	0,908	1
106	SEVDR	0,926	1
107	SIOFF	1,0554	1
108	SNI	0,9753	1
109	SOFF	0,6024	1
110	SONG	1,5959	1
111	SPU	1,0085	1
112	SRBANK	1,0398	1
113	SSC	1,4452	1
114	SSO	0,8314	1
115	STORM	1,7826	1
116	TELIO	1,6445	1
117	TIL	1,9971	1
118	TOM	0,9862	1
119	TTS	1,2547	1
120	VARDIA	1,3532	1

121	VEI	1,2541	1
122	VIZ	0,7954	1
123	VVL	2,0606	1
124	WBULK	1,6789	1
125	WRL	1,9456	1
126	WWASA	1,2245	1
127	XXL	1,3497	1
128	ZAL	0,8954	1
129	AFK	1,1573	1
130	AGR	1,0658	1
131	APP	1,4891	1
132	ASETEK	4,8737	1
133	ATLA NOK	0,9005	1
134	BERGEN	0,8287	1
135	BLO	1,1676	1
136	BMA	0,8735	1
137	BOUVET	1,8946	1
138	COMROD	0,9693	1
139	DAT	1,2416	1
140	DOM	0,8517	1
141	FOP	0,8339	1
142	HAVI	0,8753	1
143	INFRA	1,2043	1
144	ITE	1,6569	1
145	KIT	0,8524	1
146	MEDI	2,7823	1
147	NAPA	1,3267	1
148	NTS	4,8359	1
149	POL	1,1888	1
150	PSI	0,9972	1
151	REPANT	2,6414	1
152	RISH	0,895	1
153	SKI	0,7618	1
154	SOLV	0,8161	1
155	SSI	0,8257	1
156	TIDE	0,9577	1
157	WILS	0,9114	1

Source: Compiled by authors based on Bloomberg (2015) and respective annual reports (2014).

This appendix describes the process of interviewing analysts from prominent Norwegian investment banks covering KOG. The interviews were conducted to get objective input regarding KOG and the analysts' approaches to the state ownership issue. The appendix includes the methods applied, a description of the participants, the questions asked and a transcription of the interviews. The interviews were conducted in Norwegian, and the enclosed questions and transcribed answers have been translated into English.

Method

The interviews were conducted in an unstructured manner. This was done to stimulate a discussion, rather than dictating it (Tracy, 2013). This style was chosen because the authors wanted to get information about the company, the respective industries and the macroeconomic environment, rather than only focusing on the state ownership issue. The questions were asked so the analysts could speak freely and elaborate on topics of interest. This method is supported by Tracy (2013) as it is ideal to understand the interviewed objects complex viewpoints without the strict constraints of scripted questions. However, each object got a description of the topics that was of interest, and the authors conducted a list of questions that was used as guidance for the discussion. These questions are provided in this appendix, but should not be regarded as a script.

Interview participants

The interview objects was gathered in an opportunistic way (Tracy, 2013) There is a limited number of analysts covering KOG on a regular basis, and the authors had time constraints in conducting the interviews. Therefore, four analysts had the opportunity to participate within the given period of time. All objects were based in Oslo and employed by different investment banks.

Jon D. Gjertsen, Partner Equity Research, Pareto Securities

Mr. Gjertsen has had a long track record as equity analyst in Pareto Securities and is covering many of the stocks at Oslo Stock Exchange with the state as majority shareholder. He holds a BSc in finance from the Norwegian School of Management and a MSc of Banking and International Finance form Cass Business School.

Lars Daniel Westby, Head of Research, SpareBank 1 Markets

Mr. Westby has extensive experience from several investment banks and large Norwegian Enterprises. He also holds experience form the Norwegian Armed forces as the Head of Helicopter Supply Section. Mr. Westby graduated from Norwegian School of Management in 2000 with an MSc of Economics and Finance.

Chr. Fredrik Lunde, Head of Research, Carnegie

Mr. Lunde has worked as an equity analyst in Carnegie since 2006 and is responsible for the coverage of KOG. He holds a MSc of Finance form Norwegian School of Management.

Haakon Amundsen, Partner Equity Research, ABG Sundal Collier

Mr. Amundsen has worked as an equity analyst since 2007 and is responsible for ABGSCs coverage of KOG. He also holds experience form Aker Solutions as a Senior Process Engineer a tier one peer of KOG within the maritime segment.

Interview

Case

1. What do you think about the ongoing discussion regarding the Norwegian Government's proposition of reducing its share in KOG to 34%?
2. What are potential solutions to the challenges in terms of KOG being a weapon producer?
3. Which valuation method do you use?

State Ownership

4. Do you think the residual ownership held by the Norwegian state after privatization of Norwegian companies will affect relative valuation?
5. Do you adjust you valuation for a state ownership discount for KOG, and if so, how do you do it?
6. If there is a discount how has it developed historically?
   a. Have you changed your approach/understanding of the discount?
7. How do you choose your peer group and what is the argument for the multiples chosen for valuation purposes?

Financial development

8. What is your view regarding the financial development in the four different segments KOG operates?
9. How do you picture the growth going forward?
10. Do you believe there will be any disposal of strategic business units?
    a. Can you identify any potential acquirers?
11. Do you see any potential acquisition targets within the different segments?
    a. Which strategic segments should be strengthened and why?

Macroeconomic factors

12. Do you forecast on any macroeconomic factors, and if so, which?
13. What macroeconomic shifts will affect KOG in the years to come?

Industry specific

14. How do you picture the competition within KOG's segments going forward?
    a. How is KOG positioned for potential structural changes?

Company specific

15. Does KOG possess any sustainable competitive advantages?

Transcribed interviews

The transcribing symbols applied as provided in the table below.

Explanation	Symbol	Example
Authors comment about context	((Words)) double parentheses around the comment	The snow helps to some extent. ((Participant are talking about the reduced daylight during winter))
Author is uncertain about what was said	(unclear word) parentheses around unclear word	Let me just get (pen) and paper.
Speech overlap	[single left bracket	#1: But don't you think that is strange, given the situation? #2 [It is not strange if you understand it
Words omitted from sentence	[…] three equally spaced dots inside brackets	When I eat early, especially salad […] I get bad breath.
Sentence omitted form excerpt	. […] Four dots	A question is when I am going to eat. […] My trainer says to eat within 20 minutes after workout.
Multiple sentences omitted form excerpt	// double slash	I am a slave of ice cream. // The best is when it has kind of melted.
Words written by author (for clarification, summary or confidentiality)	[replacement or additional words]	I need to call nana [grandmother], because it's her birthday.

Source: Compiled by Authors based on Tracy (2013)

Interview # 1: Jon D. Gjertsen

Date and time: February 26th, 13:29 – 14:02

Participants: Jon D. Gjertsen (=JG), Ola-Jo Semb (=OS) and Jacob Hartwig (=JH)

OS: Has the Norwegian Government's concentrated ownership in KOG any effect on the company's underlying value?

JG: This [discussion] is primarily an asset management question for the Norwegian Government. […] How should the state tie up their own cash? Should they own big listed Norwegian companies or should they free some of their cash for other purposes? ((Transitions to answer these questions)). Strategically, it is very important for the Norwegian state to have a stake there [in KOG] because of the defense part ((essentially meaning KDS and KPS)). If they didn't have these parts [if KOG didn't have operations within the defense segment], it wouldn't have been as important for them to have an ownership stake in the company. […] and then there are the challenges you probably are aware of with regards to the missing legislations [the lack of Norwegian regulation with regards to company control if they were to reduce their ownership stake]. In the recent consultation rounds it has been the company itself that has highlighted the fact that Norwegian legislation is lacking limitations that prevents international players to take control over KOG's defense technology. If you look to similar cases internationally, for example France, Germany and the UK, you can see that they have laws that makes it possible to prevent that the technology leaves the country even with a 34 percent ownership stake. [These countries have laws that prevent the owners of companies with sensitive technology to lose control over this technology even if they reduce their share to a minority share in special circumstances]. […] so the [Norwegian] Government is working to see if they can make some changes to the legislation to make it possible for them to reduce their share to 34 percent.

OS: How long do you think this work will take?

JG: I believe that this may take some time. […] at least a year before something will happen, and then it's a political question after that.

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OS: We have done a literature review and have discovered that there exist some proofs that state ownership has a negative effect on the relative valuation and the performance of the company when it comes to profit. We have

also seen that dividend policies and capital structures [in companies with state ownership] are very conservative. Is this reason enough to consider a discount in the valuation of KOG?

JG: I would say that there are two things you need to think about when it comes to discount on the valuation in this particular case. If you look at "ungeared" multiples [multiples that are not affected by the company's capital structure] like EV/EBITDA or EV/EBIT, you will find that KOG [the stock] looks very cheap compared to peers. […] there are two discount factors here [reasons for the discount]. The first is a liquidity discount, which could have been a lot better if the state had reduced their ownership. ((Jon points to the fact that the Norwegian Government's high ownership stake results in fewer stocks available for sale on a daily basis)). Secondly, there is no doubt that their capital structure is suboptimal. They have 3.6 billion [Norwegian Kroner] in net cash. […] they are paying out an extraordinary dividend of 600 million [Norwegian Kroner], but anyway, the company still has a way too strong balance sheet. […] I cover most of the other companies on Oslo Stock Exchange and it is a common denominator that the gearing is low. It is relatively common among state-owned companies [in Norway] to have a careful capital structure. It's not like Seadrill [a Norwegian offshore deep water drilling company] or Norwegian [a Norwegian airline company] to put it nicely. ((Jon compares the state-owned companies with two Norwegian companies with aggressive capital structures)).

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OS: We have run a regression where we found that state-owned companies on Oslo Stock Exchange are relatively valued lower compared to companies with 100 percent private ownership. Are you of the same perception?

JG: I can follow that ((Jon partly agrees)), but then you have to look at "ungeared" multiples [multiples that are not affected by the company's capital structure] as I mentioned earlier. The companies [state-owned companies] have lower gearing. […] there is some Miller-Modigliani in there ((Jon refers to Miller and Modigliani's research on capital structure which favors high debt ratios)). The capital structure is way too defensive. […] but there are some aspects to it that the companies are pointing to ((meaning that the companies have their reasons for keeping their capital structures this way)). They cannot go out on the open market to raise capital in the same way as privately held companies when they want to make acquisitions; it is a little more complicated than that. Because of this, they need large sums of cash on their balance sheet in order to make these acquisitions organically instead.

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JH: What is your view regarding the financial development in the four different segments KOG operates?

JG: […] KOGT is the segment that is in the worst shape [financially]. It will probably continue like this for a while ((essentially meaning that the oil & gas industry will continue to be weak)). A lot of the technology that KOGT is specializing in, and the companies that they are selling to. […] I mean the willingness to invest among companies within the oil & gas sector is very low at the moment, as you probably know. They have been prepared for growth and increased recruiting, but have been forced to cut quite drastically just to make sure that they are breakeven. It [KOGT] is very dependent on the oil price and will probably contribute less to the total revenue for the company than we saw in 2014. […] KM will continue to be the biggest segment, but you will see that the order intake will fall quite sharply. […] it has offshore [the offshore sector] as its biggest driver which stands for 60 percent of revenues. The biggest segments within offshore are drillships, OSV's [Offshore Support Vessels], FPSO's [Floating Production Storage and Offloading] and LNG [Liquified Natural Gas] ships. […] a big part of their backlog within drillships that are already ordered will probably be pushed forward [postponed] and you will see a lot less new orders.

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OS: Do you think they can recover some revenues from service on existing projects?

JG: Absolutely. If you look at the numbers from 2014 and KM in particular, you can see that NOK 3 billion was so-called "lifecycle revenues" [revenue from existing projects/orders]. A good rule of thumb for KOG is that over a lifetime of a rig [oilrig] or a vessel, 150 percent of what they earned on delivery will be paid in service-charges later. […] so if they sell for 50 million they will receive an additional 75 million throughout the lifetime of, say, 20-25 years of the rig/vessel. The key driver for this [service revenues] is the amount of vessels that have already installed their technical solutions […] and this is still growing. In my report I show what's happening to the revenues from offshore as a function of this. In 2015 you will probably see a flat to weak growth, in 2016-17 you will start to see a drop in new build [new orders] revenues […] the net effect will be a decrease in revenues. The base in offshore are the NOK 3 billion in lifecyce [revenues] and these won't disappear unless drillships that have been in operation for less than 10 year will be scrapped, which is not very likely. […] so this is a pretty safe base. If you look at the book/bill ratio for KM compared to other companies in the oil service sector, you will find that KM's [book/bill] ratio has been above 1.00 in the last year, which is significantly stronger than what you see among other players. // It also has something to do with their position in the market ((Jon is implying that they have a very strong position within the Maritime Sector)). […] it is a market position, which is one of the most extreme positions I have ever seen. If you look at drillships, their market share lies at almost 100 percent. […] many players have tried to enter the market, for example GE, without any luck.

OS: What is the reason for this?

JG: They were very early to enter the market and they had a product with very few defects. It is also an advantage for a shipowner to have one system across the whole fleet […] a uniform fleet, as there are many technical gains coming from this. They have also been quite disciplined in their pricing strategy. […] they have very moderate margins and are not making a fortune on every sale. This makes it a lot less attractive for a new player to enter the market.

OS: Do you think they will manage to "fight off" competitors within this segment in the future?

JG: I think so. […] they would have to have a lot better product. KOG is very skilled on R&D [research and development] so I don't see this as a very big threat. […] the player would also have to discriminate on pricing, which would result in almost no margins at all. ((Jon is implying that the margins are already so low that it wouldn't be profitable for a competitor to challenge KM on pricing)). […] so it's a combination of being an early mover, having a solid product, and disciplined pricing that has led to the success within this market. […] if they had started out with higher margins, they would have been a lot more vulnerable [to competition].

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OS: How does it look for KDS and KPS?

JG: If we put the two segments in the same category [defense sector]. […] there are very few items on the national budgets around the world that has been cut as heavily as the defense budgets in the last five to six years. […] especially in Europe and in the US. This has of course been bad news for these segments [KDS and KPS]. But recently we have seen a tendency for this to change. NATO has a goal that all members should have a defense-spending of two percent of total GDP within 10 years. At the moment, only four of the member-countries fulfill this requirement. The US [which contributes 70 percent of total NATO spending] is way above the two percent, and will probably continue to do so. […] but if all countries reach this goal it will mean an increase in defense spending of 100 billion dollars. A rule of thumb is that one fifth of this will be [military] equipment, […] so approximately 20 billion dollars.

OS: How much of this can potentially be claimed by KDS and KPS?

JG: That is the hard part of the forecasting process. It is tough to say, but the outlook for defense seen from a macro perspective is a lot better compared to what we saw a couple of years ago. If we move down to product-level, we know that KDS and KPS don't have a product range that reflects the whole defense market. They have

few niche products. Having that said, these products are very exciting and I see a lot of potential. I don't know if you have seen their air defense systems NASAMS [Norwegian Advanced Surface to Air Missile System]? […] they currently have six or seven countries as customers at the moment. They signed a big contract with Oman in the first quarter of 2014. […] It is quite possible that they can get a few more orders in 2015 with the same size [NOK 2-3 billion], which will typically run over a four-year period. The Middle-East has big potential and Oman could be a potential door opener to this market. In addition, there are many European countries that are operating with very old Hawk air defense systems from the 1960's. […] there is room for improvement in these countries and a lot of things may happen here. The US is already customers and they are using NASAMS around The White House, Pentagon and other strategically important assets. // And then you have their missiles where a lot of exciting things may happen. The JSM [Joint Strike Missile] is the only missile that currently fits the F-35 aircraft. There is no competition here as KDS has been very good at developing partnerships with the companies that are producing these aircrafts in the US. […] there are approximately 4,200 aircrafts that are going to be produced from 2020 and forward, and around one fourth of these are going to be delivered to the US Navy, which is probably the most relevant for KOG [as the US Navy is already a customer]. This could mean a revenue potential for KDS of NOK 17-18 billion from 2020 to 2030. // When it comes to the NSM [Naval Strike Missile], there are currently only two customers, Norway and Poland. The US has tested the missile for quite some time. This fall they tested the missile from a Literal Combat Ship, and they are planning to build a fleet of 55 of these ships. […] if they order 10-20 missiles per ship it can have an impact of 5.5-11 billion for KDS. // On top of this you have a portfolio of a lot of other technology and communication equipment, but this is smaller in size.

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OS: You have mentioned defense spending as a key driver within the defense segment and oil price as a contributor in the maritime segment. Are there other macro factors affecting the company?

JG: I would say that the geopolitical situation is another key driver. Of course, this is hard to forecast, but it is definitely important and something that can impact the company's profitability. If you look at the conflict between Israel and Palestine, KOG won't earn a penny from an escalation here as they don't deliver to any of these parts. But, the increased tension between Russia and the rest of Europe is definitely positive for KOG. They are already present in many of the European countries and they have products and solutions that may help strengthen the defense of these countries. // When it comes to the maritime sector, KOG is a lot more diversified than many people think ((Jon implies that they have a lot more than just offshore products driven by the oil price)). […] only 25 percent of the subsea segment is traditional subsea business. They also do deliveries to

fisheries underwater research to mention a few. And then you also have the merchant marine, which is shipping. […] so it [KM] is pretty diversified. But it is true that offshore is an important market and there you have supply and demand in the rig sector, which is heavily driven by the oil price, as a key driver.

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OS: I feel like we have touched on a lot of important things. Is there anything else you want to add before we finish?

JG: I assume that there is some kind of valuation exercise in this thesis, am I right?

OS: Yes.

JG: ((Jon wants to explain what he did in his valuation of KOG)). What I did was that I used the peer multiples the way they were at that time. […] you will probably see that [multiples] for defense have been a bit lower. I believe that the point in time where I used these multiples was. […] they had experienced a very sharp decline in the sector and the estimates had not followed yet, so try to base the average on a bit longer period. […] and also, remember to have in mind the size of the multiples with regards to risk and growth ((Jon points to the fact that the comparable peers are a lot bigger than KOG)). The risk for KOG within the maritime sector is a lot smaller than for peers when you think about their position in the market. […] they will not lose the current installed base, that won't happen. Another tip is that a pure KM company would have been traded at a significant premium compared to other companies in this segment. // Lastly, I believe that one reason why they will not do a split between defense and maritime is that there are some R&D [research & development] synergies. However, these synergies could have been overcome by having some license or royalty agreements or something like that.

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Interview # 2: Daniel Westby

Date and time: February 27th 2014, 11:25-11:40, 15:15-15:37

Participants: Daniel Westby (=DW) and Ola-Jo Semb (=OS)

OS: What do you think about the discussion of reducing the states ownership to 34%?

DW: The discussion of reducing to 34 %, […] I am also following Yara and Hydro ((other Norwegian companies with state ownership)). […] I haven't done any fundamental analysis with regressions and what not, but in the Kongsberg case I wouldn't say that state ownership is the problem for the investors. If you look at their strategic positions and how much money they make, state ownership is not the problem. It is the liquidity in the stock, which are their main problem. Look at their ownership structure, the state owns 50%, in addition there is Arendal Fossekompani and Erik Must a substantial share […] and Snefond with Bergesen, […] Danske has a lot, […] Odin have sold their [Shares]. There is very limited free float in the stock. This is what investors are skeptical about if you don't consider their profitability ((The lack of free float)). Free float is the problem, and the other thing is that they [investors] do not like the companies balance sheet ((they think it's too much cash)).

OS: Yes we have noticed that and other analysts have also pointed towards it. [Goes on describing effects states ownership has on companies and in terms of dividends and gearing].

DW: That is what happens if you have a passive owner ((Companies pay less dividend)), it is very comfortable for management to have a significant cash position. Managements argument is that they cannot use stocks to pay if they want to do an acquisition. I definitely agree with you ((That the problems regarding liquidity and state ownership is a consequence of state ownership)). However, investors did not agree with Hydro when they bought (Hval), but they were very pleased with the state and that they participated in the share issue.

OS: Interesting, what kind of valuation methods do you use?

DW: Let me just focus on your question number two first regarding a possible solution. […] I know some of the people in the departments, and there is no point for Høyre and Fremskittspartiet ((the political parties included in the current Norwegian government)) [To proceed with their plans] because there is no pressure among their voters and it would only cause turbulence. […] You should check out one thing; if you want to export weapons from Norway you need a license. So the state could in reality just sell the entire company but still keep control of who they sold their products till. To me it is political, maybe it would have been better if they didn't own the company, because then you do not own a weapon producer.

OS: Ok, [Talks about regulatory efforts done by other governments in UK and France].

DW: I use the Sum-Of-The-Parts (SOTP) method when determining the company's value.

OS: Do you use multiples or a DCF approach?

DW: I use multiples in the reports I publish, that's because I only have around five minutes when I talk to investors, […] multiples makes it more convenient ((There is fewer subjective assumptions to justify)). […] It is very easy to divide between defense and maritime at the moment, or it has off course always been that way. […] Now defense are very hot because defense spending by NATO countries are increasing from 1.8% to 2%, oil service on the other hand is not ((a very hot industry)), thus it make sense to spilt the company. However, it is good to do a DCF as well, I do forecast the NOPAT. […] The most important thing is that you look at a scatter plot, let's say you have EBITDA/KGEAR on your X-axis and EV/EBITDA on you Y-axis.

OS: That's good because we are thinking about doing a SOTP, we feel that the annual reports provide enough information to justify a split.

DW: There is so many ways to do a valuation; my approach is that I tell the investors what I think the company is worth based on news flow. It must be up to them if they want to include a discount or not.

OS: So you do not include any [discount]? The company has been discounted towards peers historically. Don't you even discount your multiples or add any [premium] to your WACC?

DW: I have never done it. Not event for ORKLA ((Norwegian conglomerate). I know that there is a lot of discussions about it and that you always find a discount on conglomerates. […] You find yourself in a situation where you think a company is cheap, but it has always been cheap. Let's say that a company is worth 200 NOK based on fundamentals, but it has always been cheap, […] your estimates will not increase and there is nothing exiting happening in you news flow. It may then be reasonable to say that it is worth 150 NOK, now you are talking about the famous "value-trap" companies, which will never trade at their fair value.

OS: How do you do it then? Do you use a more subjective approach where you state that your numbers tell you X but your personally think Y?

DW: The thing is that this is where the craftsmanship matters ((Meaning the art of valuation)). Everybody could do the calculous of a valuation, but companies change based on the investors' perceptions. [Talks about a parody made by John Cleese]. The sentiment changes as news emerge. Let's say that a company is valued at its fundamentals, out of nowhere they start paying dividend and interests levels drop, suddenly the company is

value through dividend discounting. […] if the news flow is terrible but the underlying values are ok there is no point in buying the company. It changes a lot based on people's perceptions, just look at how Orkla has changed. Estimates have no impact, people are just waiting for SAPA ((a division within Orkla)) to be listed so that they could recive a dividend of 10 NOK, which is fine in the current market.

OS: [Discusses the art of valuation]

DW: There is lot of cross ownership and cooperation in the defense industry. Everybody knows who everybody is and where they are located. […] Kongsberg got that agreement with Raytheon which they use a lot.

OS: The one about Joint Strike Missiles?

DW: No the one on surface to air, so there is a lot of cooperation within the industry.

The interview continues later that day, 15.10-15.34

DW: […] We separate between maritime and defiance in terms of their different value drivers. Regardless of your choice of method it is useful to create a scatterplot, because then you are able to look at how growth drives multiples.

OS: We have looked at peers, [name companies within the universe of peers]

DW: I have sent you those that I use.

OS: We have noticed that Kongsberg's capital structure deviates from peers. Is it important to use multiples that are immune to leverage ((i.e. EV/EBIT))?

DW: Yes, you should either look at EBIT or EBITDA. I use EBITDA on KOG because they have a lot less depreciation than for example subsea peers.

OS: It would be interesting to hear what you have to say about future growth within the segments.

DW: [...] I think you should look at the order book within each segment. It will provide you with a solid understanding of previous and next year's sales. […] Most of all I look at the outlook in oil service spending, that affects their maritime segment. On defense you should address current global conflict level and how much of the state budget are allocated to defense. I think NATO countries are increasing their spending from 1.8% to 2%. That's the two macroeconomic drivers I address.

OS: […] Merchant shipping are an important customer segment within their maritime division ((brought up because Daniel Westby ignores it)) do you address commodity prices and economic growth?

DW: No, I don't. Let's see, for maritime I say that oil and offshore proceeds is about 6 billion NOK, 30% of these are aftersales. […] 1.3 billion NOK is rig newbuilds, […] 1.3 billion NOK is newbuilds offshore supply, […] 600 million NOK is FPSO and LNG, […] 200 million NOK is pipe layers to subsea. […] then I say rig is at risk, offshore supply is at risk, FPSO and LNG is neutral ((Daniel Westby explains his methods for strategic analysis)). This is how I do it.

OS: Ok, // I feel that the maritime division is more diversified; fishery and deep sea research are important customers.

DW: […] If you look at their news feed you will notice that there is very few announcements regarding maritime. That's the thing, these contracts are so small. If they win a contract within the rig segment it is likely to be worth 40-50 million NOK. If they win a contract within offshore supply ship it is probably worth 5 million NOK. […] That's the reason [to his approach]. I look at the big picture. In one of the reports I sent you currency is the most important thing.

OS: Yes, most of their ((Kongsberg Gruppen ASA)) revenue is international?

DW: If you look at the reports I sent you there is a split. This is not something the issue, but I have got it from them. If you look at EBITDA you will see that it increases with 50% in 2014 with 2015 currency ((??)). Let's look at the maritime division, if the oil price declines the NOK will decline and they will benefit on currency, if the oil price increases the NOK will appreciate and they will benefit form a stronger market ((The company receives revenue in foreign currency, but their costs are in NOK. Oil prices drive demand)).

OS: Could we say that it's a natural hedge?

DW: Yes, that is why I am not worried about the profitability of the company.

OS: Will they be able to defend their margins?

DW: Yes their situation is good. And remember their revenue for defense will increase and they could build a strong order book. The effect on KOG is quite delayed if the cycle turns, so their profitability will remain good there [defense] in years to come, maybe the oil price will improve as well.

OS: // What do you think about their strong cash position, will there be any acquisitions? People may be afraid that they will buy anything within KOGT since this division is built on acquisitions. […] Are there any opportunities within Maritime?

DW: There are things to buy, […] when I talked to the chairman of the board some year ago he said that the cases which are presented to the board got hockey-stick profitability ((very dramatic projections of profitability growth), which they are expected to pay for. They [The Board] are not interested in that [to pay a premium]. When it is cheap they think it is a bit frightening to buy, because they think it is cheap for a reason. If you look at their history you will see that they did two sizable acquisitions in 1996 and in 2000. After this they have only engaged in smaller transactions and built the entire company through organic growth, […] they would need to change the culture of the company if the suddenly where starting to buy companies.

OS: Is it likely to use the cash to increase R&D spending?

DW: That's been their strategy historically. I do not remember if its 5% or 10% of revenue, which is expensed on R&D in the P/L. // They try to invest in products where they can receive funding from the state. They have a lot of cooperation with Forsvarets Forsknings Institutt [The Norwegian Defense Research Institute] and the Norwegian defense in general. […] That's how it works in the defense industry, you have to sell to you own defense before other states wants to buy form you. If you develop the NSM missile [Naval Strike Missile] together with the Norwegian government, they will participate in the funding and later buy it from you, but the price is already determined. It is a kind of open book accounting so those margins are rather low. If you later sell those missiles to a state that haven't participated in the funding your margins will be much higher.

OS: So the strategy is to get the Norwegian defense onboard in the developing phase and then sell it expensive international.

DW: Yes, to some degree, but they will not sponsor anything; the products must be in interest for the Norwegian military. NSM is developed for Nowegian fjords so the must be a link [between the funding and needs]. In the defense industry the customers will let you earn 10% EBITDA margin on new installments and 25% on after sales. The contracts are so big that the customers are very aware of what they are buying; they will ask to see the books. Look at the Protector systems you will see that the margins are very good in '11, '12, '13, and partly '14, but those margins are inflated due to after sales.

OS: ((Returns to discussing a split of the company))

DW: I think there are a lot of synergies; I do not think that they should do a split. Kongsberg is a technology company more than an oil service company and a defense company. But I understand those who want to split it.

OS: Is it a conglomerate?

DW: // I have followed the company since 2007 and still don't know about all their products. For example, they do service on helicopter gearboxes. They tend to pop up wherever you look with small products and services.

OS: How is their technological position in the market if we look ahead.

DW: Their main product within Maritime is dynamic positioning. They once told me that this product generated around 40% of revenues. They are number 1 in terms of that product.

OS: Is their market share 100% ((Within dynamic positioning))?

DW: No, there is (convert team) which covers cruise ships, Rolls Royce is another competitor.

OS: I thought they were outperforming everyone in that market?

DW: If you talked to them [Kongsberg's management], they would tell you that they are number 1 on high end dynamic positioning. If you want to keep a PSV stable close to a rig, you choose Kongsberg. […] And if you look at KOG's revenue from missiles, naval systems and surveillance is the big thing. If you are looking to buy these types of missiles there are no alternatives, it's the only available missile.

OS: Yes, it's the only one that fits within the F35, […] this JSM missile?

DW: It started with the penguin, then there was NSM and now they have developed NSM to fit within the planes [F 35], but this missile is fifth generation.

OS: So it's just a product line which has developed?

DW: Yes, they have used 2 billion NOK to develop NSM, and it costs 20 million for those who want to buy it, therefore no one else wants to develop it. I also think they are quite well positioned with that surface to air integrated system they have in cooperation with Raytheon as well. I think they are very proud to have delivered it to the White House. And then there is that naval system which they deliver to submarines, this is probably tied together with dynamic positioning to some degree.

The rest of the interview is used to discuss our process regarding the thesis.

Interview #3: Chr. Frederik Lunde

Date and time: *February 26th 2015, 16:10-16:42*

Participants: *Chr. Frederik Lunde (=FL) and Ola-Jo Semb (=OS)*

OS: [Describes the thesis, motivation and problem statement]. What do you think about the Norwegian Governments proposition to reduce their ownership stake to 34%?

FL: As far as I know the proposal is dropped dead by the parliament, due to their defense operations. […] I think it happened in January, so it [Kongsberg Gruppen] is probably not on top of the list at the moment.

OS: Yes that is right, and we are aware of the situation. However, we understood it as the process was just post ponded to reveal if there was possible to use some kind of regulation to guarantee that the weapons did not end up in the wrong hands?

FL: // It is not a problem to reduce the stake to 34% and still keep control, it is practically impossible to take over a company where one investor got a share of 34% or more ((due to corporate laws)). So they could reduce the ownership without any of the highlighted implications ((being that the lose control of the weapon export)). The question is what private investors at Oslo Stock Exchange prefer. On the other hand, why should the stat sell? They do not need the money.

OS: // After running some regressions and studied research we have concluded that state ownership has a negative effect on valuation and performance. We know that companies like Telenor, KOG and Yara are all controlled by the Norwegian government, but they seem to trade at discount.

FL: […] I think that companies that are owned by private investors will always experience harder demands, the management would always want a strong balance sheet ((refers to the agency problem between owners and management)). It is never popular as a member of the board to make the hard decisions such as firing people, pay more dividends or increase the leverage. You will face opposition from everybody, so there is little to gain by entering those battles. […] I think the greatest problem of state ownership is that all changes must be defended, it must be documented. After all, members of the board are representing the state ((interview object indicates that it is harder for the state to put demands forward as they may affect social welfare such as employment, he also highlight that the cost of monitoring is greater for the state)). […] In terms of valuation, partly state owned companies would be impossible to acquire, without an acquisition premium the upside potential is therefore reduced. // Off course Cermaq [a Norwegian state owned company] was delisted and sold, but the norm is that these companies are protected.

OS: What about soft budged constrains, do they pay out less in dividends than those with private owners?

FL: Yes and no. Look at Statkraft [the Norwegian power company, 100% state owned], they paid out way more dividends than the management wanted. It's been a lot of disagreement and discussions about that, and the chairman even stepped of two years ago because he believed that they were under performing and their dividend payouts were unjustifiable.

OS: What kind of valuation methods do you use in relation to Kongsberg Gruppen?

FL: // I think it is completely pointless to use a SOTP approach, that's because this is not a company that ever would get divided. It would be hypothetical to look at what the different parts is worth. Also, it is rather hard to find peers for the defense division, which are driven by significant system investments in the American military.

OS: So you would have used a DCF or multiples on the company as a whole?

FL: Yes. It is very correct theoretically to do the SOPT. However, the investors have screamed about additional dividends and a split of the company for a long time, but the reality is that it will not happen ((Participant indicates that the management are not willing, and the state is too passive)). As long as the Norwegian shareholder the structure of Kongsberg Gruppen will be as it is today and they are likely to have too much cash on their balance sheet for a long time ahead.

OS: […] I know that some analysts are using a discount because of their cash position and the stocks liquidity in their valuation. Do you apply any discount in you analysis.

FL: Not in terms of the cash. Liquidity and state ownership is the reason that the stock is traded at a discount. We do not use any mathematical models which says that the WACC must be X% higher.

OS: And you don't adjust your multiples either?

FL: No.

OS: Ok, let's talk about the strategic implications. How to you foresee the development within the different business segments?

FL: It looks like Maritime will have a good 2015 [2014] as well, but that the order intake is reduced and most of their revenue steam from service, 2015 looks worse. […] I think we should look at long term trends here. There has been a 10 year positive trend within commodities and energy, which has a positive effect on Maritime. On the other hand there has been a 25 year negative trend within defense after the Berlin wall fell in 1989. Defense

budgets have been reduced, especially in the western world. This seems to be shifting now, but it is important to remember that we are switching out an army of 100 000 men with technology, this is positive for Kongsberg's products. During the next five years we will experience a strong growth in KDS, meaning defense. If this happens in 2015 or 2016 is hard to determine because of the longitude of these programs, F35 has been in the loop for 20 years now. […] An American order may first be on KOF income statement 10 years from now, but the opportunities are enormous. So much money has been placed in R&D, now it is time for the customers to make their move and place the order.

OS: Should Kongsberg focus on sales?

FL: I don't think that it helps if Kongsberg use 10 or 100 million NOK on advertising and sales. These customers are characterized by slow decision processes. The American congress must put money aside for a new weapons program, there will be a tender process, the F35 fighter planes must be ready and formal or informal repurchase agreements must be in place between Norway and USA. The people taking these decisions do not have a two year perspective but rather five. Kongsberg cannot affect when the orders are placed, they must be ready with the products when their customers have made up their minds.

OS: If their defense business is shaping up, is the timing right to make acquisitions within this area? Will the future growth be organic or through acquisitions?

FL: There is not much you can buy within defense due to political implications and few players, additionally is much developed internal and they cooperate with each other anyways. […] If you look at Maritime they have a very strong product- and technology-portfolio, there are minor acquisition targets, but nothing to consider. […] They have spent some money on their oil and gas operations, […] it been a disaster, they should exit if you ask me ((exit from the oil and gas segment)). Their problem is that the technology is not unique [within oil and gas]. There are many players which deliver small products to the oil and gas industry, […] it could be an interesting market in a good market, but the outlook is so poor and it's been a money drain so far. [let me rephrase] Only small bucks in comparison to the total, but if you look at the [capital] injections you will realize how little they have got back. […] One of the major concerns among investors is that they will use some of the cash to acquire something expensive and poor within oil and gas. That they buy on top [of the cycle] and never get their investment back, they [Kongsberg] deserve credit for not doing this.

OS: The competition [within oil and gas] is hard as well?

FL: Exactly, they [Kongsberg] are very technological and their customers are slow. Oil companies are not especially fond of acquiring new technology or solutions from a new supplier, it is not given that even if you product is revolutionary that you will manage to sell it.

OS: Ok.

FL: Let's not forget Protect, this has been an incredible business for them. It is also the only product of its kind in the western world, at least in NATO. It's currently running on low volume ((quantity sold)) without any additional cost for them, but the day USA, Canada or Saudi Arabia decided that they want to roll out a new weapons program they could increase their revenue by ten times.

OS: Is there a possibility that new technology could replace this product?

FL: Have you seen the film American Sniper?

OS: Yes.

FL: // Then you have seen the Hummers they drive and the manual machineguns. The Americans face most casualties on their soldiers that operated those machineguns. That's why they started to buy Protector ((Product within Protect division)) from Kongsberg and it has been a huge success. SAAB has a comparable product but have not sold a single product externally to my knowledge. // It's like Kongsberg communicates; a weapon is something you buy and hope you never have to use, but you would like it to be sure that it works. You don't want be standing there as a shooter and wondering if your system works when driving around in Syria, if not you will be caught by IS, put in a cage and lit on fire. That's the reality. You need something that works, and that is proven to work over time, the fact that the customers trust this system and knows that its ready is extremely valuable. […] Kongsberg also provide service on these products, […] the American military would never let a producer from China or Russia deliver these products. […] China and Russia has similar products but they are miles away, and they could never sell them to NATO.

OS: So Protector has a very strong brand?

FL: […] I would call it a strong market position. The other aspect is […], let's say that the Americans want to place an order for 10 billion in new systems. Then you need your products to be ready, you can't start developing the weapons at that time, […] it would take five years before they you could ship them ((the weapons)). This is why it is so hard for a new player to enter the market.

OS: Let's talk about the macroeconomic, defense spending and the geo political situation are most likely the most important drivers. But geo political are hard to determine?

FL: […] Geo politics drives the defense budgets. […] NATO demands this increase due to the situation in Ukraine ((Meaning that the members must increase their spending to 2% of GDP)). It's because of IS and the Arabic Spring that the spending are increasing within the middle east, that's probably why OMAN placed that order this winter. […] It's important to understand that a 2% increase in US military spending is not equivalent to a 2% increase in revenues for Kongsberg Gruppen. We are talking about an enormous number and within that there is so many niches [The participant are referring to the spending increase example he made before], if there was a situation comparable to Vietnam as Iraq was it would have been very important. That would increase the demand for the Protect products, but would not influence the surface to air systems of Kongsberg. However, the fact that F35 are on the ramps and that Russia are sharpening their sabers ((metaphor)) are very important for NASAMS and JSM so there are big differences within the market.

OS: So, it will be important to understand how these drivers affect the different product lines?

FL: Yes, a 5% reduction of NATO spending could happen at the same time that Kongsberg doubles their revenue in terms of missiles. Let's say that everybody are shifting from F16 to F35, […] they would need new missiles.

OS: What about Maritime? Is spending by oil service companies what we should look at?

FL: Yes, but merchant is also important. Think of the drivers in bulk, tank, offshore supply and container, everything is driven by global growth and commodity prices. If there is global growth demand after oil, coal, corn and iron ore will increase. That's what drives the demand in these markets and Kongsberg are a supplier of equipment to the payers in these markets.

OS: So we should return to the big picture, start with global growth and work our way downwards?

FL: Yes. China started to invest heavily in infra-structure 15 years ago, […] they needed oil, coal gas everything Kongsberg are a supplying their equipment to in their Maritime segment ((meaning vessels that ship these products and support vessels needed to extract oil offshore)). China has now built much of this, and there is likely that we will see a diminishing growth rate in that market. […] That's what important to remember about global growth, in China the growth is driven by investments in infrastructure, […] in USA it is driven by the IT sector. From a 10 year perspective I think it is safe to say that China has gone through an economic lift, I don't think we will experience that they will consume every commodity available for the next 10 years. For the

Maritime segment we will experience that most of their revenue are generated through service rather than new installments.

OS: […] is there any competitive advantages [held by KOG]?

FL: […] That they are selling to NATO, SAAB is not selling to NATO, I think that limits their [SAAB] operations. You mention the issue about splitting the company, […] management has pointed towards synergies between KDS and KM, historically that is probably true. However, there is no problem to buy and sell technology between two firms.

OS: I saw that Jonas Gahr Støre [former foreign minister of Norway, now leader of the opposition] suggested a split in Dagens Næringsliv ((Norwegian Financial paper)).

FL: Yes, he can't decide if he wants to be red or blue ((red is the social democratic symbol in Norway and blue is the conservative)), and he currently has no power.

OS: Norway is one of the countries in Europe with most state ownership after the privatization wave of the 1980s and 1990s, are we behind?

FL: // I think it's more to it. Historically we have never had a private ownership in Norway in terms of nobility. And we didn't have a capitol before we became independent so there was not a capital market either. If you look at the big owners in London, Germany or Italy these are old family dynasties. […] It becomes historical. However, the Norwegian state is quite transparent, they behave like a normal investor, in France the state hold small stakes, but the government is far more influential than In Norway. They use regulation to avoid acquisitions even though they only control 3-4%. In one instance ((being Norway)) there is formal ownership or power, in the other ((being France)) there are other ways to control. I think we are hung up in playing by the book in Norway.

Interview # 4: Haakon Amundsen

Date and time: March 5th, 15:00 – 15:21

Participants: Haakon Amundsen (=HA) and Jacob Hartwig (=JH)

JH: What is your view on the Norwegian Government's proposal of a reduction [from 50%] to 34% ownership in KOG, and will the reduction have any impact on the valuation of the company?

HA: I believe that KOG is a special case when it comes to state ownership. […] in many other cases, you can say that you have doubtful or subjective assessments of whether or not it is important to have the government as an owner. While in KOG's case you have parts [KDS and KPS] of the operations integrated with other activities that are run by the state […] or the Norwegian Army. So […] parts of KOG's business require special treatment in some way. […] and in Norway on has handled this through state ownership, more precisely by the Norwegian Government owning a controlling part [50%] of the company's shares. In other countries this is handled through distinct laws, that regulates who can own the stock and who can buy and control the technology of the company in question. […] and this is why KOG's management went to the Parliament and said that they had to reassess their proposal of a divestment [in KOG]. […] not because they had any opinion on whether or not they wanted the state as an owner, but because they believed that there was a lack of legal protection of their technology if the state reduced their ownership [to 34%]. […] this is why KOG is a special case. If you compare with Statoil ((where the government owns 67%)) […] where the government says that they own because oil is important for the country and that it wants to protect the country's natural resources. […] you can say that there are some of the same arguments with KOG when it comes to keeping the [company's] headquarters in Norway, but it is definitely a special element with KOG and the protection of defense technology which has to be solved in some way. […] this has been solved through state ownership thus far. The other aspect of this ((why the government owns 50%)) is that a lot of the defense operations of the company is financed by the state. […] and this has been an advantage for KOG. However, this does not necessarily mean that they have to own the company.

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((Transitions to talk about the valuation of the company)) One of the most important things when we look at the valuation of the company historically, is that the state can be seen as an obstacle when it comes to doing potential acquisitions or […] restructuring the company in a way that maybe could have been value creating. The state's ownership has been viewed as a limitation for this. An example is that many investors have discusses the thought of separating out the maritime [KM & KOGT] part from the defense [KDS & KPS] part. […] and that

the maritime part would have traded at a higher price as a separate company. This has led to a standard view among investors that the valuation of KOG is too low because maritime could have been priced higher as a separate unit […] and the reason why it is not [a separate unit] is because the state owns 50%. They [the Norwegian Government] do not see the benefits […] or they do not see the rationale behind excreting the maritime part, while a more active or financial owner would probably evaluate it differently.

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That was a long answer, but this is the way we think. We believe that the government's ownership will be there until the new legislation is intact, which may take forever. At the same time, as there is a pretty vast trough in the offshore and maritime market at the moment, so it is not certain that you would have created much value by excreting maritime [KM & KOGT] […] the timing is not very good.

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JH: We have noticed that KOG has a very careful capital structure. Is this something that can be related to the state having a controlling ownership stake in the company as well?

HA: To a certain extent that is true. One argument that has been used in this context is that KOG is a high-tech company that wants to be positioned for acquisitions of smaller high-tech companies. […] and even if the state is a trustworthy owner, one has been uncertain of whether they will contribute with equity […] or one has been uncertain of how they would react to potential capital needs. Because of this, the company has decided to, instead of paying out a lot of dividends that would have gone straight to the government; keep the excess cash so that they are able to acquisitions without asking the government for more capital. […] so that is one reason why they are overcapitalized, and one may say that this has something to do with state ownership. […] I would think so. I'm sure that if you had a more active owner, for example Jon Fredriksen [controlling owner of several Norwegian companies] or Kjell-Inge Røkke [controlling owner of Aker Solutions], you would not have the same capital structure. Then you would have had net debt and you would have paid dividends. […] and they would have gone to the owner if they had potential expansion plans, and the owner would have provided the capital if they thought the plans made sense. […] so the answer is probably yes, they are overcapitalized partly because they the state is a controlling owner. It is at least very likely.

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JH: Does it also lead to less liquidity in the stock?

HA: Yes, it is clear that when you have one party owning 50 percent it will limit the liquidity, but if it is the state or any other owner is irrelevant. It is the same thing with Aker ASA, where Røkke owns two thirds. […] that is just how it is when you have a big owner. Maybe you can say that the Norwegian Government is even more "long-term" than a private owner, but in practice I do not think state is more long-term than Røkke for example. ((Amundsen is using Røkke as an example of a private controlling owner)).

JH: Let us move over to KOG's operations. How do you see the development for the different segments in the next few years?

HA: KOG delivers technology and equipment to assets involved in either oil exploration & production or shipping. At the moment there is an overcapacity of equipment within oil service, which means that there is dramatically less demand for new assets within the product categories that KOG delivers to […] at least in the offshore segment where it is fair to assume that there will be a vast reduction in new orders for KM. […] and then you have two other segments as well, Merchant Marine and Subsea. Merchant Marine is pure shipping and they follow a different cycle than a lot of Offshore, but it is clear that there has been a certain weakening in some of these sub-segments as well. If you look at the dry bulk rates and a couple of other shipping segments it is clear that these also have been pretty weak. […] the orders from shipyards have been down in general. So we believe that the order intake for KM will drop approximately 30 percent this year on new equipment. This will lead to a drop in revenue of approximately 10 percent in 2016.

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JH: Will they recover some of this on lifecycle revenues?

HA: Yes, 30 percent of total sale is after sales, which will fall less, maybe even grow. So it is not the whole revenue foundation that will fall, but 70 percent of revenues will fall due to the decrease in order intake. […] but then you have a solid order book, so it will take some time before you see the decrease in sales, even if the new orders fall by 30%. […] both the order book and lifecycle revenues will curb the decrease in revenues. […] and who knows what will happen in 3-4 years, maybe the order intake will start increasing heavily again. [...] but our view for Maritime is that it will be flat this year and down next year.

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I believe that the same thing goes for KOGT. However, this is a small "shack" that does not have a critical mass of customers so it is harder to predict. KM is so big so they will surf a little on the sector, while for KOGT it is more uncertain depending on whether they get a big contract or make acquisitions etc. […] but the underlying

market will decrease by 15-20 percent this year and may continue to fall next year. So it is a question of whether KOGT will fall more or less depending on specific events.

//

JH: It is hard to find comparable companies for KOG, especially for KM. What companies are you using when you compare with peers?

HA: Many of the biggest competitors are large conglomerates, which make the exercise hard. GE is a competitor, but GE is a lot more. ((Amundsen implying that GE has a lot of other business areas as well)). We have used Oil Service and Shipping equipment companies in our pricing matrices and peer tables etc. […] Aker Solutions, Cargo Tech, Cameron, and National Oilwell are some of the companies we use. They are not perfect peers, but at least you compare with pure product technology companies within offshore maritime. [...] while if you compare with some of the big competitors on technology you will get IT companies or large conglomerates, which are not that easy to compare them with. [...] I would look at oil service and shipping companies that are product and technology companies.

//

JH: Do they have many suppliers or partners that they cooperate with in the value chain? They seem mostly like a technology company, and not so much a manufacturer. How does the value chain look like?

HA: Well, they have a long supply chain. […] they often have a very specific product, a dynamic positioning system on a rig for example. […] but I would say that they are more weighted towards the technology part and less towards the manufacturing of hardware. They have some hardware production, but a lot is provided by suppliers or partners. […] it is a mix. I am not that familiar with the companies that they cooperate with in this area so I cannot really give you any examples.

A.9. E&P Spending Forecast

This section will provide details for the analysis and forecast of E&P spending in section 4.1.

Oil Price expectations

Oil Price Forecast, real terms (in $/bbl)	2015	2016	2017	Long term
Nordea Markets	62	75		
ABG Sundal Collier	63	75	80	80
Swedbank	66	85	90	90
DNB Markets	65	79	81	83
IEA	55	62	67	71
EIA	59	75		
Average	**62**	**75**	**80**	**81**

Source: ABG (2015), DNB (2015), Swedbank (2015), Nordea (2015), EIA (2015), IEA (2015)

Relationship between E&P Capex and demand for KOG's offshore products
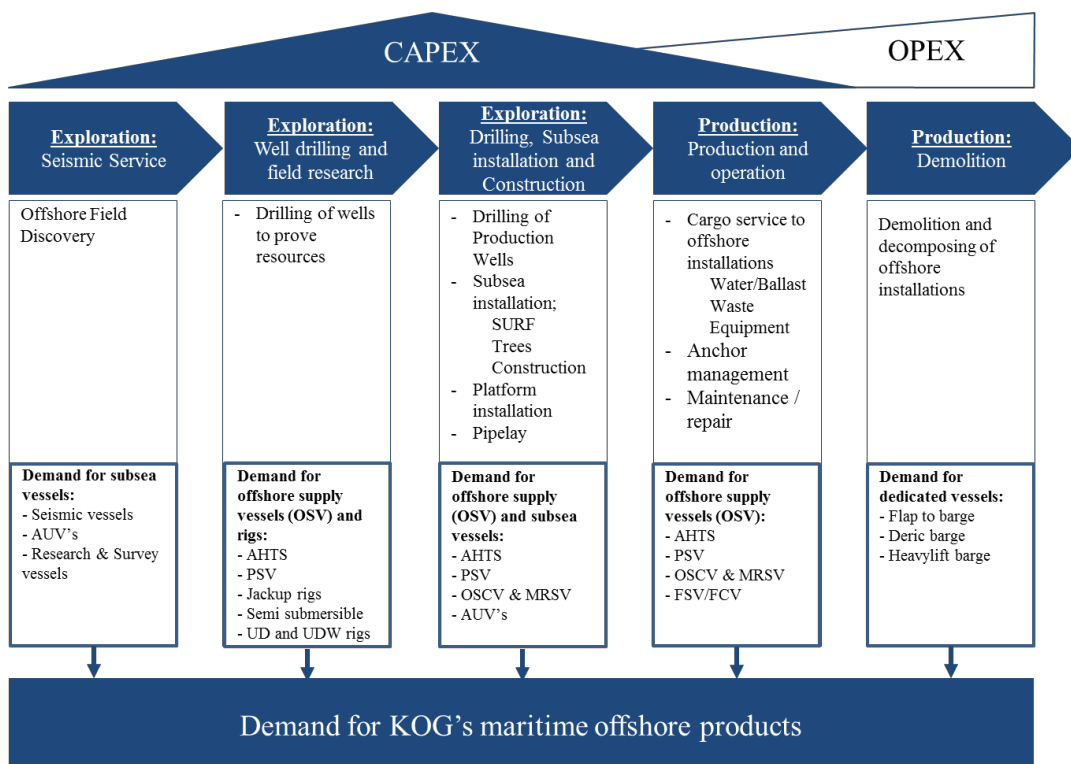
Source: Authors' own compilation KOG annual reports (2010-2014).

Data for the Regression Analysis

Date	Brent spot price	CAPEX Major oil
1987	19	50,1
1988	15	62,4
1989	18	55,1
1990	24	59,6
1991	20	61,5
1992	19	53,6
1993	17	51,8
1994	16	51,5
1995	17	59,8
1996	21	59,3
1997	19	75,3
1998	13	83,9
1999	18	67,7
2000	29	72,8
2001	24	99,9
2002	25	88,7
2004	38	112,4
2005	55	140,4
2006	65	193,1
2007	72	221,7
2008	97	328,0
2009	62	268,0
2010	80	344,3
2011	111	395,9
2012	112	427,6
2013	109	457,6
2014	99	475,9

Source: *Authors' own compilation based on data from EIA (2014), Department of Commerce (2014).*

E&P spending forecast

E&P spending growth for 2015 was estimated by taking the average of guided CAPEX budgets from the 15 largest E&P companies.

E&P Capex Budgets (USDbn)

Company	2014	2015e	Growth
BG	9,4	6,5	-31%
BP	22,9	20,0	-13%
Chevron	37,1	31,6	-15%
ENI	16,9	11,5	-32%
ExxonMobil	13,9	12,0	-14%
Lukoil	38,5	34,0	-12%
Shell	15,0	13,5	-10%
CNOOC	29,2	12,0	-59%
Ecopetrol	17,2	7,9	-54%
Gazprom	10,6	30,0	183%
Pemex	38,0	19,8	-48%
Petrobras	22,4	22,4	0%
PTTEP	28,2	3,1	-89%
Statoil	19,6	18,0	-8%
Total	**318,9**	**242,3**	**-24%**

Source: Company reports (2014)

For 2016 to 2018 the authors have taken the average of our results from the regression analysis and the expectations from 7 brokerage firms (see figure below). The aggregate E&P spending growth forecast data can be seen in figure.

E&P spending	2015E	2016E	2017E	2018E
ABGSC	-18,0%	-2,0%	5,0%	5,0%
DNB	-20,0%	-5,0%	5,0%	
Sparebank 1	-25,0%	-5,0%	5,0%	
Swedbank	-21,0%	-2,0%		
Morgan Stanley	-15,0%	-2,2%	2,0%	2,2%
JP Morgan	-25,0%	-5,0%	4,0%	2,0%
Pareto	-15,0%	-5,0%		
Average	**-19,9%**	**-3,7%**	**4,2%**	**3,1%**

Source: ABGSC, DNB, Sparebank 1, Swedbank, Morgan Stanley, JP Morgan, Paret. (2015)

Date	Brent spot price	CAPEX Major oil	Growth				
1987	19	50,1		2003	29	90,7	2,3%
1988	15	62,4	24,6%	2004	38	112,4	26,7%
1989	18	55,1	-11,7%	2005	55	140,4	24,9%
1990	24	59,6	8,2%	2006	65	193,1	37,5%
1991	20	61,5	3,2%	2007	72	221,7	14,8%
1992	19	53,6	-12,8%	2008	97	328,0	47,9%
1993	17	51,8	-3,4%	2009	62	268,0	-18,3%
1994	16	51,5	-0,6%	2010	80	344,3	28,5%
1995	17	59,8	16,1%	2011	111	395,9	15,0%
1996	21	59,3	-0,8%	2012	112	427,6	8,0%
1997	19	75,3	27,0%	2013	109	457,6	7,0%
1998	13	83,9	11,4%	2014	99	475,9	4,0%
1999	18	67,7	-19,3%	2015E	62	361,6	-24,0%
2000	29	72,8	7,5%	2016E	75	341,0	-5,7%
2001	24	99,9	37,2%	2017E	80	356,2	4,5%
2002	25	88,7	-11,2%	2018E	81	366,5	2,9%

Source: Authors' own compilation based on data from EIA (2014), Department of Commerce (2014).

The following section presents the consolidated reported financial statements of KOG, which have been used to derive the analytical statements of the two segments. It should be noted that special estimations have been conducted in order to derive at 'Net Earnings' for each segment. The same applies for the balance sheet items, as KOG only provide limited segmentation of 'Invested Capital'

Kongsberg Gruppen ASA Income Statement

Reported Income Statement (NOK millions)	2010	2011	2012	2013	2014
Revenues	15.497	15.128	15.652	16.323	16.613
COGS	-6.906	-5.609	-4.760	-5.415	-5.572
Gross profit	**8.591**	**9.519**	**10.892**	**10.908**	**11.041**
Personnel expenses	-4.003	-4.539	-5.251	-5.742	-6.118
Other operating expenses	-2.103	-2.586	-3.347	-3.024	-2.863
EBITDA	**2.485**	**2.394**	**2.294**	**2.142**	**2.060**
Depreciation	-269	-262	-323	-345	-342
Amortization	-103	-97	-131	-138	-140
Impairment	-	-	-	-	-320
EBIT	**2.113**	**2.035**	**1.840**	**1.659**	**1.258**
Finance income	49	49	59	95	137
Finance expenses	-65	-76	-90	-110	-110
Net financing	**-16**	**-27**	**-31**	**-15**	**27**
Profit before tax	2.097	2.008	1.809	1.644	1.285
Taxation	-597	-578	-505	-419	-405
Profit for the year	**1.500**	**1.430**	**1.304**	**1.225**	**880**

Reported Balance Sheet (NOK millions)	2010	2011	2012	2013	2014
ASSETS					
Inventory	3.034	3.274	3.465	2.944	3.264
Recivables	1.694	2.645	2.559	2.996	3.284
Construction contracts in progress, assets	936	799	1.327	1.963	3.183
Derivatives	805	385	782	173	215
Cash	2.660	3.083	2.509	3.272	4.424
Total Current Assets	**9.129**	**10.186**	**10.642**	**11.348**	**14.370**
Non-Current Assets:					
PPE	2.182	2.430	2.602	2.655	2.477
Goodwill	1.781	1.998	2.010	2.308	2.088
Other Intangiable Assets	655	746	740	829	793
Avaliable for sale shares	129	114	125	140	132
Shares in associated companies	-	-	-	-	313
Other non-Current assets	101	144	155	155	100
Total Non-Current Assets	**4.848**	**5.432**	**5.632**	**6.087**	**5.903**
Total Assets	**13.977**	**15.618**	**16.274**	**17.435**	**20.273**
EQUITY & LIABILITIES					
Equity					
Issued capital	982	982	982	982	982
Other Capital reserves	276	90	122	-94	-604
Retained earnings	3.599	4.392	5.159	5.761	5.875
Equity attributable to owners	**4.857**	**5.464**	**6.263**	**6.649**	**6.253**
Non-controlling interest	24	20	11	8	29
Total Equity	**4.881**	**5.484**	**6.274**	**6.657**	**6.282**
Liabilities					
Long-term interest bearing loans	847	570	1.311	811	873
Pension liabilities	316	460	532	757	915
Derivatives	6	6	9	8	1
Provisions	147	126	114	116	153
Deferred tax liabilities	546	609	847	1.001	934
Other non-current liabilities	62	105	73	56	19
Total non-current liabilities and provisions	**1.924**	**1.876**	**2.886**	**2.749**	**2.895**
Construction contracts in progress, liability	2.695	2.703	2.284	2.548	3.590
Derivatives	173	330	49	312	2.732
Provisions	1.035	1.075	990	953	825
Short-term interest-bearing loans	-	322	-	526	-
Other current liabilities	3.269	3.828	3.791	3.690	3.949
Total current liabilities and provisions	**7.172**	**8.258**	**7.114**	**8.029**	**11.096**
Total Liabilities and Provisions	**9.096**	**10.134**	**10.000**	**10.778**	**13.991**
Total Shareholders Equity and Liabilities	**13.977**	**15.618**	**16.274**	**17.435**	**20.273**

Income Statement

Most items can easily be related to either 'Operations' or 'Financing'. However, there are a few items which require a more detailed analysis in order to be able to classify the item. This section will therefore explain the rationale and assumptions behind the reclassification of the Income Statement and Balance Sheet of KOG ASA.

Other operating expenses

KOG reports very little details about this item. However, the item is recurring in the entire historical period and it therefore classified as an operating item in the 'Analytical Income Statement'.

See Note 30, p.69, Annual Report 2014

Financial income and expenses

Clearly, these items are directly related to the Group's financing and are therefore included as 'Financing' activities in the 'Analytical Income Statement'.

See Note 14, p.50, Annual Report 2014

Taxes

The taxes of the company are related to both 'Operating' and 'Financing' activities. However, the reported income statement does not distinguish between 'tax on operations' and 'tax on financial items'. The authors have therefore estimated them separately by calculating 'tax shield' from 'net financial expenses'. The estimated effective tax rate is applied in these estimations.

See Note 15, p.51, Annual Report 2014

Balance Sheet

Deferred tax liabilities

The deferred tax liabilitites are calculated as the net deferred taxes in the annual report and arises as a consequence of temporary differences between book values and tax values (Petersen & Plenbord, p. 431-433).. This item is related to fixed assets and construction contracts in progress and is therefore considered as part of 'Operating activities'.

See Note 15, p.51-52, Annual Report 2014

Pension liabilities

The defined pension plan is made of the present value of future pension benefits of KOG's employees. It is discounted to the present value using an interest rate and is therefore considered a 'Financing' activity (Petersen & Plenborg, 2012, p. 78).

See Note 10, p.42-43, Annual Report 2014

Current and non-current provisions

Current provisions apply to circumstances where there is a disagreement between contracting parties, uncertainty in relation to a warranty, or products that are early in their life-cycles (KOG, 2014). Non-current provisions are also related to warranties or leases on fixed assets. The authors consider these activities as directly related to the Group's operations and have therefore included the items as 'Operating' activities (Petersen & Plenborg, p.87-89, 2012).

See Note, 24, p.64, Annual Report 2014

Other current and non-current assets & liabilities

The annual report provides very limited information regarding these items. However, it can be interpreted from the information available that these items are mostly related to 'accounts payable' 'accounts receivable', 'public duties payable', 'accrued holiday pay', and 'prepayments'. Consequently, these items are considered 'Operational' (Petersen & Plenborg, p.89, 2012).

See Note, 25, p.65, Annual Report 2014,

A.12. KOG ASA – Analytical Statements

Analytical Income Statement (NOK million)	2010	2011	2012	2013	2014
Revenue	**15.497**	**15.128**	**15.652**	**16.323**	**16.613**
COGS	-6.906	-5.609	-4.760	-5.415	-5.572
Gross profit	**8.591**	**9.519**	**10.892**	**10.908**	**11.041**
Payroll expenses	-4.003	-4.539	-5.251	-5.742	-6.118
Other	-2.103	-2.586	-3.347	-3.024	-2.863
EBITDA	**2.485**	**2.394**	**2.294**	**2.142**	**2.060**
Depreciation	-269	-262	-323	-345	-342
Amortization	-103	-97	-131	-138	-140
Impairment	-	-	-	-	-320
EBIT	**2.113**	**2.035**	**1.840**	**1.659**	**1.258**
Taxation (estimated)	-601	-586	-514	-423	-396
NOPAT	**1.512**	**1.449**	**1.326**	**1.236**	**862**
Net financial expenses (estimated)	**-16**	**-27**	**-31**	**-15**	**28**
Tax shield	4	8	9	4	-9
Net financial expenses (after tax)	**-12**	**-19**	**-22**	**-11**	**19**
Total tax	-597	-578	-505	-419	-405
Profit/loss for the year	**1.500**	**1.430**	**1.304**	**1.225**	**880**

Analytical Balance Sheet (NOK million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Inventory	3.034	3.274	3.465	2.944	3.264
Receivables	1.694	2.645	2.559	2.996	3.284
Construction contracts in progress, assets	187	160	265	393	637
Total current operating assets	**4.915**	**6.079**	**6.289**	**6.333**	**7.185**
Construction contracts in progress, liability	539	541	457	510	718
Other Current Liabilities	3.269	3.828	3.791	3.690	3.949
Provisions	1.035	1.075	990	953	825
Total current non-interest-bearing debt	**4.843**	**5.444**	**5.238**	**5.153**	**5.492**
Net working Capital	**72**	**635**	**1.052**	**1.180**	**1.693**
Property, plant and equipment	2.182	2.430	2.602	2.655	2.477
Goodwill	1.781	1.998	2.010	2.308	2.088
Other Intangiable Assets	655	746	740	829	793
Construction contracts in progress, assets	749	639	1.062	1.570	2.546
Derivatives - project hedge	805	385	782	173	215
Other non-Current assets	101	144	155	155	100
Total non-current assets	**6.273**	**6.342**	**7.351**	**7.690**	**8.219**
Construction contracts in progress, liability	2.156	2.162	1.827	2.038	2.872
Provisions	147	126	114	116	153
Deferred tax liabilities	546	609	847	1.001	934
Derivatives - project hedge	45	54	0	210	1629
Other non-current liabilities	62	105	73	56	19
Non Current Liabilities	**2.956**	**3.056**	**2.861**	**3.421**	**5.607**
Invested Capital (Net operating assets)	**3.389**	**3.921**	**5.541**	**5.449**	**4.305**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	**4.881**	**5.484**	**6.274**	**6.657**	**6.282**
Long-term interest-bearing loans	847	570	1.311	811	873
Pension liabilities	316	460	532	757	915
Derivatives - current loan-hedge	6	6	9	8	1
Derivatives -non current loan-hedge	128	276	49	102	1.103
Short-term interest-bearing loans	-	322	-	526	-
Interest-bearing debt	**1.297**	**1.634**	**1.901**	**2.204**	**2.892**
Cash	2.660	3.083	2.509	3.272	4.424
Avaliable for sale shares	129	114	125	140	132
Shares in associated companies					313
Interest-bearing assets	**2.789**	**3.197**	**2.634**	**3.412**	**4.869**
Net interest-bearing debt (NIBD)	**-1.492**	**-1.563**	**-733**	**-1.208**	**-1.977**
Invested Capital	**3.389**	**3.921**	**5.541**	**5.449**	**4.305**

A.13. Segmentation of Income Statement and Balance Sheet

The following section will provide further explanation for the segmentation of 'Income Statement' and 'Balance Sheet' for KOG Defense and KOG Maritime.

Income statement

Operating costs

The operating costs have been distributed to each segment based on the common-size analysis below.

	2010	**2011**	**2012**	**2013**	**2014**
COGS	53%	44%	36%	38%	38%
Payroll expenses	31%	36%	39%	40%	42%
Other expenses	16%	20%	25%	21%	20%
Total Operating costs	100%	100%	100%	100%	100%

Depreciation and amortization

KOG provides segment information of 'depreciation' and 'amortization' in 'Note 6' on page 40 in their annual report (KOG, 2014).

Cost of NIBD

The same cost of NIBD has been applied for both segments. The effective tax rate is applied on Group level. Calculations are illustrated below

	2010	**2011**	**2012**	**2013**	**2014**
NIBD/Net Financial Expenses (before tax)	1,072%	1,727%	4,229%	1,242%	-1,416%

Effective tax rate

The effective tax rate is applied on Group level. Calculations are illustrated below

	2010	**2011**	**2012**	**2013**	**2014**
Effective tax rate (Total tax/EBIT)	-27,5%	-28,8%	-27,9%	-25,5%	-31,5%

Balance sheet

ASSETS

Current assets

Current assets for each segment were found through Equation A10.1. As 'working capital' is the interesting item in terms of the valuation exercise, 'current assets' has not been split up any further.

$$Eq.A10.1: Current\ Assets$$
$$= Segment\ assets \div PPE \div Goodwill \div Other\ intangible\ assets$$
$$+ Fair\ value\ adjustments + Construction\ contracts\ in\ progress, asset$$

Construction contracts, in progress

KOG communicates that the majority of the items 'Construction contracts in progress, asset' and 'Construction contracts in progress, liability' are related to Defense operations. However, the do not give any specific numbers on how much of the items that are related to each segment. The authors have therefore assumed a 70/30 distribution to Defense and Maritime respectively. KOG has also communicated that the majority of the contracts are long-term contracts, which also makes sense when considering the fact that most of the defence contracts are over time-periods of 3-7 years. Consequently, the authors have distributed 20 percent of the items to current assets and the respective 80 percent to non-current assets

Property, Plant & Equipment

In order to estimate the segmented 'PPE' the authors first estimated the average useful life of 'PPE' through equation A10.2, and estimated PPE for each segment through equation A10.3

$$Eq.A10.2: Average\ useful\ life\ 'PPE' = \frac{Total\ PPE}{Total\ Depreciation}$$

$$Eq.A10.3: Segment\ 'PPE' = Segment\ depreciation \times Average\ useful\ life\ 'PPE'$$

Goodwill

This item is segmented in 'Note 13' on page 49 in KOG's annual report (KOG, 2014).

Other Intangible Assets

'Other intangible assets' for each segment in was found through equation A10.4 and A10.5

$$Eq.A10.4: Average\ useful\ life\ 'Other\ intangible\ assets' = \frac{Total\ Other\ intangible\ assets}{Total\ Amortization}$$

$$Eq.A10.5: Segment \, 'Other \, intangible \, assets'$$

$$= Segment \, Amortization \times Average \, useful \, life \, 'Other \, intangible \, assets'$$

Available for Sale Shares, Shares in Associated Companies and Other Non-Current Assets

These items have been segmented based on each segment's revenue contribution. See figure and equation A10.6 below

	2010	**2011**	**2012**	**2013**	**2014**
Maritime	44%	48%	53%	58%	65%
Defence	56%	52%	47%	42%	35%

$$Eq.A10.6: Segmented \, asset = Revenue \, contribution \times Asset \, on \, Group \, level$$

LIABILITIES

Current Liabilities and Provisions

KOG has segmented the item 'Current segment liabilities and provision' in 'Note 6' in the annual report (KOG, 2014). This item consists of; 'Construction contracts in progress, liability', 'Provisions' and 'Other current liabilities'. As it became apparent that only 20 percent of the item 'Construction contracts in progress, liability' is related to current liabilities in the analytical statement, 'Current segment liabilities and provision' had to be split up into its three respective parts. This was done through the common size analysis in figure X.5, where 'Current segment liabilities and provision' for each segment was divided by 'Current liabilities and provision' on a group level. Furthermore, the three respective items was distributed to each segment through equation X.8 below. Finally, 20 percent of 'Construction contracts in progress, liability' was distributed to 'current assets' and 80 percent was distributed to 'non-interest-bearing assets'.

Current Liabilities and Provision	**2010**	**2011**	**2012**	**2013**	**2014**
Maritime	3.158	3.050	3.200	3.657	3.771
Defence	3.841	4.556	3.845	3.534	4.593
Group	6.999	7.606	7.045	7.191	8.364
Common Size	**2010**	**2011**	**2012**	**2013**	**2014**
Maritime	45,1%	40,1%	45,4%	50,9%	45,1%
Defence	54,9%	59,9%	54,6%	49,1%	54,9%

$$Eq.X.8: Segment\ liability$$
$$= Common\ size\ Current\ Liabilities\ and\ Provision \times Liability\ on\ Group\ Level$$

Non-Current Interest-Bearing Liabilities

There exists very limited information about the segmentation of the remaining liabilities on the balance sheet. The authors have therefore decided to distribute these items based on the revenue contribution presented in figure X.4.

Presented below are the analytical statements for each of the business segments. Note that the company only report segmentation down to EBIT and that special estimations have been made in order to drive "Net earnings". Also, the group does not offer thorough segmentation of the respective division's balance sheets, so these have been estimated as well. For details se appendix 10..

KOG Defense

Analytical Income Statement (NOK million)	2010	2011	2012	2013	2014
Revenue	8.693	7.805	7.330	6.817	5.842
COGS	-3.880	-2.925	-2.183	-2.245	-1.937
Gross profit	**4.813**	**4.880**	**5.147**	**4.572**	**3.905**
Payroll expenses	-2.249	-2.367	-2.408	-2.380	-2126
Other	-1.181	-1.348	-1.535	-1.253	-995
EBITDA	**1.383**	**1.165**	**1.204**	**939**	**784**
Depreciation	-143	-147	-179	-170	-148
Amortization	-39	-24	-35	-44	-52
Impairment	-	-	-	-	0
EBIT	**1.201**	**994**	**990**	**725**	**584**
Taxation (estimated)	-338	-302	-241	-177	-139
NOPAT	**863**	**692**	**749**	**548**	**445**
Net financial expenses (estimated)	**-9**	**-13**	**-16**	**-7**	**10**
Tax shield	3	4	4	2	-3
Net financial expenses (after tax)	**-6**	**-9**	**-12**	**-5**	**7**
Total tax	-336	-298	-236	-175	-142
Profit/loss for the year	**856**	**683**	**738**	**543**	**452**

Analytical Balance Sheet (NOK million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	**2.560**	**3.038**	**2.669**	**1.888**	**2.134**
Construction contracts in progress, liability	296	324	249	250	394
Other Current Liabilities	1.794	2.293	2.069	1.813	2.168
Provisions	568	644	540	468	453
Total current non-interest-bearing debt	**2.658**	**3.261**	**2.858**	**2.531**	**3.015**
Net working Capital	**-98**	**-223**	**-189**	**-643**	**-881**
Property, plant and equipment	1.160	1.363	1.442	1.308	1.072
Goodwill	132	170	168	170	172
Other Intangible Assets	248	185	198	264	295
Construction contracts in progress, assets	599	511	849	1.256	1.782
Derivatives	471	206	376	74	76
Other non-Current assets	59	77	75	66	35
Total non-current assets	**2.669**	**2.512**	**3.108**	**3.138**	**3.432**
Construction contracts in progress, liability	1.183	1.295	997	1.002	1577
Provisions	86	67	55	50	55
Deferred tax liabilities	319	325	407	428	328
Derivatives - project hedge	25	32	0	103	895
Other non-current liabilities	36	56	35	24	7
Non Current Liabilities	**1.649**	**1.775**	**1.494**	**1.607**	**2.862**
Invested Capital (Net operating assets)	**922**	**514**	**1.425**	**888**	**-311**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	**1.751**	**1.273**	**1.807**	**1.418**	**442**
Long-term interest-bearing loans	495	304	631	346	307
Pension liabilities	185	246	256	323	322
Derivatives - non-current	4	3	4	3	-
Derivatives - loan hedge	70	165	27	50	606
Short-term interest-bearing loans	-	172	-	225	-
Interest-bearing debt	**754**	**890**	**918**	**947**	**1.235**
Cash	1.509	1.589	1.242	1.417	1832
Avaliable for sale shares	75	61	60	60	46
Shares in associated companies	0	0	0	0	110
Interest-bearing assets	**1.584**	**1.650**	**1.302**	**1.477**	**1.988**
Net interest-bearing debt (NIBD)	**-830**	**-760**	**-384**	**-530**	**-753**
Invested Capital	**921**	**513**	**1.423**	**888**	**-311**

KOG Maritime

Analytical Income Statement (NOK million)	2010	2011	2012	2013	2014
Revenue	6.761	7.323	8.322	9.506	10.771
COGS	-3.003	-2.684	-2.577	-3.170	-3.635
Gross profit	**3.758**	**4.639**	**5.745**	**6.336**	**7.136**
Payroll expenses	-1.741	-2.172	-2.843	-3.362	-3.992
Other	-915	-1.238	-1.812	-1.771	-1.868
EBITDA	**1.102**	**1.229**	**1.090**	**1.203**	**1.276**
Depreciation	-126	-115	-144	-175	-194
Amortization	-64	-73	-96	-94	-88
Impairment	-	-	-	-	-320
EBIT	**912**	**1.041**	**850**	**934**	**674**
Taxation (estimated)	-263	-284	-273	-246	-257
NOPAT	**649**	**757**	**577**	**688**	**417**
Net financial expenses (estimated)	**-7**	**-14**	**-15**	**-8**	**17**
Tax shield	2	4	4	2	-5
Net financial expenses (after tax)	**-5**	**-10**	**-11**	**-6**	**12**
Total tax	-261	-280	-269	-244	-262
Profit/loss for the year	**644**	**747**	**566**	**682**	**428**

Analytical Balance Sheet (NOK million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	**2.355**	**3.041**	**3.621**	**4.445**	**5.051**
Construction contracts in progress, liability	243	217	207	259	324
Other Current Liabilities	1.475	1.535	1.722	1.877	1.781
Provisions	467	431	450	485	372
Total current non-interest-bearing debt	**2.185**	**2.183**	**2.379**	**2.621**	**2.476**
Net working Capital	**171**	**858**	**1.242**	**1.824**	**2.574**
Property, plant and equipment	1.022	1.067	1.160	1.347	1.405
Goodwill	1.649	1.828	1.842	2.138	1.916
Other Intangiable Assets	407	561	542	565	498
Construction contracts in progress, assets	150	128	212	314	764
Derivatives	334	179	406	99	139
Other non-Current assets	42	67	80	89	65
Total non-current assets	**3.604**	**3.830**	**4.243**	**4.551**	**4.788**
Construction contracts in progress, liability	973	867	830	1.037	1.295
Provisions	61	59	59	66	99
Deferred tax liabilities	227	284	440	573	606
Derivatives - project hedge	20,3019	21,6554	0	106,803	734,516
Other non-current liabilities	26	49	38	32	12
Non Current Liabilities	**1.307**	**1.280**	**1.366**	**1.815**	**2.747**
Invested Capital (Net operating assets)	**2.468**	**3.408**	**4.118**	**4.560**	**4.616**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	**3.130**	**4.210**	**4.466**	**5.239**	**5.840**
Long-term interest-bearing loans	352	266	680	465	566
Pension liabilities	131	214	276	434	593
Derivatives - non-current	2	3	5	5	1
Derivatives - loan hedge	58	111	22	52	497
Short-term interest-bearing loans	-	150	-	301	-
Interest-bearing debt	**543**	**743**	**983**	**1.256**	**1.657**
Cash	1.152	1.492	1.266	1.854	2.593
Avaliable for sale shares	54	53	65	80	86
Shares in associated companies	0	0	0	0	203
Interest-bearing assets	**1.206**	**1.545**	**1.331**	**1.934**	**2.882**
Net interest-bearing debt (NIBD)	**-662**	**-802**	**-348**	**-678**	**-1.224**
Invested Capital	**2.468**	**3.408**	**4.118**	**4.561**	**4.616**

A.15. Segment – Index Analysis

The following section presents index analysis of both the income statement and balance sheet items for the two segments.

Index Analysis – Income Statement, KOG Defense and KOG Maritime respectively

Index Analysis	2010	2011	2012	2013	2014
Revenue	100	90	84	78	67
COGS	100	75	56	58	50
Gross profit	100	101	107	95	81
Payroll expenses	100	105	107	106	95
Other	100	114	130	106	84
EBITDA	100	84	87	68	57
Depreciation	100	103	125	119	103
Amortization	100	62	90	113	133
Impairment					
EBIT	100	83	82	60	49
Taxation (estimated)	100	89	71	52	41
NOPAT	100	80	87	64	52
Net financial expenses (estimated)	100	144	178	78	-111
Tax shield	100	146	174	70	-123
Net financial expenses (after tax)	100	144	179	81	-106
Total tax	100	89	70	52	42
Profit/loss for the year	100	80	86	63	53

Index Analysis	2010	2011	2012	2013	2014
Revenue	100	108	123	141	159
COGS	100	89	86	106	121
Gross profit	100	123	153	169	190
Payroll expenses	100	125	163	193	229
Other	100	135	198	194	204
EBITDA	100	112	99	109	116
Depreciation	100	91	114	139	154
Amortization	100	114	150	147	138
Impairment					
EBIT	100	114	93	102	74
Taxation (estimated)	100	108	104	94	98
NOPAT	100	117	89	106	64
Net financial expenses (estimated)	100	200	214	114	-243
Tax shield	100	200	200	100	-250
Net financial expenses (after tax)	100	200	220	120	-240
Total tax	100	107	103	93	100
Profit/loss for the year	100	116	88	106	66

Index Analysis – Balance Sheet, Defense and Maritime respectively

Index Analysis	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	100	119	104	74	83
Construction contracts in progress, liability	100	109	84	84	133
Other Current Liabilities	100	128	115	101	121
Provisions	100	113	95	82	80
Total current non-interest-bearing debt	100	123	108	95	113
Net working Capital	100	228	193	656	899
Property, plant and equipment	100	118	124	113	92
Goodwill	100	129	127	129	130
Other Intangible Assets	100	75	80	106	119
Construction contracts in progress, assets	100	85	142	210	297
Other non-Current assets	100	131	127	112	59
Total non-current assets	100	94	116	118	129
Construction contracts in progress, liability	100	109	84	85	133
Provisions	100	78	64	58	64
Deferred tax liabilities	100	102	128	134	103
Other non-current liabilities	100	156	97	67	19
Non Current Liabilities	100	108	91	97	174
Invested Capital (Net operating assets)	100	56	155	96	-34
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	100	73	103	81	25
Long-term interest-bearing loans	100	61	127	70	62
Pension liabilities	100	133	138	175	174
Derivatives - non-current	100	75	100	75	0
Derivatives - loan hedge	100	236	39	71	866
Short-term interest-bearing loans					
Interest-bearing debt	100	118	122	126	164
Cash	100	105	82	94	121
Avaliable for sale shares	100	81	80	80	61
Interest-bearing assets	100	104	82	93	126
Net interest-bearing debt (NIBD)	100	92	46	64	91
Invested Capital	100	56	155	96	-34

Index Analysis	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	100	129	154	189	214
Construction contracts in progress, liability	100	89	85	107	133
Other Current Liabilities	100	104	117	127	121
Provisions	100	92	96	104	80
Total current non-interest-bearing debt	100	100	109	120	113
Net working Capital	100	503	728	1070	1510
Property, plant and equipment	100	104	113	132	137
Goodwill	100	111	112	130	116
Other Intangiable Assets	100	138	133	139	122
Construction contracts in progress, assets	100	85	142	210	510
Other non-Current assets	100	160	192	212	155
Total non-current assets	100	106	118	126	133
Construction contracts in progress, liability	100	89	85	107	133
Provisions	100	96	97	109	162
Deferred tax liabilities	100	125	194	253	267
Other non-current liabilities	100	190	147	125	48
Non Current Liabilities	100	98	105	139	210
Invested Capital (Net operating assets)	100	138	167	185	187
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	100	135	143	167	187
Long-term interest-bearing loans	100	75	193	132	161
Pension liabilities	100	163	210	330	452
Derivatives - non-current	100	112	187	184	26
Derivatives - loan hedge	100	192	39	90	861
Short-term interest-bearing loans					
Interest-bearing debt	100	137	181	231	305
Cash	100	130	110	161	225
Avaliable for sale shares	100	99	121	150	160
Interest-bearing assets	100	128	110	160	239
Net interest-bearing debt (NIBD)	100	121	52	102	185
Invested Capital	100	138	167	185	187

A.16. Segment – Common-size Analysis

This section provides a common size analysis of the two segments income statements and balance sheets.

Common-size Analysis – Income Statement, Defense and Maritime respectively

Common Size Analysis	2010	2011	2012	2013	2014
Revenue	100%	100%	100%	100%	100%
COGS	-45%	-37%	-30%	-33%	-33%
Gross profit	55%	63%	70%	67%	67%
Payroll expenses	-26%	-30%	-33%	-35%	-36%
Other	-14%	-17%	-21%	-18%	-17%
EBITDA	16%	15%	16%	14%	13%
Depreciation	-2%	-2%	-2%	-2%	-3%
Amortization	0%	0%	0%	-1%	-1%
Impairment	0%	0%	0%	0%	0%
EBIT	14%	13%	14%	11%	10%
Taxation (estimated)	-4%	-4%	-3%	-3%	-2%
NOPAT	10%	9%	10%	8%	8%
					0%
Net financial expenses (estimated)	0%	0%	0%	0%	0%
Tax shield	0%	0%	0%	0%	0%
Net financial expenses (after tax)	0%	0%	0%	0%	0%
					0%
Total tax	-4%	-4%	-3%	-3%	-2%
Profit/loss for the year	10%	9%	10%	8%	8%

Common Size Analysis	2010	2011	2012	2013	2014
Revenue	100%	100%	100%	100%	100%
COGS	-44%	-37%	-31%	-33%	-34%
Gross profit	56%	63%	69%	67%	66%
Payroll expenses	-26%	-30%	-34%	-35%	-37%
Other	-14%	-17%	-22%	-19%	-17%
EBITDA	16%	17%	13%	13%	12%
Depreciation	-2%	-2%	-2%	-2%	-2%
Amortization	-1%	-1%	-1%	-1%	-1%
Impairment	0%	0%	0%	0%	-3%
EBIT	13%	14%	10%	10%	6%
Taxation (estimated)	-4%	-4%	-3%	-3%	-2%
NOPAT	10%	10%	7%	7%	4%
					0%
Net financial expenses (estimated)	0%	0%	0%	0%	0%
Tax shield	0%	0%	0%	0%	0%
Net financial expenses (after tax)	0%	0%	0%	0%	0%
					0%
Total tax	-4%	-4%	-3%	-3%	-2%
Profit/loss for the year	10%	10%	7%	7%	4%

Common-size Analysis – Balance Sheet, Defense and Maritime respectively

Common Size Analysis	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	278%	591%	187%	213%	-686%
Construction contracts in progress, liability	32%	63%	17%	28%	-127%
Other Current Liabilities	195%	446%	145%	204%	-697%
Provisions	62%	125%	38%	53%	-146%
Total current non-interest-bearing debt	288%	634%	201%	285%	-969%
Net working Capital	-11%	-43%	-13%	-72%	283%
Property, plant and equipment	126%	265%	101%	147%	-345%
Goodwill	14%	33%	12%	19%	-55%
Other Intangible Assets	27%	36%	14%	30%	-95%
Construction contracts in progress, assets	65%	99%	60%	141%	-573%
Other non-Current assets	6%	15%	5%	7%	-11%
Total non-current assets	289%	489%	218%	353%	-1103%
Construction contracts in progress, liability	128%	252%	70%	113%	-507%
Provisions	9%	13%	4%	6%	-18%
Deferred tax liabilities	35%	63%	29%	48%	-105%
Other non-current liabilities	4%	11%	2%	3%	-2%
Non Current Liabilities	179%	345%	105%	181%	-920%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	190%	248%	127%	160%	-142%
Long-term interest-bearing loans	54%	59%	44%	39%	-99%
Pension liabilities	20%	48%	18%	36%	-104%
Derivatives - non-current	0%	1%	0%	0%	0%
Derivatives - loan hedge	8%	32%	2%	6%	-195%
Short-term interest-bearing loans	0%	34%	0%	25%	0%
Interest-bearing debt	82%	173%	65%	107%	-397%
Cash	164%	310%	87%	160%	-589%
Avaliable for sale shares	8%	12%	4%	7%	-15%
Interest-bearing assets	172%	322%	91%	166%	-639%
Net interest-bearing debt (NIBD)	-90%	-148%	-27%	-60%	242%
Invested Capital	100%	100%	100%	100%	100%

Common Size Analysis	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Total current operating assets	95%	89%	88%	97%	109%
Construction contracts in progress, liability	10%	6%	5%	6%	7%
Other Current Liabilities	60%	45%	42%	41%	39%
Provisions	19%	13%	11%	11%	8%
Total current non-interest-bearing debt	89%	64%	58%	57%	54%
Net working Capital	7%	25%	30%	40%	56%
Property, plant and equipment	41%	31%	28%	30%	30%
Goodwill	67%	54%	45%	47%	42%
Other Intangiable Assets	16%	16%	13%	12%	11%
Construction contracts in progress, assets	6%	4%	5%	7%	17%
Other non-Current assets	2%	2%	2%	2%	1%
Total non-current assets	146%	112%	103%	100%	104%
Construction contracts in progress, liability	39%	25%	20%	23%	28%
Provisions	2%	2%	1%	1%	2%
Deferred tax liabilities	9%	8%	11%	13%	13%
Other non-current liabilities	1%	1%	1%	1%	0%
Non Current Liabilities	53%	38%	33%	40%	60%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	127%	124%	108%	115%	127%
Long-term interest-bearing loans	14%	8%	17%	10%	12%
Pension liabilities	5%	6%	7%	10%	13%
Derivatives - non-current	0%	0%	0%	0%	0%
Derivatives - loan hedge	2%	3%	1%	1%	11%
Short-term interest-bearing loans	0%	4%	0%	7%	0%
Interest-bearing debt	22%	22%	24%	28%	36%
Cash	47%	44%	31%	41%	56%
Avaliable for sale shares	2%	2%	2%	2%	2%
Interest-bearing assets	49%	45%	32%	42%	62%
Net interest-bearing debt (NIBD)	-27%	-24%	-8%	-15%	-27%
Invested Capital	100%	100%	100%	100%	100%

Defense

	2010	**2011**	**2012**	**2013**	**2014**
NOPAT	863	692	749	548	445
Invested Capital (After-tax)	922	514	1425	888	-311
WACC	8,66%	8,66%	8,66%	8,66%	8,66%
Revenue	8693	7805	7330	6817	5842
Economic Profit as % of Revenue	9,00%	8,30%	8,54%	6,91%	8,07%
Profit Margin	9,92%	8,87%	10,22%	8,04%	7,61%

Maritime

	2010	**2011**	**2012**	**2013**	**2014**
NOPAT	649	757	577	688	417
Invested Capital (After-tax)	2.468	3.408	4.118	4.560	4.616
WACC	9,16%	9,16%	9,16%	9,16%	9,16%
Revenue	6.761	7.323	8.322	9.506	10.771
Economic Profit as % of Revenue	6,26%	6,07%	2,40%	2,84%	-0,05%
Profit Margin	9,60%	10,34%	6,93%	7,24%	3,87%
Invested capital as % of revenue	36,50%	46,54%	49,49%	47,97%	42,85%

A.18. Peer Group Analysis

When scanning for potential competitors and peers for the two segments an extensive list for each segment was constructed. Using DataStream, the authors collected financial data and calculated valuation multiples. The list of peers and multiples are provided in this section.

Company Name	Country	Market Cap (USDm)	EV 2014 (USDm)	EV/EBITDA 2017E
Kongsberg Gruppen	Norway	1.974.449	1.503.205	

Defense	Country	Market Cap (USDm)	EV 2014 (USDm)	EV/EBITDA 2017E
Thales	France	13.550.193	12.421.567	6,3
Boeing	USA	91.860.447	88.132.447	9,7
General Dynamics	USA	45.712.423	45.266.423	10,3
Airbus Group	Netherland	39.217.445	34.615.267	5,0
Raytheon	USA	33.208.190	34.015.190	6,3
BAE Systems	UK	23.180.897	24.786.813	10,7
Rheinmetall	Germany	1.682.958	2.153.333	8,5
Northrop Grumann	USA	29.320.328	31.385.328	9,4
Lockheed Martin	USA	60.466.980	65.189.980	9,4
Finmeccanica	Italy	5.407.186	10.401.141	6,9
SAAB	Sweden	2.737.194	2.663.835	7,9

Maritime	Country	Market Cap (USDm)	EV 2014 (USDm)	EV/EBITDA 2017E
Technip	France	6.726.973	7.947.766	5,4
Aker solutions	Norway	1.508.708	1.444.216	9,6
Akastor	Norway	783.280	1.017.965	18,1
Subsea 7	Norway	3.343.359	3.297.559	5,7
Cameron	USA	9.738.874	12.323.874	8,5
FMC	USA	10.852.828	11.350.528	7,9
Schoeller Bleckmann	Austria	1.159.081	1.202.091	19,0
RollsRoyce	UK	16.377.905	15.752.905	7,0
Schlumberger	USA	108.924.432	114.944.432	4,0
Halliburton	USA	33.351.840	38.889.840	5,2

Source: Compiled by authors based on (DataStream 2015)

In section 5.2 it was highlighted that it is risky to directly compare the multiples of companies within the same industry without examining the future growth prospects and cost structure. DataStream allows the authors to extract analyst estimate averages in terms of future projections for each of the potential peer companies. Hence, expected EBTIDA margin 2017 and projected sales growth 2015-2017 has been found. The potential peers of

each segment have been sorted based on these characteristics allowing to group the peers based on underlying EV/EBITDA factors affecting the multiple. The sorting yielded the following table:

Sorting peers based on underlying financial performance

Segment	Valuation multiples	Consensus projected Financial Performance		
	EV/EBTIDA17E	Sales Growth 2014-2017 (%)	EBITDA margin 2017E (%)	
Defense				
SAAB	7,9	-0,7	10,8	Low growt, low margin
Finmeccanica	6,9	2,7	12,3	
Lockheed Martin	9,4	3,0	14,7	Low growth, high margin
Northrop Grumann	9,4	3,5	14,9	
Rheinmetall	8,5	3,6	14,7	
BAE Systems	10,7	4,3	12,2	
Raytheon	6,3	11,7	6,7	High growth, low margin
Airbus Group	5,0	13,9	9,7	
General Dynamics	10,3	4,9	14,5	High growth, high margin
Boeing	9,7	4,9	11,3	
Thales	6,3	4,6	11,5	
Average	8,2	5,1	12,1	
Maritime				
Technip	5,2	-10,1	11,4	Low growth, low margin
Aker solutions	4,0	-7,8	8,1	
Akastor	7,0	-2,0	7,2	
Subsea 7	19,0	-9,6	17,9	Low growth, high margin
Cameron	7,9	-3,0	15,0	
FMC	8,5	1,7	15,9	High growth, low margin
Schoeller Bleckmann	5,7	6,0	28,0	
Rolls Royce	18,1	9,1	15,3	High growth, high margin
Schlumberger	9,6	14,8	26,2	
Halliburton	5,4	25,9	18,9	
Average	9,1	2,5	16,4	

Source: Compiled by authors, based on DataStream (2015)

Based on the expected sales growth and future EBITDA-margin, the list of peers is refined into a refined peer group which is most comparable to the segments based on historical performance. The list is presented in Section 5.2 and will be used in the relative valuation of the two segments.

A.19. Tier one Peer Group – Reported Financials

The following section presents the reported financial statements of the selected tier one peer group for each segment.

Lockheed Martin

Revenue	45.671	46.499	47.182	45.358	45.600
Cost of sales	-41.827	-42.755	-42.986	-41.171	-40.345
Gross profit	**3.844**	**3.744**	**4.196**	**4.187**	**5.255**
Other operating income	261	276	238	318	337
Operating profit	**4.105**	**4.020**	**4.434**	**4.505**	**5.592**
Financing income	18	-	21	-	6
Financing costs	-345	-389	-383	-350	-340
Net financing	**-327**	**-389**	**-362**	**-350**	**-334**
Profit before taxation	3.778	3.631	4.072	4.155	5.258
Taxation	-1.164	-964	-1.327	-1.205	-1.644
Net Earnings from continued operations	2.614	2.667	2.745	2.950	3.614
Net earnings/loss from discontinued operations	264	-12	-	31	-
Profit of the year	**2.878**	**2.655**	**2.745**	**2.981**	**3.614**

Balance Sheet (USD millions)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	2.261	3.582	1.898	2.617	1.446
Receivables	5.692	6.064	6.563	5.834	5.884
Short-term investments	516				
Inventories	2.363	2.481	2.937	2.977	2.882
Deferred tax	1.147	1.339	1.269	1.088	1.451
Other current assets	518	628	1.188	813	666
Assets held for sale	396				-
Total current assets	**12.893**	**14.094**	**13.855**	**13.329**	**12.329**
Property, plant and equipment	4.554	4.611	4.675	4.706	4.755
Goodwill	9.605	10.148	10.370	10.348	10.862
Deferred tax	3.485	4.388	4.809	2.850	4.013
Other non-current assets	4.576	4.667	4.948	4.955	5.114
Total non-current assets	**22.220**	**23.814**	**24.802**	**22.859**	**24.744**
Total Assets	**35.113**	**37.908**	**38.657**	**36.188**	**37.073**
EQUITY & LIABILITIES					
EQUITY					
Common stock	346	321	321	319	314
Additional paid in capital	-	-	-	-	-
Retained earnings	12.161	11.937	13.211	14.200	14.956
Accumulated other comprehensive loss	-9.010	-11.257	-13.493	-9.601	-11.870
Total Equtiy	**3.497**	**1.001**	**39**	**4.918**	**3.400**
LIABILITIES					
Accounts payable	1.627	2.269	2.038	1.397	1.570
Customer advances	5.890	6.399	6.503	6.349	5.790
Salaries, benefits and payroll tax	1.870	1.664	1.649	1.809	1.826
Current portion of long-term debt	1.810	-	150	-	
Other current liabilities	204	1.798	1.815	1.565	1.926
Total current liabilities	**11.401**	**12.130**	**12.155**	**11.120**	**11.112**
Accrued pension liabilities	5.019	6.460	15.278	9.361	11.413
Other post-retirement liabilities	10.607	13.502	1.220	902	1.102
Long-term debt	1.213	1.274	6.158	6.152	6.169
Other non-current liabilities	3.376	3.541	3.807	3.735	3.877
Total non-current liabilities	**20.215**	**24.777**	**26.463**	**20.150**	**22.561**
Total Liabilities	**31.616**	**36.907**	**38.618**	**31.270**	**33.673**
Total Equity & Liabilities	**35.113**	**37.908**	**38.657**	**36.188**	**37.073**

Source: *Compiled by authors based on Lockheed Martin ('10-14)*

Raytheon

Reported Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	25.150	24.791	24.414	23.706	22.826
Cost of sales - products	-17.000	-16.245	-15.712	-15.292	-14.271
Cost of sales - services	-3.273	-3.419	-3.380	-3.240	-3.024
Gross profit	**4.877**	**5.127**	**5.322**	**5.174**	**5.531**
General and administrative expenses	-2.264	-2.297	-2.333	-2.236	-2.352
Operating profit	**2.613**	**2.830**	**2.989**	**2.938**	**3.179**
Financing income	-	2	-	29	17
Financing costs	-179	-172	-210	-210	-213
Net financing	**-179**	**-170**	**-210**	**-181**	**-196**
Profit before taxation	2.434	2.660	2.779	2.757	2.983
Taxation	-590	-782	-878	-808	-790
Net Earnings from continued operations	**1.844**	**1.878**	**1.901**	**1.949**	**2.193**
Net earnings/loss from discontinued operations	-4	-12	-13	47	65
Profit of the year	**1.840**	**1.866**	**1.888**	**1.996**	**2.258**

Balance Sheet (USD million)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	3.638	4.000	3.188	3.296	3.222
Short-term investments	-	-	856	1.001	1.497
Contracts in process	4.414	4.526	4.543	4.870	4.985
Inventories	363	336	381	363	414
Deferred tax	266	221	96	24	-
Prepaid expenses and other current assets	141	226	182	262	174
Total current assets	**8.822**	**9.309**	**9.246**	**9.816**	**10.292**
Property, plant and equipment	2.003	2.006	1.986	1.937	1.935
Deferred tax	106	657	1.367	66	-
Goodwill	12.045	12.544	12.756	12.764	13.061
Other non-current assets	1.446	1.338	1.331	1.384	2.612
Total non-current assets	**15.600**	**16.545**	**17.440**	**16.151**	**17.608**
Total Assets	**24.422**	**25.854**	**26.686**	**25.967**	**27.900**
EQUITY & LIABILITIES					
EQUITY					
Common stock	4	3	3	3	3
Additional paid in capital	11.406	3.523	2.928	1.972	1.309
Retained earnings	10.390	-7.001	12.883	14.173	15.671
Accumulated other comprehensive loss	-12.046	11.656	-7.788	-5.113	-7.458
Total Raytheon company Equity	**9.754**	**8.181**	**8.026**	**11.035**	**9.525**
Non-controlling interest in subsidiaries	136	159	164	162	196
Total Equity	**9.890**	**8.340**	**8.190**	**11.197**	**9.721**
LIABILITIES					
Advance payments and billings	2.201	2.542	2.398	2.350	2.284
Accounts payable	1.538	1.507	1.348	1.178	1.250
Accrued employee compensation	901	941	1.014	1.068	1.059
Other current liabilities	1.320	1.140	1.142	1.214	1.337
Total current liabilities	**5.960**	**6.130**	**5.902**	**5.810**	**5.930**
Accrued retiree benefits and other long-term liabilities	4.815	6.774	7.854	3.903	6.919
Deferred tax	147	5	9	323	-
Long-term debt	3.610	4.605	4.731	4.734	5.330
Total non-current liabilities	**8.572**	**11.384**	**12.594**	**8.960**	**12.249**
Total Liabilities	**14.532**	**17.514**	**18.496**	**14.770**	**18.179**
Total Equity & Liabilities	**24.422**	**25.854**	**26.686**	**25.967**	**27.900**

Source: Compiled by authors based on Raytheon ('10-14)

General Dynamics

Reported Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	32.466	32.677	31.513	31.218	30.852
Cost of sales - products	-17.359	-17.230	-16.228	-15.296	-15.335
Cost of sales - services	-9.198	-9.591	-10.182	-10.158	-9.644
Gross profit	**5.909**	**5.856**	**5.103**	**5.764**	**5.873**
General and administrative expenses	-1.964	-2.030	-2.276	-2.079	-1.984
Goodwill impairment	-	-	-1.994	-	-
Operating profit	**3.945**	**3.826**	**833**	**3.685**	**3.889**
Financing income	2	33	-	8	
Financing costs	-157	-141	-292	-86	-87
Net financing	**-155**	**-108**	**-292**	**-78**	**-87**
Profit before taxation	3.790	3.718	541	3.607	3.802
Taxation	-1.162	-1.166	-873	-1.121	-1.129
Net Earnings from continued operations	**2.628**	**2.552**	**-332**	**2.486**	**2.673**
Net earnings/loss from discontinued operations	-4	-26	-	-129	-140
Profit of the year	**2.624**	**2.526**	**-332**	**2.357**	**2.533**

Balance Sheet (USD million)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	2.613	2.649	3.296	5.301	4.388
Accounts receivable	3.848	4.429	4.204	4.402	4.050
Contracts in process	4.873	5.168	4.964	4.780	4.591
Inventories	2.158	2.310	2.776	2.968	3.221
Other current assets	694	812	504	435	1.157
Total current assets	**14.186**	**15.368**	**15.744**	**17.886**	**17.407**
Property, plant and equipment	2.971	3.284	3.403	3.415	3.329
Intangible assets	1.992	1.813	1.383	1.217	912
Goodwill	12.649	13.576	12.048	11.977	11.731
Other assets	747	842	1.731	953	1.976
Total non-current assets	**18.359**	**19.515**	**18.565**	**17.562**	**17.948**
Total Assets	**32.545**	**34.883**	**34.309**	**35.448**	**35.355**
EQUITY & LIABILITIES					
EQUITY					
Common stock	482	482	482	482	482
Surplus	1.729	1.888	1.988	2.226	2.548
Retained earnings	17.076	18.917	17.860	19.428	21.127
Treasury stock	-4.535	-5.743	-6.165	-6.450	-9.396
Accumulated other comprehensive loss	-1.436	-2.312	-2.775	-1.185	-2.932
Total Equity	**13.316**	**13.232**	**11.390**	**14.501**	**11.829**
LIABILITIES					
Accounts payable	2.736	2.895	2.469	2.248	2.057
Short-term debt	-	-	-	-	501
Customer advances and deposits	4.465	5.011	6.042	6.584	7.335
Other current liabilities	3.203	3.239	3.109	3.362	3.858
Total current liabilities	**10.404**	**11.145**	**11.620**	**12.194**	**13.751**
Long-term debt	3.203	3.907	3.908	3.908	3.410
Other liabilities	5.622	6.599	7.391	4.845	6.365
Total non-current liabilities	**8.825**	**10.506**	**11.299**	**8.753**	**9.775**
Total Liabilities	**19.229**	**21.651**	**22.919**	**20.947**	**23.526**
Total Equity & Liabilities	**32.545**	**34.883**	**34.309**	**35.448**	**35.355**

Source: Compiled by authors based on General Dynamics ('10-14)

Northrop Grumman

Reported Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	28.143	26.412	25.218	24.661	23.979
Cost of sales - products	-12.558	-11.491	-10.415	-10.623	-10.431
Cost of sales - services	-10.291	-9.295	-9.223	-8.659	-7.947
Gross profit	**5.294**	**5.626**	**5.580**	**5.379**	**5.601**
General and administrative expenses	-2.467	-2.350	-2.450	-2.256	-2.405
Operating profit	**2.827**	**3.276**	**3.130**	**3.123**	**3.196**
Financing income	37	28	47	-	23
Financing costs	-498	-221	-212	-260	-282
Net financing	**-461**	**-193**	**-165**	**-260**	**-259**
Profit before taxation	2.366	3.083	2.965	2.863	2.937
Taxation	-462	-997	-987	-911	-868
Net earnings from continuing operations	1.904	2.086	1.978	1.952	2.069
Earnings from discontinued operations	149	32	-	-	-
Net Earnings	**2.053**	**2.118**	**1.978**	**1.952**	**2.069**

Balance Sheet (USD million)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	3.701	3.002	3.862	5.150	3.863
Accounts receivable	3.329	2.964	2.858	2.685	2.806
Inventories	896	873	798	698	742
Deferred tax	392	496	574	605	404
Prepaid expenses	244	411	300	350	369
Assets of discontinued operations	5.212				
Total current assets	**13.774**	**7.746**	**8.392**	**9.488**	**8.184**
Property, plant and equipment	3.045	3.047	2.887	2.806	2.991
Goodwill	12.568	12.374	12.431	12.438	12.466
Non-current deferred tax	628	900	1.542	209	1.622
Other non-current assets	1.395	1.344	1.291	1.440	1.309
Total non-current assets	**17.636**	**17.665**	**18.151**	**16.893**	**18.388**
Total Assets	**31.410**	**25.411**	**26.543**	**26.381**	**26.572**
EQUITY & LIABILITIES					
EQUITY					
Common stock	291	254	239	218	199
Paid-in capital	7.778	3.873	2.924	848	-
Retained earnings	8.124	9.699	11.138	12.538	12.392
Accumulated other comprehensive loss	-2.757	-3.490	-4.787	-2.984	-5.356
Total Equity	**13.436**	**10.336**	**9.514**	**10.620**	**7.235**
LIABILITIES					
Accounts payable	2.357	1.481	1.392	1.229	1.305
Acrrued employee compensation	1.146	1.196	1.173	1.446	1.441
Advance payments and billings	1.969	1.777	1.759	1.722	1.713
Other current liabilities	1.763	1.681	1.732	1.418	1.433
Liabilities of discontinued operations	2.792				
Total current liabilities	**10.027**	**6.135**	**6.056**	**5.815**	**5.892**
Long-term debt	3.940	3.935	3.930	5.928	5.925
Pension and post-retirement plans	3.089	4.079	6.085	2.954	6.555
Other liabilities	918	926	958	1.064	965
Total non-current liabilities	**7.947**	**8.940**	**10.973**	**9.946**	**13.445**
Total Liabilities	**17.974**	**15.075**	**17.029**	**15.761**	**19.337**
Total Equity & Liabilities	**31.410**	**25.411**	**26.543**	**26.381**	**26.572**

Source: *Compiled by authors based on Northrop Grumman ('10-14)*

Rolls Royce

Reported Income Statement (GBP millions)	2010	2011	2012	2013	2014
Revenue	11.085	11.124	12.161	15.513	13.736
Cost of sales	-8.885	-8.676	-9.432	-12.197	-10.533
Gross profit	**2.200**	**2.448**	**2.729**	**3.316**	**3.203**
Other operating income	95	69	-	65	10
Commercial and administrative costs	-836	-984	-993	-1.323	-1.124
Research and development costs	-422	-463	-531	-683	-793
Share of results of joint ventures and associates	93	116	173	160	94
Operating profit	**1.130**	**1.186**	**1.378**	**1.535**	**1.390**
Profit on transfer of joint ventures to subsidiaries		3	-	119	2
Profit on disposal of businesses	4	-	699	216	6
Profit before financing and taxation	**1.134**	**1.189**	**2.077**	**1.870**	**1.398**
Financing income	453	456	797	327	121
Financing costs	-885	-540	-108	-438	-1.452
Net financing	**-432**	**-84**	**689**	**-111**	**-1.331**
Profit before taxation	702	1.105	2.766	1.759	67
Taxation	-159	-257	-431	-380	-151
Profit of the year	**543**	**848**	**2.335**	**1.379**	**-84**

Balance Sheet (NOK million)	2010	2011	2012	2013	2014
ASSETS					
Inventories	2.429	2.561	2.726	3.319	2.768
Trade and other receivables	3.943	4.009	4.119	5.092	5.509
Taxation recoverable	6	20	33	16	19
Other financial assets	250	91	115	74	22
Short-term investments	328	11	11	321	7
Cash and cash equivalents	2.859	1.310	2.585	3.990	2.862
Assets held for sale	9	313	4	6	1
Total current assets	**9.824**	**8.315**	**9.593**	**12.818**	**11.188**
Intangible assets	2.884	2.882	2.901	4.987	4.804
Property, plant and equipment	2.136	2.338	2.564	3.392	3.446
Investments - joint ventures and associates	393	1.680	1.800	601	539
Investments - other	11	10	6	27	31
Other financial assets	371	327	592	674	107
Deferred tax assets	451	368	330	316	369
Post-retirement scheme surpluses	164	503	329	248	1.740
Total non-current assets	**6.410**	**8.108**	**8.522**	**10.245**	**11.036**
Total Assets	**16.234**	**16.423**	**18.115**	**23.063**	**22.224**
EQUITY & LIABILITIES					
EQUITY					
Called-up share capital	374	374	374	376	376
Share premium account	133	-	-	80	179
Capital redemption reserve	209	173	169	163	159
Cash flow hedging reserve	-37	-52	-63	-68	-81
Other reserves	527	433	314	250	78
Retained earnings	2.769	3.590	5.294	4.804	5.671
Equity attributable to ordinary shareholders	**3.975**	**4.518**	**6.088**	**5.605**	**6.382**
Non-controlling interests	4	1	17	698	5
Total Equtiy	**3.979**	**4.519**	**6.105**	**6.303**	**6.387**
LIABILITIES					
Borrowings	717	20	149	207	68
Other financial liabilities	105	111	312	1.976	209
Trade and other payables	5.910	6.236	6.387	7.045	6.791
Tax liabilities	170	138	126	204	184
Provisions	276	276	220	348	433
Assets held for sale	-	135	-	-	-
Total current liabilities	**7.178**	**6.916**	**7.194**	**9.780**	**7.685**
Borrowings	1.135	1.184	1.234	2.164	2.193
Other financial liabilities	945	919	418	360	717
Trade and other payables	1.271	1.314	1.465	2.138	2.445
Tax liabilities			-	10	10
Deferred tax liabilities	438	445	584	882	1.228
Provisions	268	226	241	385	374
Post-retirement scheme benefits	1.020	900	874	1.041	1.185
Total non-current liabilities	**5.077**	**4.988**	**4.816**	**6.980**	**8.152**
Total Liabilities	**12.255**	**11.904**	**12.010**	**16.760**	**15.837**
Total Equity & Liabilities	**16.234**	**16.423**	**18.115**	**23.063**	**22.224**

Source: Compiled by authors based on Rolls Royce ('10-14)

Aker Solutions

Reported Income Statement (NOK millions)	2010	2011	2012	2013	2014
Revenue	33.207	35.667	41.123	42.804	32.971
Cost of sales	-14.589	-16.233	-19.835	-20.004	-13.561
Gross profit	**18.618**	**19.434**	**21.288**	**22.800**	**19.410**
Other operating income	158	807	509	96	-
Salaries, wages and ssc	-10.727	-11.353	-12.086	-14.345	-11.171
Other operating expenses	-4.741	-5.443	-5.540	-5.048	-5.565
EBITDA	**3.308**	**3.445**	**4.171**	**3.503**	**2.674**
Depreciation, amotization and impairment	-817	-876	-895	-1.618	-665
Operating profit	2.491	2.569	3.276	1.885	2.009
Financing income	86	183	110	73	71
Financing costs	-509	-641	-602	-798	-315
Profit/loss on foreign currency contracts	-22	35	-124	264	51
Profit/loss from equity-accounted investees	-78	-73	9	-26	-
Net financing	**-523**	**-496**	**-607**	**-487**	**-193**
Profit before taxation	1.968	2.073	2.669	1.398	1.816
Taxation	-634	-482	-609	-393	-516
Profit from discontinued operations (net of income tax)	676	3.663	200	262	-
Profit of the year	**2.010**	**5.254**	**2.260**	**1.267**	**1.300**

Balance Sheet (NOK million)	2010	2011	2012	2013	2014
ASSETS					
Current tax assets	238	103	68	106	106
Inventories	1.686	1.765	2.360	2.492	862
Trade and other receivables	14.870	12.117	16.524	17.659	12.042
Derivative financial instruments	386	540	441	1.544	1.187
Current interest-bearing receivables	621	534	421	511	82
Cash and cash equivalents	3.198	1.308	1.214	2.345	3.339
Assets held for sale	3.136	1.831	-	3.437	
Total current assets	**24.135**	**18.198**	**21.028**	**28.094**	**17.618**
Property, plant and equipment	7.494	7.409	10.041	9.815	3.603
Deferred tax assets	487	533	570	600	380
Intangible assets	6.783	6.310	6.884	8.242	5.763
Employee benefit assets	95	103			
Non-current interest-bearing receivables	225	704	672	159	
Other non-current operating assets	221	191	168	162	27
Equity accounted investees	424	246	283	440	
Other investments	157	418	569	645	
Total non-current assets	**15.886**	**15.914**	**19.187**	**20.063**	**9.773**
Total Assets	**40.021**	**34.112**	**40.215**	**48.157**	**27.391**
EQUITY & LIABILITIES					
EQUITY					
Issued capital	548	455	455	455	294
Treasury shares	-9	-7	-6	-3	-1
Other capital paid in	1.534	1.534	1.534	1.534	
Reserves	-763	-565	-1.121	192	-7
Retained earnings	8.855	9.731	10.961	11.216	5.391
Equity attributable to ordinary shareholders	**10.165**	**11.148**	**11.823**	**13.394**	**5.677**
Non-controlling interests	189	169	157	161	216
Total Equtiy	**10.354**	**11.317**	**11.980**	**13.555**	**5.893**
LIABILITIES					
Current borrowings	716	629	1.008	3.896	674
Current tax liabilities	115	86	37	38	42
Provisions	1.039	935	1.173	872	581
Trade and other payables	16.278	12.934	16.012	17.409	13.075
Derivative financial instruments	243	247	274	834	2.581
Assets held for sale - liabilities	1.539	45	-	953	-
Total current liabilities	**19.930**	**14.876**	**18.504**	**24.002**	**16.953**
Non-current borrowings	7.508	5.371	6.683	7.420	3.154
Employee benefits obligations	647	577	805	748	670
Deferred tax liabilities	829	1.310	1.828	2.076	699
Other non-current liabilities	753	661	415	356	22
Total non-current liabilities	**9.737**	**7.919**	**9.731**	**10.600**	**4.545**
Total Liabilities	**29.667**	**22.795**	**28.235**	**34.602**	**21.498**
Total Equity & Liabilities	**40.021**	**34.112**	**40.215**	**48.157**	**27.391**

Source: Compiled by authors based on Aker Solutions ('10-14)

Halliburton

Reported Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	17.973	24.829	28.503	29.402	32.870
Cost of sales - products	-3.508	-4.379	-5.322	-5.972	-6.599
Cost of sales - services	-11.227	-15.432	-18.447	-18.959	-21.060
Gross profit	**3.238**	**5.018**	**4.734**	**4.471**	**5.211**
General and administrative expenses	-229	-281	-275	-333	-309
Loss contingency for Macondo well incident	-	-	-300	-1.000	195
Operating profit	**3.009**	**4.737**	**4.159**	**3.138**	**5.097**
Financing income	-	-	-	-	
Financing costs	-354	-288	-337	-374	-385
Net financing	**-354**	**-288**	**-337**	**-374**	**-385**
Profit before taxation	2.655	4.449	3.822	2.764	4.712
Taxation	-853	-1.439	-1.235	-648	-1.275
Net Earnings from continued operations	**1.802**	**3.010**	**2.587**	**2.116**	**3.437**
Net earnings/loss from discontinued operations	40	-166	58	19	64
Noncontrolling interest in net income of subsidiaries	-7	-5	-10	-10	-1
Profit of the year	**1.835**	**2.839**	**2.635**	**2.125**	**3.500**

Balance Sheet (USD million)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	1.398	2.698	2.484	2.356	2.291
Receivables	3.924	5.084	5.787	6.181	7.564
Inventories	1.940	2.570	3.186	3.305	3.571
Prepaid expenses	653	321	608	737	658
Deferred tax	257	-	351	388	421
Other current assets	714	904	670	737	563
Total current assets	**8.886**	**11.577**	**13.086**	**13.704**	**15.068**
Property, plant and equipment	6.842	8.492	10.257	11.322	12.475
Goodwill	1.315	1.776	2.135	2.168	2.330
Other assets	1.254	1.832	1.932	2.029	2.367
Total non-current assets	**9.411**	**12.100**	**14.324**	**15.519**	**17.172**
Total Assets	**18.297**	**23.677**	**27.410**	**29.223**	**32.240**
EQUITY & LIABILITIES					
EQUITY					
Common stock	2.674	2.683	2.682	2.680	2.679
Paid in capital	339	455	486	415	309
Accumulated other comprehensive income	-240	-273	-309	-307	-399
Retained earnings	12.371	14.880	17.182	18.842	21.809
Treasury stock	-4.771	-4.547	-4.276	-8.049	-8.131
Total Halliburton company Equity	**10.373**	**13.198**	**15.765**	**13.581**	**16.267**
Non-controlling interest in subsidiaries	14	18	25	34	31
Total Equity	**10.387**	**13.216**	**15.790**	**13.615**	**16.298**
LIABILITIES					
Accounts payable	1.139	1.826	2.041	2.365	2.814
Accrued employee benefits	716	862	930	1.029	1.033
Deferred revenue	266	309	307	350	756
Loss contingency for Macondo well incident	-	-	-	278	367
Other current liabilties	636	1.124	1.474	1.004	913
Total current liabilities	**2.757**	**4.121**	**4.752**	**5.026**	**5.883**
Long-term debt	3.824	4.820	4.820	7.816	7.840
Loss contingency for Macondo well incident	-		300	1.022	691
Employee compensation and benefits	487	534	607	584	439
Other non-current liabilities	842	986	1.141	1.160	1.089
Total non-current liabilities	**5.153**	**6.340**	**6.868**	**10.582**	**10.059**
Total Liabilities	**7.910**	**10.461**	**11.620**	**15.608**	**15.942**
Total Equity & Liabilities	**18.297**	**23.677**	**27.410**	**29.223**	**32.240**

Source: *Compiled by authors based on Halliburton ('10-14)*

Cameron

Reported Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	6.135,00	6.959,00	8.502,00	9.838,00	10.381,00
COGS	-4.212,00	-4.838,00	-6.024,00	-7.016,00	-7.464,00
Gross profit	**1.923,00**	**2.121,00**	**2.478,00**	**2.822,00**	**2.917,00**
General and administrative expenses	-862,00	-1.002,00	-1.161,00	-1.363,00	-1.287,00
Depreciation and amortization	-202,00	-207,00	-255,00	-315,00	-348,00
Operating profit	**859,00**	**912,00**	**1.062,00**	**1.144,00**	**1.282,00**
Financing income	-	-	-	-	
Financing costs	-125,00	-261,00	-124,00	-192,00	-202,00
Net financing	**-125,00**	**-261,00**	**-124,00**	**-192,00**	**-202,00**
Profit before taxation	734,00	651,00	938,00	952,00	1.080,00
Taxation	-171,00	-129,00	-188,00	-228,00	-258,00
Net Earnings from continued operations	**563,00**	**522,00**	**750,00**	**724,00**	**822,00**
Noncontrolling interest in net income of subsidiaries	-	-	-	-25,00	-11,00
Profit of the year	**563,00**	**522,00**	**750,00**	**699,00**	**811,00**

Balance Sheet (USD million)	2010	2011	2012	2013	2014
ASSETS					
Cash and cash equivalents	1.833	899	1.186	1.813	1.513
Short-term investments	-	424	517	41	113
Receivables	1.056	1.757	1.967	2.719	2.389
Inventories	1.779	2.400	2.741	3.132	2.929
Other current assets	265	349	500	463	608
Total current assets	**4.933**	**5.829**	**6.911**	**8.168**	**7.552**
Property, plant and equipment	1.248	1.500	1.765	2.037	1.964
Goodwill	1.475	1.615	1.924	2.925	2.461
Intangibles	-	-	336	904	728
Other assets	349	418	222	214	187
Total non-current assets	**3.072**	**3.533**	**4.247**	**6.080**	**5.340**
Total Assets	**8.005**	**9.362**	**11.158**	**14.248**	**12.892**
EQUITY & LIABILITIES					
EQUITY					
Common stock	3	3	3	3	3
Preferred stock	-	-	-	-	-
Capital in excess og par value	2.259	2.072	2.095	3.207	3.255
Retained earnings	2.848	3.370	4.121	4.820	5.631
Accumulated other elements of comprehensive income	-27	-91	-30	-79	-540
Less: Treasury stock	-691	-647	-623	-2.098	-3.794
Total Cameron company Equity	**4.392**	**4.707**	**5.566**	**5.853**	**4.555**
Non-controlling interests		-	-	1.062	889
Total Equity	**4.392**	**4.707**	**5.566**	**6.915**	**5.444**
LIABILITIES					
Short-term debt	520	11	29	297	263
Accounts payable	2.016	2.670	3.046	3.883	3.748
Accrued income taxes	38	-	94	80	258
Total current liabilities	**2.574**	**2.681**	**3.169**	**4.260**	**4.269**
Long-term debt	773	1.574	2.047	2.563	2.819
Deferred income taxes	96	185	132	277	193
Other long-term liabilities	170	215	244	233	167
Total non-current liabilities	**1.039**	**1.974**	**2.423**	**3.073**	**3.179**
Total Liabilities	**3.613**	**4.655**	**5.592**	**7.333**	**7.448**
Total Equity & Liabilities	**8.005**	**9.362**	**11.158**	**14.248**	**12.892**

Source: *Compiled by authors based on Cameron ('10-14)*

A.20. Tier-One Peers – Analytical Statements

This section will present the reclassified (analytical) statements of the respective peers to each segment. Some of the peers operate under US GAAP, while KOG and some peers operate under IFRS. However, it is argue that the similarities between the two standards are more dominant than the differences. It is therefore assumed that key figures, on an overall basis are comparable.

Defense Peers

Lockheed Martin

Analytical Income Statement (USD millions)	2010	2011	2012	2013	2014
Revenue	**45.932**	**46.775**	**47.420**	**45.676**	**45.937**
COGS	-40.775	-41.747	-41.998	-39.986	-39.232
Gross Profit	**5.157**	**5.028**	**5.422**	**5.690**	**6.705**
EBITDA	**5.157**	**5.028**	**5.422**	**5.690**	**6.705**
Depreciation and amortisation	-1.052	-1.008	-988	-990	-994
Impairment	-	-	-	-195	-119
EBIT	**4.105**	**4.020**	**4.434**	**4.505**	**5.592**
Taxation (estimated)	-1.183	-1.070	-1.445	-1.298	-1.748
NOPAT	**2.922**	**2.950**	**2.989**	**3.207**	**3.844**
Net financial expenses (before tax)	**-327**	**-389**	**-362**	**-350**	**-334**
Tax shield	101	103	118	102	104
Net financial expenses (after tax)	**-226**	**-286**	**-244**	**-248**	**-230**
Net Special items (before tax)	**264**	**-12**	**-**	**31**	**-**
Tax Shield	-81	3	-	-9	
Net special items (after tax)	**183**	**-9**	**-**	**22**	
Total tax	-1.164	-964	-1.327	-1.205	-1.644
Profit/loss for the year	**2.878**	**2.655**	**2.745**	**2.981**	**3.614**

Comments to Lockheed Martin's Analytical Income Statement and Balance Sheet

- *Lockheed Martin Reports under US GAAP*
- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*
- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*
- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (GBP million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Receivables	5.692	6.064	6.563	5.834	5.884
Inventories	2.363	2.481	2.937	2.977	2.882
Deferred tax	1.147	1.339	1.269	1.088	1.451
Other current assets	518	628	1.188	813	666
Total current operating assets	**9.720**	**10.512**	**11.957**	**10.712**	**10.883**
Accounts payable	1.627	2.269	2.038	1.397	1.570
Customer advances	5.890	6.399	6.503	6.349	5.790
Other current liabilities	204	1.798	1.815	1.565	1.926
Total current non-interest-bearing debt	**7.721**	**10.466**	**10.356**	**9.311**	**9.286**
Net working Capital	**1.999**	**46**	**1.601**	**1.401**	**1.597**
Property, plant and equipment	4.554	4.611	4.675	4.706	4.755
Goodwill	9.605	10.148	10.370	10.348	10.862
Deferred tax	3.485	4.388	4.809	2.850	4.013
Other non-current assets	4.576	4.667	4.948	4.955	5.114
Total non-current assets	**22.220**	**23.814**	**24.802**	**22.859**	**24.744**
Other non-current liabilities	3.376	3.541	3.807	3.735	3.877
Non-interest-bearing debt	**3.376**	**3.541**	**3.807**	**3.735**	**3.877**
Invested Capital (Net operating assets)	**20.843**	**20.319**	**22.596**	**20.525**	**22.464**
Invested Capital	**2.010**	**2.011**	**2.012**	**2.013**	**2.014**
Equity (estimated)	**3.497**	**1.001**	**39**	**4.918**	**3.400**
Salaries, benefits and payroll tax	1.870	1.664	1.649	1.809	1.826
Current portion of long-term debt	1.810	-	150	-	-
Accrued pension liabilities	5.019	6.460	15.278	9.361	11.413
Other post-retirement liabilities	10.607	13.502	1.220	902	1.102
Long-term debt	1.213	1.274	6.158	6.152	6.169
Interest-bearing debt	**20.519**	**22.900**	**24.455**	**18.224**	**20.510**
Cash and cash equivalents	2.261	3.582	1.898	2.617	1.446
Short-term investments	516				-
Assets held for sale	396				-
Interest-bearing assets	**3.173**	**3.582**	**1.898**	**2.617**	**1.446**
Net interest-bearing debt (NIBD)	**17.346**	**19.318**	**22.557**	**15.607**	**19.064**
Invested Capital	**20.843**	**20.319**	**22.596**	**20.525**	**22.464**

Raytheon

Analytical Income Statement (USD million)	2010	2011	2012	2013	2014
Revenue	**25.150**	**24.791**	**24.414**	**23.706**	**22.826,00**
COGS	-19.859	-19.220	-18.637	-18.087	-16.856
Gross Profit	**5.291**	**5.571**	**5.777**	**5.619**	**5.970**
General and administrative expenses	-2264	-2297	-2333	-2236	-2352
EBITDA	**3.027**	**3.274**	**3.444**	**3.383**	**3.618,00**
Depreciation and amortisation	-414	-444	-455	-445	-439,00
Impairment	-	-	-	-	-
EBIT	**2.613**	**2.830**	**2.989**	**2.938**	**3.179**
Taxation (estimated)	-634	-836	-948	-847	-825
NOPAT	**1.979**	**1.994**	**2.041**	**2.091**	**2.354,31**
Net financial expenses (before tax)	**-179**	**-170**	**-210**	**-181**	**-196**
Tax shield	43	50	66	53	52
Net financial expenses (after tax)	**-136**	**-120**	**-144**	**-128**	**-144**
Net Special items (before tax)	**-4**	**-12**	**-13**	**47**	**65**
Tax Shield	1	4	4	-14	-17
Net special items (after tax)	**-3**	**-8**	**-9**	**33**	**48**
Total tax	-590	-782	-878	-808	-790
Profit/loss for the year	**1.840**	**1.866**	**1.888**	**1.996**	**2.258**

Comments to Raytheon's Analytical Income Statement and Balance Sheet

- *Raytheon Reports under US GAAP*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (USD million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Contracts in process	3.090	3.168	3.180	3.409	3.490
Inventories	363	336	381	363	414
Deferred tax	266	221	96	24	-
Prepaid expenses and other current assets	141	226	182	262	174
Total current operating assets	**3.860**	**3.951**	**3.839**	**4.058**	**4.078**
Advance payments and billings	2.201	2.542	2.398	2.350	2.284
Accounts payable	1.538	1.507	1.348	1.178	1.250
Other current liabilities	1.320	1.140	1.142	1.214	1.337
Total current non-interest-bearing debt	**5.059**	**5.189**	**4.888**	**4.742**	**4.871**
Net working Capital	**-1.199**	**-1.238**	**-1.049**	**-684**	**-794**
Property, plant and equipment	2003	2006	1986	1937	1935
Contracts in process	1324,2	1357,8	1362,9	1461	1495,5
Deferred tax	106	657	1367	66	0
Goodwill	12045	12544	12756	12764	13061
Other non-current assets	1446	1338	1331	1384	2612
Total non-current assets	**16.924**	**17.903**	**18.803**	**17.612**	**19.104**
Deferred tax	147	5	9	323	0
Non-interest-bearing debt	**147**	**5**	**9**	**323**	**-**
Invested Capital (Net operating assets)	**15.578**	**16.660**	**17.745**	**16.605**	**18.310**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Total Equity	**9.890**	**8.340**	**8.190**	**11.197**	**9.721**
Accrued retiree benefits and other long-term liabilities	4.815	6.774	7.854	3.903	6.919
Long-term debt	3.610	4.605	4.731	4.734	5.330
Accrued employee compensation	901	941	1.014	1.068	1.059
Interest-bearing debt	**9.326**	**12.320**	**13.599**	**9.705**	**13.308**
Cash and cash equivalents	3638	4000	3188	3296	3222
Short-term investments	-	-	856	1.001	1497
Interest-bearing assets	**3.638**	**4.000**	**4.044**	**4.297**	**4.719**
Net interest-bearing debt (NIBD)	**5.688**	**8.320**	**9.555**	**5.408**	**8.589**
Invested Capital	**15.578**	**16.660**	**17.745**	**16.605**	**18.310**

General Dynamics

Analytical Income Statement (USD million)	2010	2011	2012	2013	2014
Revenue	**32.466**	**32.677**	**31.513**	**31.218**	**30.852**
COGS	-25.988	-26.118	-25.489	-24.898	-24.483
Gross Profit	**6.478**	**6.559**	**6.024**	**6.320**	**6.369**
General and administrative expenses	-1964	-2030	-2276	-2079	-1.984
EBITDA	**4.514**	**4.529**	**3.748**	**4.241**	**4.385**
Depreciation	-345	-354	-386	-393	-375
Amortization	-224	-238	-234	-163	-121
Impairment	-	-111	-2.295	-	-
EBIT	**3.945**	**3.826**	**833**	**3.685**	**3.889**
Taxation (estimated)	-1.211	-1.208	-1.344	-1.185	-1.196
NOPAT	**2.734**	**2.618**	**-511**	**2.500**	**2.693**
Net financial expenses (before tax)	**-155**	**-108**	**-292**	**-78**	**-87**
Tax shield	48	34	471	24	26
Net financial expenses (after tax)	**-107**	**-74**	**179**	**-54**	**-61**
Net Special items (before tax)	**-4**	**-26**	**-**	**-129**	**-140**
Tax Shield	1	8	-	40	42
Net special items (after tax)	**-3**	**-18**	**-**	**-89**	**-98**
Total tax	-1.162	-1.166	-873	-1.121	-1.129
Profit/loss for the year	**2.624**	**2.526**	**-332**	**2.357**	**2.533**

Comments to General Dynamic's Income Statement and Balance Sheet

- *General Dynamics Reports under US GAAP*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (USD million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Accounts receivable	3.848	4.429	4.204	4.402	4.050
Contracts in process	3.411	3.618	3.475	3.346	3.214
Inventories	2.158	2.310	2.776	2.968	3.221
Other current assets	694	812	504	435	1.157
Total current operating assets	**10.111**	**11.169**	**10.959**	**11.151**	**11.642**
Accounts payable	2.736	2.895	2.469	2.248	2.057
Customer advances and deposits	4.465	5.011	6.042	6.584	7.335
Other current liabilities	3.203	3.239	3.109	3.362	3.858
Total current non-interest-bearing debt	**10.404**	**11.145**	**11.620**	**12.194**	**13.250**
Net working Capital	**-293**	**24**	**-661**	**-1.043**	**-1.608**
Property, plant and equipment	2.971	3.284	3.403	3.415	3.329
Contracts in process	1.462	1.550	1.489	1.434	1.377
Intangible assets	1.992	1.813	1.383	1.217	912
Goodwill	12.649	13.576	12.048	11.977	11.731
Other assets	747	842	1.731	953	1.976
Total non-current assets	**19.821**	**21.065**	**20.054**	**18.996**	**19.325**
Invested Capital (Net operating assets)	**19.528**	**21.089**	**19.393**	**17.953**	**17.717**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Total Equity	**13.316**	**13.232**	**11.390**	**14.501**	**11.829**
Short-term debt	-	-	-	-	501
Long-term debt	3.203	3.907	3.908	3.908	3.410
Other liabilities	5.622	6.599	7.391	4.845	6.365
Interest-bearing debt	**8.825**	**10.506**	**11.299**	**8.753**	**10.276**
Cash and cash equivalents	2.613	2.649	3.296	5.301	4.388
Interest-bearing assets	**2.613**	**2.649**	**3.296**	**5.301**	**4.388**
Net interest-bearing debt (NIBD)	**6.212**	**7.857**	**8.003**	**3.452**	**5.888**
Invested Capital	**19.528**	**21.089**	**19.393**	**17.953**	**17.717**

Northrop Grumman

Analytical Income Statement (USD million)	2010	2011	2012	2013	2014
Revenue	**28.143**	**26.412**	**25.218**	**24.661**	**23.979**
COGS	-22.294	-20.242	-19.128	-18.787	-17.916
Gross Profit	**5.849**	**6.170**	**6.090**	**5.874**	6.063
General and administrative expenses	-2.467	-2.350	-2.450	-2.256	-2.405
EBITDA	**3.382**	**3.820**	**3.640**	**3.618**	**3.658**
Depreciation and amortization	-555	-544	-510	-495	-462
Impairment					-
EBIT	**2.827**	**3.276**	**3.130**	**3.123**	**3.196**
Taxation (estimated)	-523	-1.049	-1.042	-994	-945
NOPAT	**2.304**	**2.227**	**2.088**	**2.129**	**2.251**
Net financial expenses (before tax)	**-461**	**-193**	**-165**	**-260**	**-259**
Tax shield	90	62	55	83	77
Net financial expenses (after tax)	**-371**	**-131**	**-110**	**-177**	**-182**
Net Special items (before tax)	**149**	**32**	**-**	**-**	**-**
Tax Shield	-29	-10	-	-	-
Net special items (after tax)	**120**	**22**	**-**	**-**	**-**
Total tax	-462	-997	-987	-911	-868
Profit/loss for the year	**2.053**	**2.118**	**1.978**	**1.952**	**2.069**

Comments to Northrop Grumman Income Statement and Balance Sheet

- *Northrup Grumman Reports under US GAAP*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (USD million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Accounts receivable	3.329	2.964	2.858	2.685	2.806
Prepaid expenses	244	411	300	350	369
Inventories	896	873	798	698	742
Deferred tax	392	496	574	605	404
Total current operating assets	**4.861**	**4.744**	**4.530**	**4.338**	**4.321**
Accounts payable	2.357	1.481	1.392	1.229	1.305
Customer advances and deposits	1.969	1.777	1.759	1.722	1.713
Other current liabilities	1.763	1.681	1.732	1.418	1.433
Total current non-interest-bearing debt	**6.089**	**4.939**	**4.883**	**4.369**	**4.451**
Net working Capital	**-1.228**	**-195**	**-353**	**-31**	**-130**
Property, plant and equipment	3.045	3.047	2.887	2.806	2.991
Goodwill	12.568	12.374	12.431	12.438	12.466
Non-current deferred tax	628	900	1.542	209	1.622
Other non-current assets	1.395	1.344	1.291	1.440	1.309
Total non-current assets	**17.636**	**17.665**	**18.151**	**16.893**	**18.388**
Invested Capital (Net operating assets)	**16.408**	**17.470**	**17.798**	**16.862**	**18.258**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Total Equity	**13.436**	**10.336**	**9.514**	**10.620**	**7.235**
Long-term debt	3.940	3.935	3.930	5.928	5.925
Pension and post-retirement plans	3.089	4.079	6.085	2.954	6.555
Other liabilities	918	926	958	1.064	965
Acrrued employee compensation	1.146	1.196	1.173	1.446	1.441
Liabilities of discontinued operations	2.792				
Interest-bearing debt	**11.885**	**10.136**	**12.146**	**11.392**	**14.886**
Cash and cash equivalents	3.701	3.002	3.862	5.150	3.863
Assets of discontinued operations	5.212				
Interest-bearing assets	**8.913**	**3.002**	**3.862**	**5.150**	**3.863**
Net interest-bearing debt (NIBD)	2.972	7.134	8.284	6.242	11.023
Invested Capital	**16.408**	**17.470**	**17.798**	**16.862**	**18.258**

Rolls Royce

Analytical Income Statement (NOK million)	2010	2011	2012	2013	2014
Revenue	**11.180**	**11.193**	**12.161**	**15.578**	**13.746**
COGS	-8.518	-8.266	-8.945	-11.397	-9.791
Gross Profit	**2.662**	**2.927**	**3.216**	**4.181**	**3.955**
Payroll	-836	-984	-993	-1.323	-1.124
Other	-329	-347	-358	-523	-699
Operating expenses	*-1.165*	*-1.331*	*-1.351*	*-1.846*	*-1.823*
EBITDA	**1.497**	**1.596**	**1.865**	**2.335**	**2.132**
Depreciation	-237	-241	-256	-372	-367
Amortisation	-130	-169	-231	-428	-375
Impairment	-	-	-	-	
EBIT	**1.130**	**1.186**	**1.378**	**1.535**	**1.390**
Taxation (estimated)	-256	-276	-215	-332	-467
NOPAT	**874**	**910**	**1.163**	**1.203**	**923**
Net financial expenses (before tax)	**-432**	**-84**	**689**	**-111**	**-1.331**
Tax shield	98	20	-107	24	318
Net financial expenses (after tax)	**-334**	**-64**	**582**	**-87**	**-1.013**
Net Special items (before tax)	**4**	**3**	**699**	**335**	**8**
Tax Shield	-1	-1	-109	-72	-2
Net special items (after tax)	**3**	**2**	**590**	**263**	**6**
Total tax	-159	-257	-431	-380	-151
Profit/loss for the year	**543**	**848**	**2.335**	**1.379**	**-84**

Comments to Rolls Royce Income Statement and Balance Sheet

- *Rolls Royce Reports under IFRS*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
  - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
  - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (GBP million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Inventories	2.429	2.561	2.726	3.319	2.768
Trade and other receivables	3.943	4.009	4.119	5.092	5.509
Taxation recoverable	6	20	33	16	19
Total current operating assets	**6.378**	**6.590**	**6.878**	**8.427**	**8.296**
Trade and other payables	5.910	6.236	6.387	7.045	6.791
Tax liabilities	170	138	126	204	184
Provisions	276	276	220	348	433
Total current non-interest-bearing debt	**6.356**	**6.650**	**6.733**	**7.597**	**7.408**
Net working Capital	**22**	**-60**	**145**	**830**	**888**
Intangible assets	2.884	2.882	2.901	4.987	4.804
Deferred tax assets	451	368	330	316	369
Property, plant and equipment	2.136	2.338	2.564	3.392	3.446
Total non-current assets	**5.471**	**5.588**	**5.795**	**8.695**	**8.619**
Trade and other payables	1.271	1.314	1.465	2.138	2.445
Tax liabilities			-	10	10
Deferred tax liabilities	438	445	584	882	1.228
Provisions	268	226	241	385	374
Non-interest-bearing debt	**1.977**	**1.985**	**2.290**	**3.415**	**4.057**
Invested Capital (Net operating assets)	**3.516**	**3.543**	**3.650**	**6.110**	**5.450**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	**3.979**	**4.519**	**6.105**	**6.303**	**6.387**
Borrowings	717	20	149	207	68
Other financial liabilities	105	111	312	1.976	209
Assets held for sale	-	135	-	-	-
Borrowings	1.135	1.184	1.234	2.164	2.193
Other financial liabilities	945	919	418	360	717
Post-retirement scheme benefits	1020	900	874	1041	1185
Interest-bearing debt	**3.922**	**3.269**	**2.987**	**5.748**	**4.372**
Other financial assets	250	91	115	74	107
Short-term investments	328	11	11	321	7
Cash and cash equivalents	2.859	1.310	2.585	3.990	2862
Investments - joint ventures and associates	393	1680	1800	601	539
Assets held for sale	9	313	4	6	1
Investments - other	11	10	6	27	31
Other financial assets	371	327	592	674	22
Post-retirement scheme surpluses	164	503	329	248	1740
Interest-bearing assets	**4.385**	**4.245**	**5.442**	**5.941**	**5.309**
Net interest-bearing debt (NIBD)	-463	-976	-2.455	-193	-937
Invested Capital	**3.516**	**3.543**	**3.650**	**6.110**	**5.450**

Aker Solutions

Analytical Income Statement (NOK million)	2010	2011	2012	2013	2014
Revenue	**33.365**	**36.474**	**41.632**	**42.900**	**32.971**
COGS	-14.589	-16.233	-19.835	-20.004	-13.561
Gross Profit	**18.776**	**20.241**	**21.797**	**22.896**	**19.410**
Payroll	-10.727	-11.353	-12.086	-14.345	-11.171
Other	-4.741	-5.443	-5.540	-5.048	-5.565
Operating expenses	*-15.468*	*-16.796*	*-17.626*	*-19.393*	*-16.736*
EBITDA	**3.308**	**3.445**	**4.171**	**3.503**	**2.674**
Depreciation, amortization and impairment	-817	-876	-895	-1.618	-665
EBIT	**2.491**	**2.569**	**3.276**	**1.885**	**2.009**
Taxation (estimated)	-585	254	-702	-456	-571
NOPAT	**1.906**	**2.823**	**2.574**	**1.429**	**1.438**
Net financial expenses (before tax)	**-523**	**-496**	**-607**	**-487**	**-193**
Tax shield	168	115	139	137	55
Net financial expenses (after tax)	**-355**	**-381**	**-468**	**-350**	**-138**
Net Special items (before tax)	**676**	**3.663**	**200**	**262**	**-**
Tax Shield	-218	-852	-46	-74	-
Net special items (after tax)	**458**	**2.811**	**154**	**188**	**-**
Total tax	-634	-482	-609	-393	-516
Profit/loss for the year	**2.010**	**5.254**	**2.260**	**1.267**	**1.300**

Comments to Aker Solutions' Income Statement and Balance Sheet

- *Aker Solutions Reports under IFRS*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
  - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
  - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (NOK million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Current tax assets	238	103	68	106	106
Inventories	1.686	1.765	2.360	2.492	862
Trade and other receivables	14.870	12.117	16.524	17.659	12.042
Total current operating assets	**16.794**	**13.985**	**18.952**	**20.257**	**13.010**
Current tax liabilities	115	86	37	38	42
Provisions	1.039	935	1.173	872	581
Trade and other payables	16.278	12.934	16.012	17.409	13.075
Total current non-interest-bearing debt	**17.432**	**13.955**	**17.222**	**18.319**	**13.698**
Net working Capital	**-638**	**30**	**1.730**	**1.938**	**-688**
Property, plant and equipment	7.494	7.409	10.041	9.815	3.603
Deferred tax assets	487	533	570	600	380
Intangible assets	6.783	6.310	6.884	8.242	5.763
Other non-current operating assets	221	191	168	162	27
Equity accounted investees	424	246	283	440	-
Total non-current assets	**15.409**	**14.689**	**17.946**	**19.259**	**9.773**
Deferred tax liabilities	829	1.310	1.828	2.076	699
Other non-current liabilities	753	661	415	356	22
Non-interest-bearing debt	**1.582**	**1.971**	**2.243**	**2.432**	**721**
Invested Capital (Net operating assets)	**13.189**	**12.748**	**17.433**	**18.765**	**8.364**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Equity (estimated)	**10.354**	**11.317**	**11.980**	**13.555**	**5.893**
Non-current borrowings	7.508	5.371	6.683	7.420	3.154
Employee benefits obligations	647	577	805	748	670
Current borrowings	716	629	1.008	3.896	674
Derivative financial instruments	243	247	274	834	2.581
Assets held for sale - liabilities	1.539	45	-	953	-
Interest-bearing debt	**10.653**	**6.869**	**8.770**	**13.851**	**7.079**
Derivative financial instruments	386	540	441	1.544	1.187
Current interest-bearing receivables	621	534	421	511	82
Cash and cash equivalents	3.198	1.308	1.214	2.345	3.339
Employee benefit assets	95	103			-
Non-current interest-bearing receivables	225	704	672	159	-
Assets held for sale	3.136	1.831	-	3.437	-
Other investments	157	418	569	645	-
Interest-bearing assets	**7.818**	**5.438**	**3.317**	**8.641**	**4.608**
Net interest-bearing debt (NIBD)	2.835	1.431	5.453	5.210	2.471
Invested Capital	**13.189**	**12.748**	**17.433**	**18.765**	**8.364**

Halliburton

Analytical Income Statement (USD million)	2010	2011	2012	2013	2014
Revenue	**17.973**	**24.829**	**28.503**	**29.402**	**32.870**
COGS	-13.616	-18.452	-22.141	-23.031	-25.533
Gross Profit	**4.357**	**6.377**	**6.362**	**6.371**	**7.337**
General and administrative expenses	-229	-281	-275	-333	-309
EBITDA	**4.128**	**6.096**	**6.087**	**6.038**	**7.028**
Depreciation and amortisation	-1.119	-1.359	-1.628	-1.900	-2.126
Impairment	-	-	-	-	-
EBIT	**3.009**	**4.737**	**4.459**	**4.138**	**4.902**
Taxation (estimated)	-956	-1.587	-1.425	-968	-1.309
NOPAT	**2.053**	**3.150**	**3.034**	**3.170**	**3.593**
Net financial expenses (before tax)	**-354**	**-288**	**-337**	**-374**	**-385**
Tax shield	114	93	109	88	104
Net financial expenses (after tax)	**-240**	**-195**	**-228**	**-286**	**-281**
Net Special items (before tax)	**33**	**-171**	**-252**	**-991**	**258**
Tax Shield	-11	55	81	232	-70
Net special items (after tax)	**22**	**-116**	**-171**	**-759**	**188**
Total tax	-853	-1.439	-1.235	-648	-1.275
Profit/loss for the year	**1.835**	**2.839**	**2.635**	**2.125**	**3.500**

Comments to Halliburton's Income Statement and Balance Sheet

- *Halliburton Reports under US GAAP*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

- *The liabilities related to the Macondo well incident are related to legal fees and claims from lawsuits. This item is therefore considered as 'non-interest-bearing'.*

Analytical Balance Sheet (USD million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Receivables	3.924	5.084	5.787	6.181	7.564
Inventories	1.940	2.570	3.186	3.305	3.571
Deferred tax	257	-	351	388	421
Prepaid expenses	653	321	608	737	658
Other current assets	714	904	670	737	563
Total current operating assets	**7.488**	**8.879**	**10.602**	**11.348**	**12.777**
Accounts payable	1.139	1.826	2.041	2.365	2.814
Deferred revenue	266	309	307	350	756
Loss contingency for Macondo well incident	-	-	-	278	367
Other current liabilties	636	1124	1474	1004	913
Accrued employee benefits and compensation	716	862	930	1029	1033
Total current non-interest-bearing debt	**2.757**	**4.121**	**4.752**	**5.026**	**5.883**
Net working Capital	**4.731**	**4.758**	**5.850**	**6.322**	**6.894**
Property, plant and equipment	6842	8492	10257	11322	12475
Goodwill	1315	1776	2135	2168	2330
Other assets	1254	1832	1932	2029	2367
Total non-current assets	**9.411**	**12.100**	**14.324**	**15.519**	**17.172**
Loss contingency for Macondo well incident	-		300	1.022	691
Non-interest-bearing debt	**-**	**-**	**300**	**1.022**	**691**
Invested Capital (Net operating assets)	**14.142**	**16.858**	**19.874**	**20.819**	**23.375**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Total Equity	**10.387**	**13.216**	**15.790**	**13.615**	**16.298**
Long-term debt	3.824	4.820	4.820	7.816	7.840
Employee compensation and benefits	487	534	607	584	439
Other non-current liabilities	842	986	1.141	1.160	1.089
Interest-bearing debt	**5.153**	**6.340**	**6.568**	**9.560**	**9.368**
Cash and cash equivalents	1398	2698	2484	2356	2291
Interest-bearing assets	**1.398**	**2.698**	**2.484**	**2.356**	**2.291**
Net interest-bearing debt (NIBD)	**3.755**	**3.642**	**4.084**	**7.204**	**7.077**
Invested Capital	**14.142**	**16.858**	**19.874**	**20.819**	**23.375**

Cameron

Analytical Income Statement (USD million)	2010	2011	2012	2013	2014
Revenue	**6.135**	**6.959**	**8.502**	**9.838**	**10.381**
COGS	-4.212	-4.838	-6.024	-7.016	-7.464
Gross Profit	**1.923**	**2.121**	**2.478**	**2.822**	**2.917**
General and administrative expenses	-862	-1.002	-1.161	-1.363	-1.287
EBITDA	**1.061**	**1.119**	**1.317**	**1.459**	**1.630**
Depreciation and amortisation	-202	-207	-255	-315	-348
EBIT	**859**	**912**	**1.062**	**1.144**	**1.282**
Taxation (estimated)	-200	-181	-213	-280	-309
NOPAT	**659**	**731**	**849**	**864**	**973**
Net financial expenses (before tax)	**-125**	**-261**	**-124**	**-192**	**-202**
Tax shield	29	52	25	46	48
Net financial expenses (after tax)	**-96**	**-209**	**-99**	**-146**	**-154**
Net Special items (before tax)	**-**	**-**	**-**	**-25**	**-11**
Tax Shield	-	-	-	6	3
Net special items (after tax)	**-**	**-**	**-**	**-19**	**-8**
Total tax	-171	-129	-188	-228	-258
Profit/loss for the year	**563**	**522**	**750**	**699**	**811**

Comments to Cameron's Income Statement and Balance Sheet

- *Cameron Reports under US GAAP*

- *'Net financial items' are interest-bearing and thus considered as 'financial items'*
    - *The tax-effect related to this item is isolated*

- *'Net special items' are non-core items and is not related to 'operations'*
    - *The tax effect related to this item is isolated*

- *The reclassification of the Balance Sheet have been based on the guidelines for reclassification by Petersen & Plenborg (2012, pp, 73-90). Consequently, the respective items have been separated as either 'interest bearing' or 'non-interest bearing'.*

Analytical Balance Sheet (USD million)	2010	2011	2012	2013	2014
Invested Capital (Net operating assets)	**2010**	**2011**	**2012**	**2013**	**2014**
Receivables	1.056	1.757	1.967	2.719	2.389
Inventories	1.779	2.400	2.741	3.132	2.929
Other current assets	265	349	500	463	608
Total current operating assets	**3.100**	**4.506**	**5.208**	**6.314**	**5.926**
Accounts payable	2.016	2.670	3.046	3.883	3.748
Accrued income taxes	38	-	94	80	258
Total current non-interest-bearing debt	**2.054**	**2.670**	**3.140**	**3.963**	**4.006**
Net working Capital	**1.046**	**1.836**	**2.068**	**2.351**	**1.920**
Property, plant and equipment	1.248	1.500	1.765	2.037	1.964
Goodwill	1.475	1.615	1.924	2.925	2.461
Intangibles	-	-	336	904	728
Other assets	349	418	222	214	187
Total non-current assets	**3.072**	**3.533**	**4.247**	**6.080**	**5.340**
Deferred income taxes	96	185	132	277	193
Non-interest-bearing debt	**96**	**185**	**132**	**277**	**193**
Invested Capital (Net operating assets)	**4.022**	**5.184**	**6.183**	**8.154**	**7.067**
Invested Capital	**2010**	**2011**	**2012**	**2013**	**2014**
Total Equity	**4.392**	**4.707**	**5.566**	**6.915**	**5.444**
Long-term debt	773	1.574	2.047	2.563	2.819
Short-term debt	520	11	29	297	263
Other long-term liabilities	170	215	244	233	167
Interest-bearing debt	**1.463**	**1.800**	**2.320**	**3.093**	**3.249**
Cash and cash equivalents	1.833	899	1.186	1.813	1.513
Short-term investments	-	424	517	41	113
Interest-bearing assets	**1.833**	**1.323**	**1.703**	**1.854**	**1.626**
Net interest-bearing debt (NIBD)	-370	477	617	1.239	1.623
Invested Capital	**4.022**	**5.184**	**6.183**	**8.154**	**7.067**

A.21. Tier-One Peers – Index and Common-size analysis

Income Statement – Defense

The following section illustrates index and common size digits on key line items form the income statements of the defense peers.

Index analysis – Income Statement

Lockheed Martin	**Revenue**	100	102	103	99	100
	EBITDA	100	97	105	110	130
	NOPAT	100	101	102	110	132
	Net Earnings	100	92	95	104	126
Raytheon	**Revenue**	100	99	97	94	91
	EBITDA	100	108	114	112	120
	NOPAT	100	101	103	106	119
	Net Earnings	100	101	103	108	123
General Dynamics	**Revenue**	100	101	97	96	95
	EBITDA	100	100	83	94	97
	NOPAT	100	96	-19	91	98
	Net Earnings	100	96	-13	90	97
Northrop Grumman	**Revenue**	100	94	90	88	85
	EBITDA	100	113	108	107	108
	NOPAT	100	97	91	92	98
	Net Earnings	100	103	96	95	101

Common-Size Analysis – Income Statement

Lockheed Martin					
Revenue	100%	100%	100%	100%	100%
EBITDA	11%	11%	11%	12%	15%
NOPAT	6%	6%	6%	7%	8%
Net Earnings	6%	6%	6%	7%	8%

Raytheon					
Revenue	100%	100%	100%	100%	100%
EBITDA	12%	13%	14%	14%	16%
NOPAT	8%	8%	8%	9%	10%
Net Earnings	7%	8%	8%	8%	10%

General Dynamics					
Revenue	100%	100%	100%	100%	100%
EBITDA	14%	14%	12%	14%	14%
NOPAT	8%	8%	-2%	8%	9%
Net Earnings	8%	8%	-1%	8%	8%

Northrop Grumman					
Revenue	100%	100%	100%	100%	100%
EBITDA	12%	14%	14%	15%	15%
NOPAT	8%	8%	8%	9%	9%
Net Earnings	7%	8%	8%	8%	9%

Balance Sheet – Defense

The following section illustrates index and common size digits on key line items form the balance sheet's of the defense peers

Index Analysis - Balance Sheet

Lockheed Martin	Net working Capital	100	2	80	70	80
	Total non-current assets	100	107	112	103	111
	Non-interest-bearing debt	100	105	113	111	115
	Invested Capital (Net operating assets)	100	97	108	98	108
	Equity (estimated)	100	29	1	141	97
	Net interest-bearing debt (NIBD)	100	111	130	90	110
	Invested Capital	100	97	108	98	108
Raytheon	Net working Capital	100	103	87	57	66
	Total non-current assets	100	106	111	104	113
	Non-interest-bearing debt	100	3	6	220	0
	Invested Capital (Net operating assets)	100	107	114	107	118
	Total Equity	100	84	83	113	98
	Net interest-bearing debt (NIBD)	100	146	168	95	151
	Invested Capital	100	107	114	107	118
General Dynamics	Net working Capital	100	-8	226	356	549
	Total non-current assets	100	106	101	96	97
	Invested Capital (Net operating assets)	100	108	99	92	91
	Total Equity	100	99	86	109	89
	Net interest-bearing debt (NIBD)	100	126	129	56	95
	Invested Capital	100	108	99	92	91
Northrop Grumman	Net working Capital	100	16	29	3	11
	Total non-current assets	100	100	103	96	104
	Invested Capital (Net operating assets)	100	106	108	103	111
	Total Equity	100	77	71	79	54
	Net interest-bearing debt (NIBD)	100	240	279	210	371
	Invested Capital	100	106	108	103	111

Common-Size Analysis - Balance Sheet

Lockheed Martin					
Net working Capital	10%	0%	7%	7%	7%
Total non-current assets	107%	117%	110%	111%	110%
Non-interest-bearing debt	16%	17%	17%	18%	17%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Equity (estimated)	17%	5%	0%	24%	15%
Net interest-bearing debt (NIBD)	83%	95%	100%	76%	85%
Invested Capital	100%	100%	100%	100%	100%

Raytheon					
Net working Capital	-8%	-7%	-6%	-4%	-4%
Total non-current assets	109%	107%	106%	106%	104%
Non-interest-bearing debt	1%	0%	0%	2%	0%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Total Equity	63%	50%	46%	67%	53%
Net interest-bearing debt (NIBD)	37%	50%	54%	33%	47%
Invested Capital	100%	100%	100%	100%	100%

General Dynamics					
Net working Capital	-1%	0%	-3%	-6%	-9%
Total non-current assets	101%	100%	103%	106%	109%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Total Equity	68%	63%	59%	81%	67%
Net interest-bearing debt (NIBD)	32%	37%	41%	19%	33%
Invested Capital	100%	100%	100%	100%	100%

Northrop Grumman					
Net working Capital	-7%	-1%	-2%	0%	-1%
Total non-current assets	107%	101%	102%	100%	101%
Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
Total Equity	82%	59%	53%	63%	40%
Net interest-bearing debt (NIBD)	18%	41%	47%	37%	60%
Invested Capital	100%	100%	100%	100%	100%

Income Statement – Maritime

The following section illustrates index and common size digits on key line items form the income statements of the maritime peers.

Index analysis – Income Statement

Rolls Royce	**Revenue**	100	100	109	139	123
	EBITDA	100	107	125	156	142
	NOPAT	100	104	133	138	106
	Net Earnings	100	156	430	254	-15
Aker Solutions	**Revenue**	100	109	125	129	99
	EBITDA	100	104	126	106	81
	NOPAT	100	148	135	75	75
	Net Earnings	100	261	112	63	65
Halliburton	**Revenue**	100	138	159	164	183
	EBITDA	100	148	147	146	170
	NOPAT	100	153	148	154	175
	Net Earnings	100	155	144	116	191
Cameron	**Revenue**	100	113	139	160	169
	EBITDA	100	105	124	138	154
	NOPAT	100	111	129	131	148
	Net Earnings	100	93	133	124	144

Common-Size Analysis – Income Statement

Rolls Royce						
	Revenue	100%	100%	100%	100%	100%
	EBITDA	13%	14%	15%	15%	0%
	NOPAT	8%	8%	10%	8%	0%
	Net Earnings	5%	8%	19%	9%	0%

Aker Solutions						
	Revenue	100%	100%	100%	100%	100%
	EBITDA	10%	9%	10%	8%	8%
	NOPAT	6%	8%	6%	3%	4%
	Net Earnings	6%	14%	5%	3%	4%

Halliburton						
	Revenue	100%	100%	100%	100%	100%
	EBITDA	23%	25%	21%	21%	21%
	NOPAT	11%	13%	11%	11%	11%
	Net Earnings	10%	11%	9%	7%	11%

Cameron						
	Revenue	100%	100%	100%	100%	100%
	EBITDA	17%	16%	15%	15%	16%
	NOPAT	11%	11%	10%	9%	9%
	Net Earnings	9%	8%	9%	7%	8%

Balance Sheet – Maritime

The following section illustrates index and common size digits on key line items form the balance sheet's of the maritime peers

Index analysis – Balance Sheet

Rolls Royce						
Net working Capital	100	-273	659	3773	4036
Total non-current assets	100	102	106	159	158
Non-interest-bearing debt	100	100	116	173	205
Invested Capital (Net operating assets)	100	101	104	174	155
Equity (estimated)	100	114	153	158	161
Net interest-bearing debt (NIBD)	100	211	530	42	202
Invested Capital	100	101	104	174	155

Aker Soultions						
Net working Capital	100	-5	-271	-304	108
Total non-current assets	100	95	116	125	63
Non-interest-bearing debt	100	125	142	154	46
Invested Capital (Net operating assets)	100	97	132	142	63
Equity (estimated)	100	109	116	131	57
Net interest-bearing debt (NIBD)	100	50	192	184	87
Invested Capital	100	97	132	142	63

Halliburton						
Net working Capital	100	101	124	134	146
Total non-current assets	100	129	152	165	182
Invested Capital (Net operating assets)	100	119	141	147	165
Total Equity	100	127	152	131	157
Net interest-bearing debt (NIBD)	100	97	109	192	188
Invested Capital	100	119	141	147	165

Cameron						
Net working Capital	100	176	198	225	184
Total non-current assets	100	115	138	198	174
Invested Capital (Net operating assets)	100	129	154	203	176
Total Equity	100	107	127	157	124
Net interest-bearing debt (NIBD)	100	-129	-167	-335	-439
Invested Capital	100	129	154	203	176

Common-Size Analysis – Balance Sheet

Rolls Royce	Net working Capital	1%	-2%	4%	14%	16%
	Total non-current assets	156%	158%	159%	142%	158%
	Non-interest-bearing debt	56%	56%	63%	56%	74%
	Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
	Equity (estimated)	113%	128%	167%	103%	117%
	Net interest-bearing debt (NIBD)	-13%	-28%	-67%	-3%	-17%
	Invested Capital	100%	100%	100%	100%	100%
Aker Soultions	Net working Capital	-5%	0%	10%	10%	-8%
	Total non-current assets	117%	115%	103%	103%	117%
	Non-interest-bearing debt	12%	15%	13%	13%	9%
	Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
	Equity (estimated)	79%	89%	69%	72%	70%
	Net interest-bearing debt (NIBD)	21%	11%	31%	28%	30%
	Invested Capital	100%	100%	100%	100%	100%
Halliburton	Net working Capital	33%	28%	29%	30%	29%
	Total non-current assets	67%	72%	72%	75%	73%
	Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
	Total Equity	73%	78%	79%	65%	70%
	Net interest-bearing debt (NIBD)	27%	22%	21%	35%	30%
	Invested Capital	100%	100%	100%	100%	100%
Cameron	Net working Capital	26%	35%	33%	29%	27%
	Total non-current assets	76%	68%	69%	75%	76%
	Invested Capital (Net operating assets)	100%	100%	100%	100%	100%
	Total Equity	109%	91%	90%	85%	77%
	Net interest-bearing debt (NIBD)	-9%	9%	10%	15%	23%
	Invested Capital	100%	100%	100%	100%	100%

A.22. Tier-One Peer Group – WACC Calculations

This section will present the inputs used in calculating the respective peers weighted average cost of capital. The reason weighted average cost of capital is calculated for each individual peer, is that WACC is included in the economic profit formula. And, thus will influence the findings in the historical profitability analysis. The general WACC formula is applied:

$$WACC = \frac{D}{E + D} \times R_{D_{Aftertax}} + \frac{E}{D + E} \times R_E$$

To calculate R_E, the CAPM model is applied:

$$R_E = R_F + \beta \times (R_M - R_{F)}$$

After tax Cost of Debt

For each of the peers the risk free rate is equal to a 10 year treasury bond in their respective home markets.

Risk Free Rate	
US	0,0194
UK	0,0196
NOR	0,0143

Further, a credit spread is added to the respective risk free rates of the peer in question. The credit spreads are calculated based on an implied credit rating procedure (Petersen & Plenborg, pp, 278-282, 2012).

Implied Credit Rating – Defense Peers

Rating of Lockheed Martin	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	18,1	14,1	18,2	18,1	24,4	
EBITDA interest cover (x)	22,8	17,6	22,2	22,9	29,2	
Operating Cash Flow/Total Liabilities (%)	12,6%	11,0%	10,6%	14,3%	15,0%	
Return on Invested Capital	20%	20%	20%	22%	25%	
Total Liabilities/Total Capital (%)	90%	97%	100%	86%	91%	
EBIT interest cover (x)	AA	AA	AA	AA	AAA	
EBITDA interest cover (x)	AA	AA	AA	AA	AAA	
Operating Cash Flow/Total Liabilities (%)	BBB	BBB	BBB	BBB	A	
Return on Invested Capital	A	A	A	AA	AA	
Total Liabilities/Total Capital (%)	<CCC	<CCC	<CCC	CCC	<CCC	
Yearly rating	**A**	**A**	**A**	**A**	**A**	**A**

Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	1	1	1	1	0	
EBITDA interest cover (x)	1	1	1	1	0	
Operating Cash Flow/Total Liabilities (%)	3	3	3	3	2	
Return on Invested Capital	2	2	2	1	1	
Total Liabilities/Total Capital (%)	7	7	7	6	7	
Yearly Rating	**2,8**	**2,8**	**2,8**	**2,4**	**2,0**	**2,6**
Spread						**1,3-4,7**

Rating of Raytheon	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	19,3	23,6	20,8	23,0	22,1	
EBITDA interest cover (x)	22,3	27,3	24,0	26,4	25,1	
Operating Cash Flow/Total Liabilities (%)	16,8%	14,2%	13,9%	17,4%	15,6%	
Return on Invested Capital	17%	17%	17%	18%	17%	
Total Liabilities/Total Capital (%)	60%	68%	69%	57%	65%	
EBIT interest cover (x)	AA	AAA	AA	AAA	AAA	
EBITDA interest cover (x)	AA	AAA	AA	AA	AA	
Operating Cash Flow/Total Liabilities (%)	A	BBB	BBB	AA	AA	
Return on Invested Capital	BBB	BBB	BBB	BBB	BBB	
Total Liabilities/Total Capital (%)	BBB	BB	BB	BBB	BB	
Yearly rating	**A**	**A**	**A**	**AA**	**AA**	**A**

Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	1	0	1	0	0	
EBITDA interest cover (x)	1	0	1	1	1	
Operating Cash Flow/Total Liabilities (%)	2	3	3	1	1	
Return on Invested Capital	3	3	3	3	3	
Total Liabilities/Total Capital (%)	3	4	4	3	4	
Yearly Rating	**2,0**	**2,0**	**2,4**	**1,6**	**1,8**	**2,0**
Spread						**0,7-2,4**

Rating of General Dynamics	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	36,7	51,6		68,5	63,6	
EBITDA interest cover (x)	42,0	61,1		78,9	71,7	
Operating Cash Flow/Total Liabilities (%)	14,5%	12,3%	-0,2%	12,2%	11,7%	
Return on Invested Capital	20%	18%	4%	21%	22%	
Total Liabilities/Total Capital (%)	59%	62%	67%	59%	67%	
EBIT interest cover (x)	AAA	AAA		AAA	AAA	
EBITDA interest cover (x)	AAA	AAA		AAA	AAA	
Operating Cash Flow/Total Liabilities (%)	BBB	BBB	B	BBB	BBB	
Return on Invested Capital	A	BBB	BB	A	AA	
Total Liabilities/Total Capital (%)	BBB	BBB	BB	BBB	BB	
Yearly rating	**AA**	**AA**	**BB**	**AA**	**AA**	**A**

Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	0	0		0	0	
EBITDA interest cover (x)	0	0		0	0	
Operating Cash Flow/Total Liabilities (%)	3	3	5	3	3	
Return on Invested Capital	2	3	4	2	1	
Total Liabilities/Total Capital (%)	3	3	4	3	4	
Yearly Rating	**1,6**	**1,8**	**4,3**	**1,6**	**1,6**	**2,2**
Spread						**0,8-3,6**

Rating of Northrup Grumman	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	7,6	25,1	28,4	17,6	17,5	
EBITDA interest cover (x)	9,1	29,3	33,1	20,4	20,0	
Operating Cash Flow/Total Liabilities (%)	16,2%	18,7%	15,6%	17,2%	14,4%	
Return on Invested Capital	17,2%	18,8%	17,6%	18,5%	17,5%	
Total Liabilities/Total Capital (%)	57,2%	59,3%	64,2%	59,7%	72,8%	
EBIT interest cover (x)	A	AAA	AAA	AA	AA	
EBITDA interest cover (x)	A	AAA	AAA	AA	AA	
Operating Cash Flow/Total Liabilities (%)	A	A	A	A	BBB	
Return on Invested Capital	BBB	BBB	BBB	BBB	BBB	
Total Liabilities/Total Capital (%)	BBB	BBB	BB	BBB	BB	
Yearly rating	**A**	**AA**	**BBB**	**A**	**A**	**A**

Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	2	0	0	1	1	
EBITDA interest cover (x)	2	0	0	1	1	
Operating Cash Flow/Total Liabilities (%)	2	2	2	2	3	
Return on Invested Capital	3	3	3	3	3	
Total Liabilities/Total Capital (%)	3	3	4	3	4	
Yearly Rating	**2,4**	**1,6**	**3,0**	**2,0**	**2,4**	**2,3**
Spread						**0,8-3,6**

Implied Credit Rating – Maritime Peers

Rating of Rolls Royce	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	3,4	18,4	-2,4	17,6	1,4	
EBITDA interest cover (x)	4,5	24,8	-3,2	26,8	2,1	
Operating Cash Flow/Total Liabilities (%)	11%	11%	12%	12%	13%	
Return on Invested Capital	32%	33%	38%	25%	26%	
Total Liabilities/Total Capital (%)	75%	72%	66%	73%	71%	
EBIT interest cover (x)	BB	AA	<CCC	AA	B	
EBITDA interest cover (x)	BB	AA	<CCC	AAA	B	
Operating Cash Flow/Total Liabilities (%)	BBB	BBB	BBB	BBB	BBB	
Return on Invested Capital	AA	AA	AAA	AA	AA	
Total Liabilities/Total Capital (%)	B	B	B	B	B	
Yearly rating	**BBB**	**A**	**BB**	**A**	**BBB**	**BBB**
Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	4	1	7	1	4	
EBITDA interest cover (x)	4	1	7	0	4	
Operating Cash Flow/Total Liabilities (%)	3	3	3	3	3	
Return on Invested Capital	1	1	0	1	1	
Total Liabilities/Total Capital (%)	5	5	5	5	5	
Yearly Rating	**3,4**	**2,2**	**4,4**	**2,0**	**3,4**	**3,1**
Spread						**1,3-4,7**

Rating of AKSO	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	7,0	6,7	7,0	5,4	14,5	
EBITDA interest cover (x)	9,3	9,0	8,9	10,0	19,4	
Operating Cash Flow/Total Liabilities (%)	6%	9%	9%	4%	7%	
Return on Invested Capital	19%	20%	19%	10%	24%	
Total Liabilities/Total Capital (%)	74%	67%	70%	72%	78%	
EBIT interest cover (x)	A	A	A	BBB	AA	
EBITDA interest cover (x)	A	BBB	BBB	A	AA	
Operating Cash Flow/Total Liabilities (%)	BB	BBB	BBB	BB	BB	
Return on Invested Capital	A	A	A	B	AA	
Total Liabilities/Total Capital (%)	BB	BBB	BBB	BB	B	
Yearly rating	**A**	**A**	**A**	**BBB**	**A**	**AA**
Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	2	2	2	3	1	
EBITDA interest cover (x)	2	3	3	2	1	
Operating Cash Flow/Total Liabilities (%)	4	3	3	4	4	
Return on Invested Capital	2	2	2	5	1	
Total Liabilities/Total Capital (%)	4	3	3	4	5	
Yearly Rating	**2,8**	**2,6**	**2,6**	**3,6**	**2,4**	**2,8**
Spread						**1,3-4,7**

Rating of Halliburton	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	12,5	24,3	19,5	14,5	17,5	
EBITDA interest cover (x)	17,2	31,3	26,7	21,1	25,0	
Operating Cash Flow/Total Liabilities (%)	41%	45%	42%	35%	36%	
Return on Invested Capital	21%	28%	22%	20%	21%	
Total Liabilities/Total Capital (%)	43%	44%	42%	53%	49%	
EBIT interest cover (x)	AA	AAA	AA	AA	AA	
EBITDA interest cover (x)	AA	AAA	AAA	AA	AA	
Operating Cash Flow/Total Liabilities (%)	AA	AA	AA	AA	AA	
Return on Invested Capital	AA	AA	AA	A	A	
Total Liabilities/Total Capital (%)	A	A	A	BBB	BBB	
Yearly rating	**AA**	**AAA**	**AA**	**AA**	**AA**	**AA**
Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	1	0	1	1	1	
EBITDA interest cover (x)	1	0	0	1	1	
Operating Cash Flow/Total Liabilities (%)	1	1	1	1	1	
Return on Invested Capital	1	1	1	2	1	
Total Liabilities/Total Capital (%)	2	2	2	3	3	
Yearly Rating	**1,2**	**0,8**	**1,0**	**1,6**	**1,4**	**1,2**
Spread						**0,7-2,4**

Rating of Cameron	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	9,0	4,4	10,7	7,8	8,3	
EBITDA interest cover (x)	11,1	5,3	13,3	10,0	10,6	
Operating Cash Flow/Total Liabilities (%)	24,6%	21,3%	20,2%	16,8%	18,4%	
Return on Invested Capital	21,4%	17,6%	17,2%	14,0%	18,1%	
Total Liabilities/Total Capital (%)	45,1%	49,7%	50,1%	51,5%	57,8%	
EBIT interest cover (x)	A	BBB	AA	A	A	
EBITDA interest cover (x)	A	BB	AA	A	A	
Operating Cash Flow/Total Liabilities (%)	A	A	A	A	A	
Return on Invested Capital	A	BBB	BBB	BBB	BBB	
Total Liabilities/Total Capital (%)	A	BBB	BBB	BBB	BBB	
Yearly rating	**A**	**BBB**	**A**	**A**	**A**	**A**
Calculation	2010	2011	2012	2013	2014	Avg
EBIT interest cover (x)	2	3	1	2	2	
EBITDA interest cover (x)	2	4	1	2	2	
Operating Cash Flow/Total Liabilities (%)	2	2	2	2	2	
Return on Invested Capital	2	3	3	3	3	
Total Liabilities/Total Capital (%)	2	3	3	3	3	
Yearly Rating	**2,0**	**3,0**	**2,0**	**2,4**	**2,4**	**2,4**
Spread						**0,8-3,6**

Calculated Credit Spread based on Implied Credit Rating

Adjusted US Key industrail financial ratios

Values	AAA	AA	A	BBB	BB	B	CCC
	0	1	2	3	4	5	6
EBIT interest cover (x)	21,4	10,1	6,1	3,7	2,1	0,8	0,1
EBITDA interest cover (x)	26,5	12,9	9,1	5,8	3,4	1,8	1,3
Operating Cash Flow/Total Liabilities (%)	84,2	25,2	15	8,5	2,6	-3,2	-12,9
Return on Invested Capital	34,9	21,7	19,4	13,6	11,6	6,6	1
Total Liabilities/Total Capital (%)	22,9	37,7	42,5	48,2	62,6	74,8	87,7

Definitions	
EBIT interest cover (x)	= EBIT / Net Financial Expenses
EBITDA interest cover (x)	= EBITDA / Net Financial Expenses
Operating Cash Flow/Total Liabilities (%)	= CFO / Total Liabilities
Return on Invested Capital	= EBIT / Invested Capital
Total Liabilities/Total Capital (%)	= Total Liabilities

* End-of-year figures have been used for balance sheet items

Source: Authors' own compilation based on (Petersen & Plenborg, pp. 277-291, 2012)

Credit spread

		AAA	AA	A	BBB	BB	B
10	**Upper limit**	1,900	2,400	3,600	4,700	11,200	13,100
9		1,770	2,230	3,320	4,360	10,340	12,110
8		1,640	2,060	3,040	4,020	9,480	11,120
7		1,510	1,890	2,760	3,680	8,620	10,130
6		1,380	1,720	2,480	3,340	7,760	9,140
5		1,250	1,550	2,200	3,000	6,900	8,150
4		1,120	1,380	1,920	2,660	6,040	7,160
3		0,990	1,210	1,640	2,320	5,180	6,170
2		0,860	1,040	1,360	1,980	4,320	5,180
1		0,730	0,870	1,080	1,640	3,460	4,190
0	**Lower limit**	0,600	0,700	0,800	1,300	2,600	3,200

Defence Peers				Maritime Peers			

Credit Spread	Rating	Rating	Spread	Credit Spread	Rating	Rating	Spread
Lockheed Martin	A	2,6	2,480	AKSO	AA	2,8	3,040
Raytheon	A	2,0	1,080	Rolls Royce	BBB	3,1	1,640
General Dynamics	A	2,2	1,360	Cameron	A	2,4	1,920
Northrup Grumman	A	2,3	1,640	Halliburton	AA	1,2	1,040

Source: Authors' own compilation based on(Petersen & Plenborg, pp. 277-291, 2012)

Explanation of the findings in the Credit Analysis

The exact credit spread for each individual peer was established through the implied credit rating found in the implied credit rating tables above. For example, Lockheed Martin's credit spread of 2.480 is based on the fact that they received an average of 2.6 in the credit analysis, which corresponds to an A credit rating. According to Petersen & Plenborg's framework, this rating corresponds to a credit spread between 0.8 and 3.6. As this finding is not very specific, the 'Credit Spread' table above was constructed, where the upper and lower limits have been enlarged (0-10). Hence, Lockheed Martin's Credit Rating of 2.6 corresponds to a slightly weak A-rating and a credit spread of 2.480.

Tax – Rates

The peer's historical average effective tax rates calculated in the reclassification process is applied as the tax rate when calculating the after tax cost of debt.

After Tax Cost of Debt – Calculation

Defence peers					Maritime peers			
	rd	rf	spread	1-t		rd	rf	spread	1-t
Lockheed Martin	3,09%	1,94%	2,48%	0,70	Rolls Royce	2,85%	1,96%	1,64%	0,79
Raytheon	2,17%	1,94%	1,08%	0,72	AKSO	3,26%	1,43%	3,04%	0,73
General Dynamic	2,29%	1,94%	1,36%	0,69	Cameron	3,00%	1,94%	1,92%	0,78
Northrup Grumma	2,53%	1,94%	1,64%	0,71	Halliburton	2,10%	1,94%	1,04%	0,71

Cost of Equity

R_f: The risk-free rates that were used in calculating the cost of debt will also be used when calculating cost of equity.

Beta: The calculations will apply the same industry raw betas as applied for KOGs segments (Damodaran, 2015).

Defense and Aerospace: 1.16

(Consilidated)Maritime: 1.22*

* The consolidated beta is an average of several relevant industry betas. For calculations see Appendix 34.

Market Risk Premium

The market risk premiums are calculated based on Damodaran (2015) market premiums for different regions. The different market risk premiums are weighted based on the regions relative contribution to revenue. This is the same way the market risk premium of KOG is calculated.

Lockheed Martin	ERP	% of revenue
North America	5,9%	80%
International	8,9%	20%
Market risk premium	**6,5%**	

Raytheon	ERP	% of revenue
North America	5,9%	78%
International	8,9%	22%
Market risk premium	**6,6%**	

General Dynamics	ERP	% of revenue
North America	5,9%	79%
Europe	7,7%	8%
Asia	8,2%	5%
Africa	11,7%	7%
South America	10,8%	1%
Market risk premium	**6,6%**	

Northrup Grumman	ERP	% of revenue
North America	5,9%	85%
International	8,9%	15%
Market risk premium	**6,3%**	

Rolls Royce	ERP	% of revenue
Europe	7,7%	33%
North America	5,9%	31%
Asia	8,2%	30%
South America	10,8%	3%
Africa	11,7%	1%
Rest of World	11,7%	2%
Market risk premium	**7,5%**	

AKSO	ERP	% of revenue
Norway	5,9%	48%
International	8,9%	52%
Market risk premium	**7,4%**	

Halliburton	ERP	% of revenue
North America	5,9%	54%
Asia	8,2%	17%
Europe	7,7%	15%
South America	10,8%	12%
Rest of the world	11,7%	2%
Market risk premium	**7,3%**	

Cameron	ERP	% of revenue
North America	5,9%	36%
Asia	8,2%	22%
Europe	7,7%	17%
Africa	11,7%	15%
South America	10,8%	8%
Rest of the world	11,7%	2%
Market risk premium	8,06%	

Cost of Equity – Calculation

Defence peers					Maritime peers				
CAPM	re	rf	B	rm	CAPM	re	rf	B	rm
Lockheed Martin	7,22%	1,94%	1,16	6,5%	Rolls Royce	8,72%	1,96%	1,22	7,5%
Raytheon	7,29%	1,94%	1,16	6,6%	AKSO	8,76%	1,43%	1,22	7,4%
General Dynamics	7,36%	1,94%	1,16	6,6%	Cameron	9,40%	1,94%	1,22	8,1%
Northrup Grumman	7,05%	1,94%	1,16	6,3%	Halliburton	8,44%	1,94%	1,22	7,3%

Capital Structure

It is assumed that the current capital structure of the peers is representative for both the historical and future target capital structure.

Defence peers	D/EV	E/EV	D/E	Maritime peers	D/EV	E/EV	D/E
Lockheed Martin	24%	76%	31%	Rolls Royce	0%	100%	0%
Raytheon	20%	80%	26%	AKSO	18%	82%	22%
General Dynamics	11%	89%	13%	Cameron	14%	86%	16%
Northrup Grumman	27%	73%	37%	Halliburton	18%	82%	21%

Final WACC – Calculation

Defence peers	WACC	D/D+E	rd	E/D+E	re
Lockheed Martin	6,24%	24%	3,09%	76%	7,22%
Raytheon	6,24%	20%	2,17%	80%	7,29%
General Dynamics	6,78%	11%	2,29%	89%	7,36%
Northrup Grumman	5,83%	27%	2,53%	73%	7,05%

Maritime peers	WACC	D/D+E	rd	E/D+E	re
Rolls Royce	8,73%	0%	2,85%	100%	8,72%
AKSO	7,78%	18%	3,26%	82%	8,76%
Cameron	8,50%	14%	3,00%	86%	9,40%
Halliburton	7,33%	18%	2,10%	82%	8,44%

A.23. Tier-One Peer Group's - Profitability Analysis

Defense Peers

Lockheed Martin	2010	2011	2012	2013	2014
NOPAT	2922	2950	2989	3207	3844
Invested Capital (After-tax)	20843	20319	22596	20525	22464
WACC	6,24%	6,24%	6,24%	6,24%	6,24%
Revenue	45932	46775	47420	45676	45937
Economic Profit as % of Revenue	3,53%	3,60%	3,33%	4,22%	5,32%
Profit Margin	6,36%	6,31%	6,30%	7,02%	8,37%
Invested capital as % of revenue	45,38%	43,44%	47,65%	44,94%	48,90%

Raytheon	2010	2011	2012	2013	2014
NOPAT	1979	1994	2041	2091	2354
Invested Capital (After-tax)	15578	16660	17745	16605	18310
WACC	6,24%	6,24%	6,24%	6,24%	6,24%
Revenue	25150	24791	24414	23706	22826
Economic Profit as % of Revenue	4,00%	3,85%	3,82%	4,45%	5,31%
Profit Margin	7,87%	8,05%	8,36%	8,82%	10,31%
Invested capital as % of revenue	61,94%	67,20%	72,68%	70,05%	80,22%

General Dynamics	2010	2011	2012	2013	2014
NOPAT	2734	2618	-511	2500	2693
Invested Capital (After-tax)	19528	21089	19393	17953	17717
WACC	6,78%	6,78%	6,78%	6,78%	6,78%
Revenue	28143	26412	25218	24661	23979
Economic Profit as % of Revenue	4,34%	3,64%	-5,80%	4,11%	4,83%
Profit Margin	8,42%	8,01%	-1,62%	8,01%	8,73%
Invested capital as % of revenue	60,15%	64,54%	61,54%	57,51%	57,43%

Northrop Grumann	2010	2011	2012	2013	2014
NOPAT	2304	2227	2088	2129	2251
Invested Capital (After-tax)	16408	17470	17798	16862	18258
WACC	5,83%	5,83%	5,83%	5,83%	5,83%
Revenue	28143	26412	25218	24661	23979
Economic Profit as % of Revenue	4,79%	4,58%	4,17%	4,65%	4,95%
Profit Margin	8,19%	8,43%	8,28%	8,63%	9,39%
Invested capital as % of revenue	58,30%	66,14%	70,58%	68,38%	76,14%

Maritime Peers

Rolls Royce	2010	2011	2012	2013	2014
NOPAT	874	910	1163	1203	923
Invested Capital (After-tax)	3516	3543	3650	6110	5450
WACC	8,73%	8,73%	8,73%	8,73%	8,73%
Revenue	11180	11193	12161	15578	13746
Economic Profit as % of Revenue	5,07%	5,37%	6,95%	4,30%	3,25%
Profit Margin	7,82%	8,13%	9,57%	7,72%	6,71%
Invested capital as % of revenue	31,45%	31,65%	30,01%	39,22%	39,65%
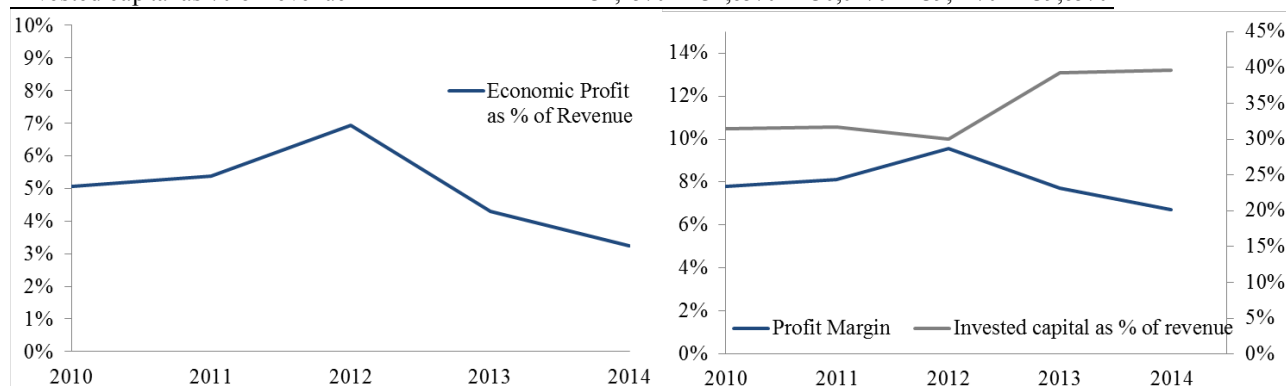
Aker Solutions	2010	2011	2012	2013	2014
NOPAT	1906	2823	2574	1429	1438
Invested Capital (After-tax)	13189	12748	17433	18765	8364
WACC	7,78%	7,78%	7,78%	7,78%	7,78%
Revenue	33365	36474	41632	42900	32971
Economic Profit as % of Revenue	2,64%	5,02%	2,93%	-0,07%	2,39%
Profit Margin	5,71%	7,74%	6,18%	3,33%	4,36%
Invested capital as % of revenue	39,53%	34,95%	41,87%	43,74%	25,37%
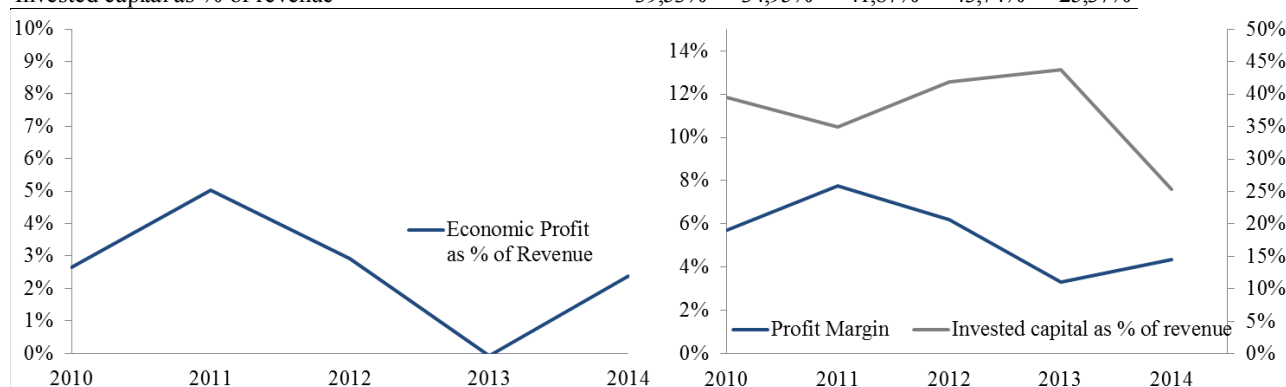
Halliburton	2010	2011	2012	2013	2014
NOPAT	2053	3150	3034	3170	3593
Invested Capital (After-tax)	14142	16858	19874	20819	23375
WACC	7,33%	7,33%	7,33%	7,33%	7,33%
Revenue	17973	24829	28503	29402	32870
Economic Profit as % of Revenue	5,66%	7,71%	5,53%	5,59%	5,72%
Profit Margin	11,42%	12,68%	10,64%	10,78%	10,93%
Invested capital as % of revenue	78,68%	67,90%	69,73%	70,81%	71,11%
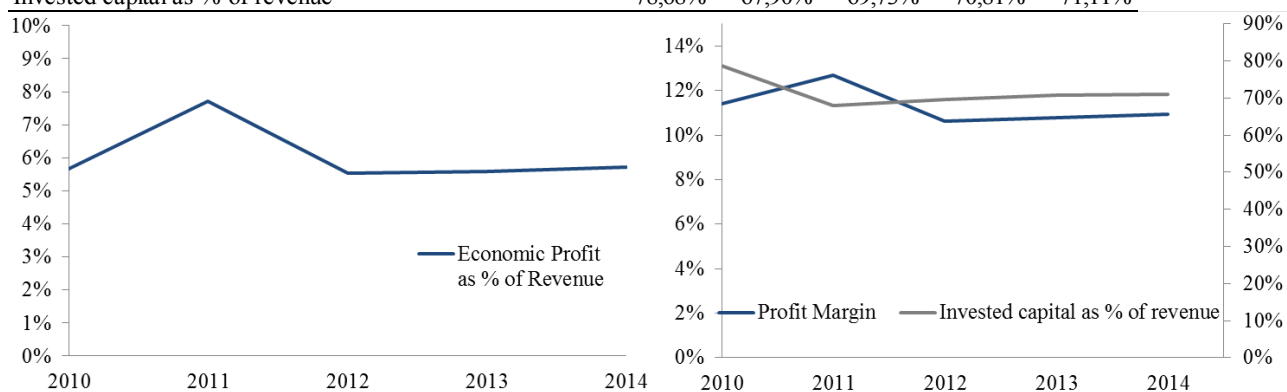
Cameron	2010	2011	2012	2013	2014
NOPAT	659	731	849	864	973
Invested Capital (After-tax)	4022	5184	6183	8154	7067
WACC	8,50%	8,50%	8,50%	8,50%	8,50%
Revenue	6135	6959	8502	9838	10381
Economic Profit as % of Revenue	5,17%	4,18%	3,81%	1,74%	3,59%
Profit Margin	10,74%	10,51%	9,99%	8,78%	9,37%
Invested capital as % of revenue	65,56%	74,49%	72,72%	82,88%	68,08%
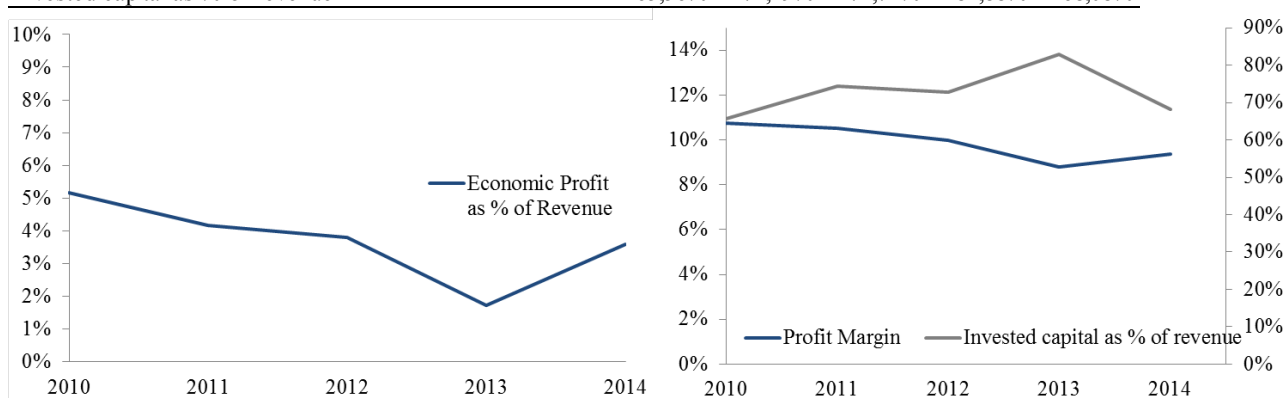
A.24. Liquidity Risk Analysis KOG ASA

Short-Term Liquidity Risk

Liquidity Cycle		2010	2011	2012	2013	2014
Defense	Lockheed Martin	15,9	0,4	12,3	11,2	12,7
	Raytheon	-17,4	-18,2	-15,7	-10,5	-12,7
	General Dynamics	-3,3	0,3	-7,7	-12,2	-19,0
	Northrup Grumman	-15,9	-2,7	-5,1	-0,5	-2,0
	Average	*38,0*	*41,1*	*45,8*	*50,4*	*40,0*
Maritime	RollsRoyce	0,7	-2,0	4,4	19,4	23,6
	AKSO	-7,0	0,3	15,2	16,5	-7,6
	Halliburton	96,1	69,9	74,9	78,5	76,6
	Cameron	62,2	96,3	88,8	87,2	67,5
	Average	*-5,2*	*-5,1*	*-4,0*	*-3,0*	*-5,3*
	KOG ASA	**1,7**	**15,3**	**24,5**	**26,4**	**37,2**

Current Ratio		2010	2011	2012	2013	2014
Defense	Lockheed Martin	1,13	1,16	1,14	1,20	1,11
	Raytheon	1,48	1,52	1,57	1,69	1,74
	General Dynamics	1,36	1,38	1,35	1,47	1,27
	Northrup Grumman	1,37	1,26	1,39	1,63	1,39
	Average	*1,93*	*1,85*	*1,85*	*1,78*	*1,71*
Maritime	RollsRoyce	1,37	1,20	1,33	1,31	1,46
	AKSO	1,21	1,22	1,14	1,17	1,04
	Halliburton	3,22	2,81	2,75	2,73	2,56
	Cameron	1,92	2,17	2,18	1,92	1,77
	Average	*1,34*	*1,33*	*1,36*	*1,50*	*1,37*
	KOG ASA	**1,27**	**1,23**	**1,50**	**1,41**	**1,30**

Quick Ratio		2010	2011	2012	2013	2014
Defense	Lockheed Martin	0,73	0,80	0,70	0,76	0,66
	Raytheon	0,61	0,65	0,54	0,57	0,54
	General Dynamics	0,62	0,64	0,65	0,80	0,61
	Northrup Grumman	0,70	0,97	1,11	1,35	1,13
	Average	*1,23*	*1,15*	*1,16*	*1,13*	*1,15*
Maritime	RollsRoyce	0,95	0,81	0,93	0,93	1,09
	AKSO	0,91	0,90	0,96	0,83	0,91
	Halliburton	1,93	1,89	1,74	1,70	1,68
	Cameron	1,12	0,99	0,99	1,06	0,91
	Average	*0,67*	*0,76*	*0,75*	*0,87*	*0,74*
	KOG ASA	**0,6**	**0,7**	**0,7**	**0,8**	**0,7**

Long-Term Liquidity Risk

Solvency Ratios (Calculations)

Lockheed Martin	2010	2011	2012	2013	2014
Number of shares	360.128.000	323.570.000	323.587.000	320.307.000	315.925.000
Share price	70	81	92	149	193
Equity value (USD)	25.176.548.480	26.176.813.000	29.863.844.230	47.616.838.620	60.837.677.250
NIBD value (USD)	17.346.000.000	19.318.000.000	22.557.000.000	15.607.000.000	19.064.000.000
Invested capital	42.522.548.480	45.494.813.000	52.420.844.230	63.223.838.620	79.901.677.250
Solvency ratio	**0,59**	**0,58**	**0,57**	**0,75**	**0,76**

Raytheon	2010	2011	2012	2013	2014
Number of shares	364.543.000	346.100.000	329.867.000	319.472.000	308.368.000
Share price	46	48	58	91	108
Equity value (USD)	16.892.922.620	16.744.318.000	18.987.144.520	28.976.110.400	33.356.166.560
NIBD value (USD)	5.688.000.000	8.320.000.000	9.555.000.000	5.408.000.000	8.589.000.000
Invested capital	22.580.922.620	25.064.318.000	28.542.144.520	34.384.110.400	41.945.166.560
Solvency ratio	**0,75**	**0,67**	**0,67**	**0,84**	**0,80**

General Dynamics	2010	2011	2012	2013	2014
Number of shares	377.744.000	356.113.000	353.070.000	352.198.000	331.390.000
Share price	71	66	69	96	138
Equity value (USD)	26.804.714.240	23.649.464.330	24.457.158.900	33.652.518.900	45.605.891.800
NIBD value (USD)	6.212.000.000	7.857.000.000	8.003.000.000	3.452.000.000	5.888.000.000
Invested capital	33.016.714.240	31.506.464.330	32.460.158.900	37.104.518.900	51.493.891.800
Solvency ratio	**0,81**	**0,75**	**0,75**	**0,91**	**0,89**

Northrup Grumann	2010	2011	2012	2013	2014
Number of shares	291.989.000	261.281.000	245.444.000	221.991.000	201.999.000
Share price	59	58	68	115	147
Equity value (USD)	17.159.317.563	15.279.712.880	16.587.105.520	25.442.388.510	29.772.632.610
NIBD value (USD)	2.972.000.000	7.134.000.000	8.284.000.000	6.242.000.000	11.023.000.000
Invested capital	20.131.317.563	22.413.712.880	24.871.105.520	31.684.388.510	40.795.632.610
Solvency ratio	**0,85**	**0,68**	**0,67**	**0,80**	**0,73**

Rolls Royce	2010	2011	2012	2013	2014
Number of shares	1.871.772.000	1.872.235.000	1.872.297.000	1.880.294.000	1.884.966.000
Share price	562	691	826	1.228	858
Equity value (GBP)	1.052.497.395.600	1.293.358.660.350	1.547.041.565.160	2.308.944.623.180	1.617.847.468.140
NIBD value (GBP)	-463.000.000	-976.000.000	-2.455.000.000	-193.000.000	-937.000.000
Invested capital	1.052.034.395.600	1.292.382.660.350	1.544.586.565.160	2.308.751.623.180	1.616.910.468.140
Solvency ratio	**1,00**	**1,00**	**1,00**	**1,00**	**1,00**

Halliburton	2010	2011	2012	2013	2014
Number of shares	909.535.000	920.165.000	927.987.000	848.226.000	847.460.000
Share price	41	35	35	51	39
Equity value (USD)	37.136.314.050	31.754.894.150	32.191.869.030	43.047.469.500	33.330.601.800
NIBD value (USD)	3.755.000.000	3.642.000.000	4.084.000.000	7.204.000.000	7.077.000.000
Invested capital	40.891.314.050	35.396.894.150	36.275.869.030	50.251.469.500	40.407.601.800
Solvency ratio	**0,91**	**0,90**	**0,89**	**0,86**	**0,82**

Cameron	2010	2011	2012	2013	2014
Number of shares	242.568.000	245.201.000	246.714.000	237.871.000	197.446.000
Share price	51	49	56	60	50
Equity value (USD)	12.305.474.640	12.061.437.190	13.929.472.440	14.160.460.630	9.862.427.700
NIBD value (USD)	-370.000.000	477.000.000	617.000.000	1.239.000.000	1.623.000.000
Invested capital	11.935.474.640	12.538.437.190	14.546.472.440	15.399.460.630	11.485.427.700
Solvency ratio	**1,03**	**0,96**	**0,96**	**0,92**	**0,86**

KOG	2010	2011	2012	2013	2014
Number of shares	120.000.000	120.000.000	120.000.000	120.000.000	120.000.000
Share price	133	116	125	128	123
Equity value (NOK)	15.960.000.000	13.920.000.000	14.940.000.000	15.300.000.000	14.760.000.000
NIBD value (NOK)	-1.492.000.000	-1.563.000.000	-733.000.000	-1.208.000.000	-1.977.000.000
Invested capital	14.468.000.000	12.357.000.000	14.207.000.000	14.092.000.000	12.783.000.000
Solvency ratio	**1,10**	**1,13**	**1,05**	**1,09**	**1,15**
Average Defense	*0,75*	*0,67*	*0,66*	*0,83*	*0,79*
Average Maritime	*1,01*	*1,00*	*0,97*	*0,95*	*0,95*

*End-of-year figures are used

**Market values are used for Equity

Source: *Authors' own compilation (Datastream, 2015).*

A.25. Credit Risk Analysis

This section presents the credit risk analysis of KOG ASA and is used to compliment the 'credit spread' found with regards to the cost of debt. The procedure in A.19. has been conducted.

Rating of KOG	Adjusted US key industrial financial ratios				
	2010	**2011**	**2012**	**2013**	**2014**
EBIT interest cover (x)	132,1	75,4	59,4	110,6	44,9
EBITDA interest cover (x)	155,3	88,7	74,0	142,8	73,6
Operating Cash Flow/Total Liabilities (%)	21%	18%	18%	16%	12%
Return on Invested Capital	62%	52%	33%	30%	29%
Total Liabilities/Total Capital (%)	65%	65%	61%	62%	69%
EBIT interest cover (x)	AAA	AAA	AAA	AAA	AAA
EBITDA interest cover (x)	AAA	AAA	AAA	AAA	AAA
Operating Cash Flow/Total Liabilities (%)	A	A	A	A	BBB
Return on Invested Capital	AAA	AAA	AA	AA	AA
Total Liabilities/Total Capital (%)	BBB	BBB	BBB	BBB	BBB
Yearly rating	**AA**	**AA**	**AA**	**AA**	**AA**
Calculation	**2010**	**2011**	**2012**	**2013**	**2014**
EBIT interest cover (x)	0	0	0	0	0
EBITDA interest cover (x)	0	0	0	0	0
Operating Cash Flow/Total Liabilities (%)	2	2	2	2	3
Return on Invested Capital	0	0	1	1	1
Total Liabilities/Total Capital (%)	3	3	3	3	3
Yearly Rating	**1,0**	**1,0**	**1,2**	**1,2**	**1,4**

Credit Rating of KOG ASA (vertical label)

Credit spread (%)

US Treasury, 10 year	AAA	AA	A	BBB	BB	B
3,38	1,9	2,4	3,6	4,7	11,2	13,1
3,38	0,6	0,7	0,8	1,3	2,6	3,2

Source: Authors' own compilation based on Petersen & Plenborg, 2012, pp. 277-291.

This section provides explanations behind the assumptions used except revenue growth and margin consideration in forecasting pro forma financial statements for KOGs segments. Each relevant item is with the relevant assumptions applied. As the thesis is structured in such a manner that the company has been separated into two segments, each segment will have separate pro forma statements. Regardless, the procedures rely on the same key value-drivers and will thus be similar for the two segments.

Depreciation & Amortization and EBIT

Depreciation and amortization as a percentage of tangible and intangible assets are estimated as the average of the historical period '10-'14. EBITDA-margin is used to estimate the segments profitability in the forecasting period, depreciation and amortization is deducted for this to arrive at EBIT.

The same calculation will be followed for both segments.

Borrowing costs (interest rate)

The interest rates have remained low during the historical period. Going forward the interest rates has been set to equal the average of the forecasting period (1.4%). However, for the terminal period, this rate has been rounded up to 2% of revenue in order to have a more conservative approach given the current low interest levels.

The same calculation will be followed for both segments.

Estimated effective tax rate

The tax rate is based on the historic average of the estimated effective tax rate in the historic period.

The same calculation will be followed for both segments.

Intangible and tangible assets

Intangible and tangible assets is forecasted as percentage of revenue. For the defense segment the industry recovery is expected to trigger more investments in terms of product development. The maritime segment on the order hand is facing a more challenging future. It is therefore expected that the investment level in within the segments product lines will come down to some extent. Further, it is assumed that the group will used more project hedges related to it maritime contracts, which also would lead to a decrease in net assets.

Going forward it is assumed that the last year level in relation to revenue is representative for the budget period in terms of the maritime division. This yields that when the development in revenues is negative so will the investment level be.

For the defense segment it is assumed that product development investments will accelerate when industry fundamentals improve. It is assumed that the average historic level plus 2% is a fair estimate going forward. However, also this is a rather conservative estimate given the future outlooks of the segments industry.

Net Working Capital

Net working capital is estimated as percentage of revenue. The increased activity level within defense operations is expected to affect the current assets and liabilities. Historically the net working capital has fluctuated around mean in the defense division. This is assumed to be representative for the future if 1% is deducted from the mean as the increase in revenue is projected as rather dramatic. For the maritime segment the expected decline in E&P spending will reduce the working capital requirements. There has been a positive trend in the line item relative to revenues historically; this is not expected to represent the future. The networking capital requirement is assumed to follow the development in revenues, but the historical average is applied in the budgeting period as the maritime segment has experienced strong growth the last year given the high oil prices.

Net interest-bearing debt

KOG states in their annual reports (2010-2014) that they shall always have a moderate gearing ratio (NIBD/EBITDA). The ratio has fluctuated between -32% and -96% from 2010 to 2014 and has been increasing in the last two year. NIBD is set equal to 2014's gearing ratio of -96% of EBITDA in the whole forecasting period for both segments. This is due to the fact that authors expect the company to maintain their conservative capital structure as long as the government is the majority owner. However, the NIBD estimate is only meant as a supporting calculation to control that invested capital is calculated correctly and is not used for valuation purposes. For a detailed description of how the item has been segregated, see Appendix 13.

A.27. Inflation Rates used in Forecasting

Inflation Rates by Region

	2010	2011	2012	2013	2014	2015E	2016E	2017E	2018E	2019E
Asia	3,82%	5,89%	4,33%	3,52%	3,35%	2,21%	2,89%	3,19%	3,12%	3,10%
North America	1,64%	3,14%	2,08%	1,46%	1,61%	0,00%	1,49%	2,37%	2,54%	2,33%
Norway	2,40%	1,30%	0,00%	2,13%	2,03%	2,25%	2,25%	2,25%	2,50%	2,50%
Europe	2,89%	5,36%	4,82%	2,40%	1,22%	1,28%	2,00%	2,40%	2,57%	2,71%
South America	6,65%	8,42%	6,84%	8,40%	10,85%	13,29%	12,75%	12,13%	11,75%	11,65%
World	3,48%	4,82%	3,61%	3,58%	3,81%	3,80%	4,27%	4,47%	4,50%	4,46%

Source: Authors' own compilation based on data from IMF, (2013).

Weighted Inflation Rates by Geographical Revenue Distribution KOG ASA

Revenue Weighted by country	2014	2015E	2016E	2017E	2018E	2019E
Norway	23%	2,21%	2,89%	3,19%	3,12%	3,10%
Europe	21%	0,00%	1,49%	2,37%	2,54%	2,33%
North America	21%	2,25%	2,25%	2,25%	2,50%	2,50%
Asia	28%	1,28%	2,00%	2,40%	2,57%	2,71%
South America	3%	13,29%	12,75%	12,13%	11,75%	11,65%
Rest of the world	4%	3,80%	4,27%	4,47%	4,50%	4,46%
Weighted Average Inflation Rate	**100%**	**1,95%**	**2,61%**	**2,96%**	**3,06%**	**3,03%**

Source: Authors' own compilation based on data from IMF, (2013).

A.28. Forecast Inputs KOG Maritime Offshore, Oil & Gas

Backlog KOG Maritime

NOKbn

2010: 4,2
2011: 5,1
2012: 6
2013: 6,5
2014: 7,5

■ Backlog
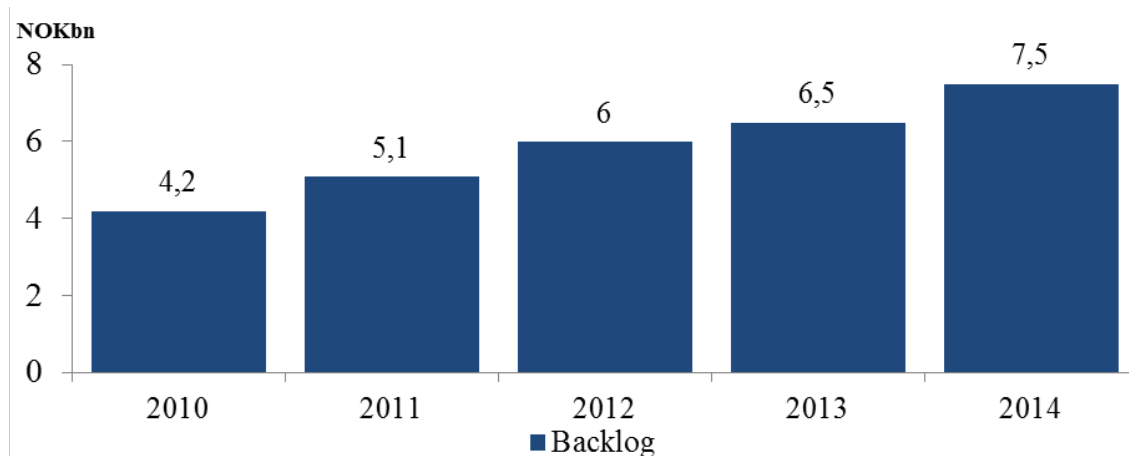
Source: Compiled by authors (KOG, Annual Reports, 2010-2014)

Scenarios newbuild deliveries OSV and Drillships (2012-2018E)

Base case has been assumed in forecast.

	2012	**2013**	**2014**	**2015E**	**2016E**	**2017E**	**2018E**
Drillships							
Low				15	15	9	11
Base	19	13	23	18	22	10	12
High				33	23	22	20
OSV							
Low				233	40	50	50
Base	191	231	233	227	90	100	100
High				227	135	180	190

Source: Authors' own compilation based on data from (Platou, 2015)

A.29. Forecasting Assumptions

Defense

Forecasting Assumptions				Historical			Short-Term		Mid-Term		TV
	2010	**2011**	**2012**	**2013**	**2014**	**Average**	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
Revenue growth	n/a	-10%	-6%	-7%	-14%	**-9%**	7,5%	6,1%	10,0%	5,0%	3,0%
EBITDA-margin	16%	15%	16%	14%	13%	**15%**	15,0%	16,0%	17,0%	16,0%	16,0%
Net borrowing costs in percent (before tax)							-1,4%	-1,4%	-1,4%	-1,4%	-2,0%
Efficient tax rate (assumed)	-28%	-29%	-28%	-25%	-32%	**-28%**	-28%	-28%	-28%	-28%	-28%
Depreciation as % of intangible and tangible assets subject to dep. and amort.	-2%	-1%	-1%	-1%	-2%	**-1%**	-1%	-1%	-1%	-1%	-1%
Intangible and tangible assets as % of revenue	25%	9%	22%	22%	10%	**18%**	20%	20%	20%	20%	20%
Net working capital as % of revenue	-14%	-3%	-3%	-9%	-15%	**-9%**	-8%	-8%	-8%	-8%	-8%
Net interest-bearing debt as a percentage of EBITDA	-60%	-65%	-32%	-56%	-96%	**-62%**	-96%	-96%	-96%	-96%	-96%

Maritime

Forecasting Assumptions				Historical			Short-Term		Mid-Term		TV
	2010	**2011**	**2012**	**2013**	**2014**	**Average**	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
Revenue growth	n/a	8%	14%	14%	13%	**12%**	8,9%	-4,7%	-3,7%	4,5%	3,0%
EBITDA-margin	16%	17%	13%	13%	12%	**14%**	11,5%	11,0%	10,5%	11,0%	11,0%
Net borrowing costs in percent (before tax)	-1%	-2%	-4%	-1%	1%	**-1%**	-1,4%	-1,4%	-1,4%	-1,4%	-2,0%
Efficient tax rate (assumed)	-28%	-29%	-28%	-25%	-32%	**-28%**	-28%	-28%	-28%	-28%	-28%
Depreciation as % of intangible and tangible assets subject to dep. and amort	-6%	-5%	-6%	-6%	-6%	**-6%**	-6%	-6%	-6%	-6%	-6%
Intangible and tangible assets as % of revenue	48%	35%	35%	29%	19%	**33%**	19%	19%	19%	19%	19%
Net working capital as % of revenue[b]	-11%	12%	15%	19%	24%	**17%**	17%	17%	17%	17%	17%
Net interest-bearing debt as a percentage of EBITDA	-60%	-65%	-32%	-56%	-96%	**-62%**	-96%	-96%	-96%	-96%	-96%

A.30. Pro forma Statements

Defense

Proforma Income Statement						
NOKm	**2014**	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
Net turnover	5.842	6.280	6.663	7.330	7.696	7.929
Cost of sales	-1.937					
Gross profit	3.905					
Payroll expenses	-2126					
Other	-995					
Operating expenses (excl. depreciation and amortization)		-5.338	-5.597	-6.084	-6.465	-6.661
EBITDA	**784**	**942**	**1.066**	**1.246**	**1.231**	**1.269**
Depreciation	-148					
Amortization	-52	-18	-19	-21	-22	-23
Impairment losses	0					
EBIT	**584**	**924**	**1.047**	**1.225**	**1.209**	**1.246**
Tax for the year on the profit/(loss) from continuing operations	-142					
Tax shield, net financial expenses	3					
Tax on EBIT	-139	-263	-298	-348	-344	-354
NOPAT	**445**	**661**	**749**	**877**	**865**	**891**
Financial income	10					
Financial expenses						
Net financial expenses before tax	10	10	12	14	16	24
Tax shield (aka Tax on net financial expenses)	-3	-3	-4	-4	-5	-7
Net financial expenses	**7**					
Profit/(loss) for the year from continuing operations	**452**	**669**	**758**	**887**	**877**	**908**

Proforma Balance Sheet						
NOKm	**2014**	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
Property, plant and equipment	1.072					
Goodwill	172					
Other Intangible Assets	295					
Construction contracts in progress, assets	1.782					
Derivatives	76					
Other non-Current assets	35					
Total non-current operating assets	**3.432**					
Current assets total	2.134					
Total current operating assets	**2.134**					
Construction contracts in progress, liability	394					
Other Current Liabilities	2.168					
Provisions	453					
Construction contracts in progress, liability	1577					
Provisions	55					
Deferred tax liabilities	328					
Derivatives - project hedge	895					
Other non-current liabilities	7					
Total non-interest-bearing debt (aka operating liabilities)	**5.877**					
Intangible and tangible assets	570	1.256	1.333	1.466	1.539	1.586
Net working capital	-881	-502	-533	-586	-616	-634
Invested capital (net operating assests)	**-311**	**754**	**800**	**880**	**924**	**952**

Invested Capital						
Equity estimated	**442**					
Equity, beginning of period		442	1.658	1.823	2.076	2.106
Net income		669	758	887	877	908
Dividends		547	-593	-634	-847	-845
Total equity	**442**	**1.658**	**1.823**	**2.076**	**2.106**	**2.169**
Long-term interest-bearing loans	307					
Pension liabilities	322					
Derivatives - non-current	-					
Derivatives - loan hedge	606					
Short-term interest-bearing loans	-					
Interest-bearing debt	**1.235**					
Cash	1832					
Avaliable for sale shares	46					
Shares in associated companies	110					
Interest-bearing assets	**1.988**					
Net-interest-bearing debt	**-753**	**-904**	**-1.023**	**-1.196**	**-1.182**	**-1.218**
Invested capital	**-311**	**754**	**800**	**880**	**924**	**952**

Cash flow statement						
NOKm	**2014**	**E2015**	**E2016**	**E2017**	**E2018**	**TV**
NOPAT		661	749	877	865	891
Depreciation		18	19	21	22	23
Δ Net working capital		-379	31	53	29	19
Net invesments (non-current assets aka. Intangble and tangible assets)		-704	-96	-155	-96	-70
Free cash flows to the firm (FCFF)		**-403**	**703**	**797**	**821**	**863**
New net financial liabilities		-151	-119	-173	14	-36
Net financial expenses after tax		7	9	10	12	17
Free cash flows to equity holders (FCFE)		**-547**	**593**	**634**	**847**	**845**
Dividend		547	-593	-634	-847	-845
Cash surplus		**0**	**0**	**0**	**0**	**0**

Maritime

Proforma Income Statement

NOKm	2014	E2015	E2016	E2017	E2018	TV
Net turnover	10.771	11.725	11.174	10.760	11.244	11.585
Cost of sales	-3.635					
Gross profit	7.136					
Payroll expenses	-3.992					
Other	-1.868					
Operating expenses (excl. depreciation and amortization)		-10.376	-9.945	-9.630	-10.008	-10.311
EBITDA	**1.276**	**1.348**	**1.229**	**1.130**	**1.237**	**1.274**
Depreciation	-195					
Amortization	-88	-133	-127	-122	-128	-131
Impairment losses	-320					
EBIT	**673**	**1.215**	**1.102**	**1.008**	**1.109**	**1.143**
Tax for the year on the profit/(loss) from continuing operations	-262					
Tax shield, net financial expenses	5					
Tax on EBIT	-257	-346	-313	-287	-315	-325
NOPAT	**416**	**870**	**789**	**721**	**794**	**818**
Financial income	17					
Financial expenses						
Net financial expenses before tax	17	17	18	16	15	24
Tax shield (aka Tax on net financial expenses)	-5	-5	-5	-5	-4	-7
Net financial expenses	**12**					
Profit/(loss) for the year from continuing operations	**428**	**882**	**802**	**733**	**805**	**835**

Proforma Balance Sheet

NOKm	2014	E2015	E2016	E2017	E2018	TV
Property, plant and equipment	1.405					
Goodwill	1.916					
Other Intangible Assets	498					
Construction contracts in progress, assets	764					
Derivatives	139					
Other non-Current assets	65					
Total non-current operating assets	**4.788**					
Current assets total	5.051					
Total current operating assets	**5.051**					
Construction contracts in progress, liability	324					
Other Current Liabilities	1.781					
Provisions	372					
Construction contracts in progress, liability	1.295					
Provisions	99					
Deferred tax liabilities	606					
Derivatives - project hedge	735					
Other non-current liabilities	12					
Total non-interest-bearing debt (aka operating liabilities)	**5.223**					
Intangible and tangible assets	2.041	2.228	2.123	2.044	2.136	2.201
Net working capital	2.574	1.993	1.900	1.829	1.912	1.969
Invested capital (net operating assests)	**4.616**	**4.221**	**4.023**	**3.874**	**4.048**	**4.171**

Invested Capital

Equity estimated	**5.840**					
Equity, beginning of period		5.840	5.515	5.203	4.958	5.236
Net income		882	802	733	805	835
Dividends		-1.206	-1.114	-977	-527	-676
Total equity	**5.840**	**5.515**	**5.203**	**4.958**	**5.236**	**5.394**
Long-term interest-bearing loans	566					
Pension liabilities	593					
Derivatives - non-current	1					
Derivatives - loan hedge	497					
Short-term interest-bearing loans	-					
Interest-bearing debt	**1.657**					
Cash	2593					
Avaliable for sale shares	86					
Shares in associated companies	203					
Interest-bearing assets	**2.882**					
Net-interest-bearing debt	**-1.224**	**-1.294**	**-1.180**	**-1.085**	**-1.187**	**-1.223**
Invested capital	**4.616**	**4.221**	**4.023**	**3.874**	**4.048**	**4.171**

Cash flow statement

DKK million	2014	E2015	E2016	E2017	E2018	TV
NOPAT		870	789	721	794	818
Depreciation		133	127	122	128	131
Δ Net working capital		581	94	70	-82	-58
Net invesments (non-current assets aka. Intangble and tangible assets)		-320	-22	-44	-220	-196
Free cash flows to the firm (FCFF)		**1.264**	**987**	**870**	**620**	**695**
New net financial liabilities		-70	114	95	-103	-36
Net financial expenses after tax		12	13	12	11	17
Free cash flows to equity holders (FCFE)		**1.206**	**1.114**	**977**	**527**	**676**
Dividend		-1.206	-1.114	-977	-527	-676
Cash surplus		**0**	**0**	**0**	**0**	**0**

A.31. Quality of Estimates in the Forecast

This section will evaluate the validity of the pro forma statements as it is important to compare the forecasted performance with the historical return. The 'Economic Profit as a percentage of revenue' has therefore been established for both historical and forecasted returns, and will provide insight and illustrate the performance in an orderly and efficient way. Needless to say, if the future performance deviates substantially from the historical, this should be supported by solid arguments.

KOG Defense

KOG Defense's metric has been fairly stable in the historical period, but clearly shows a positive trend in the forecasting period. In a combination with a positive macroeconomic outlook as well as a favorable position in terms of partnerships, it is in the authors' perception that the improvement of the metric will continue until 2017 and stabilization hereafter, is a realistic forecast in accordance with the strategic analysis. The increase will by driven by steady revenue growth and an increase in the profit margin.
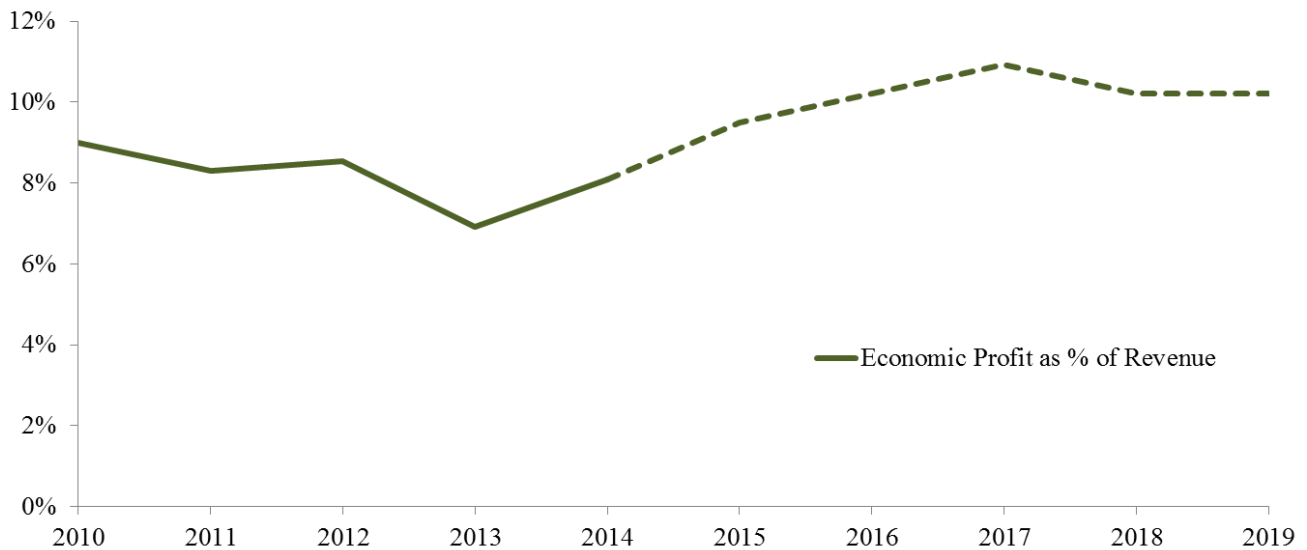
KOG Maritime

For KOG Maritime the dip in Economic Profit as a percentage of revenue in 2014 was explained by a large impairment cost related to the Oil & Gas Technology sub-segment. The authors believe it is realistic to expect that the metric will come back up to normal levels in 2015 as a direct result of a strong revenue growth which again is explained through their strong order book. Furthermore, the metric is expected to decrease in 2016 and 2017 on the back of tough market conditions as described in the strategic analysis. This will impact revenues and pressure the EBITDA-margin. For the long-term the metric is expected to stabilize around 4%, which is believed to be a fair forecast, due to the recovery of the oil price and thereby the E&P spending.
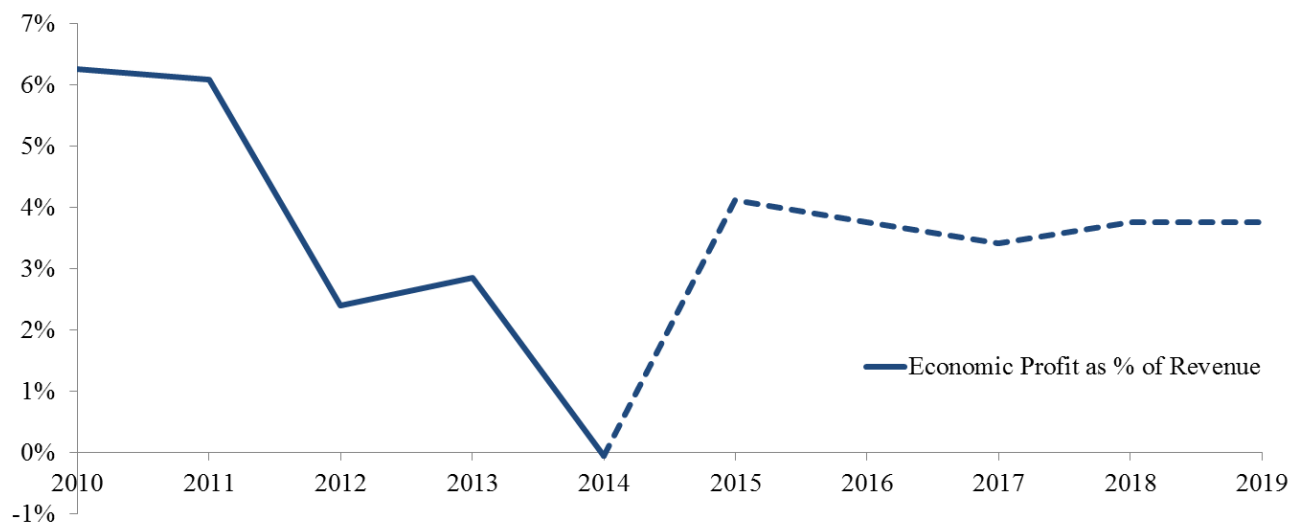
A.32. Historical Share Prices

Defense Peers (USD)

Date	Lockheed Martin		Raytheon		General Dynamics		Northrop Grumman		MSCI World	
Apr-10	82,99		58,32		76,04		59,85		1222,25	
May-10	80,79	-2,65%	56,32	-3,43%	71,71	-5,69%	57,42	-4,06%	1123,78	-8,06%
Jun-10	81,20	0,51%	52,85	-6,16%	66,29	-7,56%	55,41	-3,49%	1111,11	-1,13%
Jul-10	73,93	-8,95%	47,73	-9,69%	58,90	-11,15%	49,66	-10,38%	1089,89	-1,91%
Aug-10	71,94	-2,69%	44,76	-6,22%	60,42	2,58%	51,01	2,72%	1106,21	1,50%
Sep-10	68,51	-4,77%	45,72	2,14%	61,31	1,47%	52,41	2,74%	1157,08	4,60%
Oct-10	70,02	2,20%	45,71	-0,02%	63,93	4,27%	56,13	7,10%	1223,43	5,74%
Nov-10	68,68	-1,91%	45,90	0,42%	65,54	2,52%	56,15	0,05%	1212,56	-0,89%
Dec-10	70,37	2,46%	45,39	-1,11%	70,42	7,45%	58,58	4,31%	1260,04	3,92%
Jan-11	74,50	5,87%	50,26	10,73%	72,18	2,50%	60,99	4,12%	1309,00	3,89%
Feb-11	81,28	9,10%	50,94	1,35%	77,05	6,75%	62,18	1,95%	1352,03	3,29%
Mar-11	78,41	-3,53%	49,77	-2,30%	73,75	-4,28%	58,91	-5,25%	1260,15	-6,80%
Apr-11	78,19	-0,28%	48,81	-1,93%	71,88	-2,54%	61,29	4,04%	1338,04	6,18%
May-11	80,34	2,75%	49,07	0,53%	74,24	3,28%	64,78	5,69%	1336,65	-0,10%
Jun-11	79,91	-0,54%	48,40	-1,37%	71,28	-3,99%	64,72	-0,09%	1273,56	-4,72%
Jul-11	78,37	-1,93%	46,05	-4,86%	70,36	-1,29%	64,62	-0,15%	1313,17	3,11%
Aug-11	70,69	-9,80%	40,91	-11,16%	62,04	-11,82%	53,24	-17,61%	1196,58	-8,88%
Sep-11	76,03	7,55%	42,13	2,98%	60,60	-2,32%	54,82	2,97%	1176,03	-1,72%
Oct-11	75,99	-0,05%	42,77	1,52%	62,04	2,38%	54,56	-0,47%	1186,40	0,88%
Nov-11	75,93	-0,08%	44,50	4,04%	65,02	4,80%	58,47	7,17%	1178,95	-0,63%
Dec-11	77,10	1,54%	45,51	2,27%	63,20	-2,80%	55,66	-4,81%	1146,48	-2,75%
Jan-12	81,52	5,73%	48,67	6,94%	70,60	11,71%	58,84	5,71%	1202,48	4,89%
Feb-12	86,40	5,99%	48,81	0,29%	70,42	-0,25%	59,68	1,43%	1280,16	6,46%
Mar-12	89,32	3,38%	52,12	6,78%	72,90	3,52%	61,99	3,87%	1320,96	3,19%
Apr-12	89,57	0,28%	52,60	0,92%	69,20	-5,08%	61,04	-1,53%	1266,94	-4,09%
May-12	84,33	-5,85%	51,13	-2,79%	65,20	-5,78%	59,57	-2,41%	1204,64	-4,92%
Jun-12	83,45	-1,04%	53,67	4,97%	64,86	-0,52%	61,18	2,70%	1208,53	0,32%
Jul-12	87,14	4,42%	55,77	3,91%	64,04	-1,26%	63,49	3,78%	1225,35	1,39%
Aug-12	92,05	5,63%	56,42	1,17%	65,36	2,06%	68,79	8,35%	1287,62	5,08%
Sep-12	92,52	0,51%	57,81	2,46%	66,78	2,17%	66,33	-3,58%	1347,61	4,66%
Oct-12	93,37	0,92%	56,23	-2,73%	67,22	0,66%	70,36	6,08%	1329,43	-1,35%
Nov-12	88,46	-5,26%	54,46	-3,15%	62,13	-7,57%	63,57	-9,65%	1253,31	-5,73%
Dec-12	88,96	0,57%	57,49	5,56%	67,49	8,63%	66,80	5,08%	1325,49	5,76%
Jan-13	93,55	5,16%	57,77	0,49%	69,80	3,42%	66,85	0,07%	1378,92	4,03%
Feb-13	87,87	-6,07%	53,98	-6,56%	66,40	-4,87%	65,63	-1,82%	1406,92	2,03%
Mar-13	92,74	5,54%	57,93	7,32%	69,91	5,29%	68,80	4,83%	1444,48	2,67%
Apr-13	96,26	3,80%	57,39	-0,93%	68,39	-2,17%	71,29	3,62%	1438,81	-0,39%
May-13	104,00	8,04%	65,64	14,38%	76,14	11,33%	79,02	10,84%	1508,02	4,81%
Jun-13	107,70	3,56%	67,41	2,70%	78,00	2,44%	82,88	4,88%	1463,83	-2,93%
Jul-13	112,60	4,55%	69,56	3,19%	83,01	6,42%	87,21	5,22%	1500,53	2,51%
Aug-13	122,20	8,53%	76,74	10,32%	83,75	0,89%	94,02	7,81%	1508,80	0,55%
Sep-13	128,46	5,12%	79,66	3,81%	88,07	5,16%	97,79	4,01%	1546,52	2,50%
Oct-13	127,86	-0,47%	76,26	-4,27%	87,55	-0,59%	98,68	0,91%	1570,34	1,54%
Nov-13	137,45	7,50%	85,28	11,83%	88,71	1,32%	109,53	11,00%	1621,50	3,26%
Dec-13	140,05	1,89%	86,63	1,58%	90,92	2,49%	109,66	0,12%	1598,22	-1,44%
Jan-14	153,49	9,60%	90,68	4,68%	95,40	4,93%	118,29	7,87%	1659,34	3,82%
Feb-14	162,89	6,12%	95,93	5,79%	106,35	11,48%	120,28	1,68%	1650,12	-0,56%
Mar-14	162,42	-0,29%	100,09	4,34%	107,63	1,20%	121,44	0,96%	1641,13	-0,54%
Apr-14	159,44	-1,83%	99,03	-1,06%	108,18	0,51%	120,60	-0,69%	1664,85	1,44%
May-14	162,10	1,67%	95,39	-3,68%	113,56	4,97%	118,88	-1,43%	1683,69	1,13%
Jun-14	165,14	1,88%	97,10	1,79%	119,20	4,97%	121,56	2,25%	1726,99	2,57%
Jul-14	161,55	-2,17%	94,63	-2,54%	117,51	-1,42%	123,19	1,34%	1751,51	1,42%
Aug-14	169,16	4,71%	93,45	-1,25%	119,34	1,56%	124,87	1,36%	1714,26	-2,13%
Sep-14	177,19	4,75%	101,71	8,84%	127,75	7,05%	131,93	5,65%	1732,55	1,07%
Oct-14	174,72	-1,39%	95,32	-6,28%	117,85	-7,75%	121,60	-7,83%	1592,60	-8,08%
Nov-14	186,60	6,80%	104,63	9,77%	142,66	21,05%	136,07	11,90%	1717,20	7,82%
Dec-14	185,39	-0,65%	103,05	-1,51%	136,40	-4,39%	143,79	5,67%	1655,52	-3,59%
Jan-15	194,71	5,03%	105,73	2,60%	139,07	1,96%	153,33	6,63%	1675,15	1,19%
Feb-15	196,95	1,15%	107,03	1,23%	137,61	-1,05%	167,14	9,01%	1752,91	4,64%
Mar-15	202,11	2,62%	109,60	2,40%	134,97	-1,92%	161,34	-3,47%	1740,09	-0,73%
Apr-15	197,12	-2,47%	108,93	-0,61%	133,15	-1,35%	163,38	1,26%	1786,58	2,67%

Source: *Compiled by authors, DataStream (2015)*

Historical Share Prices – Maritime Peers (USD)

Date	Rolls Royce		Halliburton		Cameron		MSCI WORLD	
Apr-10	536,70		31,64		44,75		1222,25	
May-10	547,49	2,01%	28,09	-11,22%	37,30	-16,65%	1123,78	-8,06%
Jun-10	544,32	-0,58%	26,25	-6,55%	37,50	0,54%	1111,11	-1,13%
Jul-10	524,85	-3,58%	27,51	4,80%	34,75	-7,33%	1089,89	-1,91%
Aug-10	506,73	-3,45%	27,81	1,09%	38,51	10,82%	1106,21	1,50%
Sep-10	523,49	3,31%	31,00	11,47%	39,10	1,53%	1157,08	4,60%
Oct-10	575,11	9,86%	35,82	15,55%	43,09	10,20%	1223,43	5,74%
Nov-10	538,86	-6,30%	35,03	-2,21%	43,96	2,02%	1212,56	-0,89%
Dec-10	575,46	6,79%	40,27	14,96%	49,55	12,72%	1260,04	3,92%
Jan-11	598,79	4,05%	39,99	-0,70%	52,23	5,41%	1309,00	3,89%
Feb-11	590,55	-1,38%	47,49	18,75%	59,02	13,00%	1352,03	3,29%
Mar-11	519,65	-12,01%	42,94	-9,58%	57,90	-1,90%	1260,15	-6,80%
Apr-11	583,69	12,32%	46,82	9,04%	53,35	-7,86%	1338,04	6,18%
May-11	602,04	3,14%	45,43	-2,97%	48,89	-8,36%	1336,65	-0,10%
Jun-11	555,12	-7,79%	46,39	2,11%	46,07	-5,77%	1273,56	-4,72%
Jul-11	596,93	7,53%	53,08	14,42%	50,61	9,85%	1313,17	3,11%
Aug-11	563,49	-5,60%	45,92	-13,49%	47,67	-5,81%	1196,58	-8,88%
Sep-11	576,03	2,23%	39,88	-13,15%	52,43	9,99%	1176,03	-1,72%
Oct-11	646,17	12,18%	37,43	-6,14%	49,68	-5,25%	1186,40	0,88%
Nov-11	679,59	5,17%	39,00	4,19%	51,24	3,14%	1178,95	-0,63%
Dec-11	679,13	-0,07%	31,76	-18,56%	47,55	-7,20%	1146,48	-2,75%
Jan-12	716,65	5,52%	33,94	6,86%	51,23	7,74%	1202,48	4,89%
Feb-12	741,03	3,40%	35,64	5,01%	56,15	9,60%	1280,16	6,46%
Mar-12	790,28	6,65%	34,54	-3,09%	52,94	-5,72%	1320,96	3,19%
Apr-12	770,58	-2,49%	32,06	-7,18%	49,49	-6,52%	1266,94	-4,09%
May-12	789,71	2,48%	30,20	-5,80%	45,54	-7,98%	1204,64	-4,92%
Jun-12	781,15	-1,08%	29,45	-2,48%	44,75	-1,73%	1208,53	0,32%
Jul-12	826,77	5,84%	29,00	-1,53%	44,00	-1,68%	1225,35	1,39%
Aug-12	817,27	-1,15%	35,30	21,72%	53,17	20,84%	1287,62	5,08%
Sep-12	840,55	2,85%	37,44	6,06%	58,99	10,95%	1347,61	4,66%
Oct-12	836,75	-0,45%	34,56	-7,69%	54,70	-7,27%	1329,43	-1,35%
Nov-12	809,74	-3,23%	30,46	-11,86%	52,27	-4,44%	1253,31	-5,73%
Dec-12	834,19	3,02%	33,39	9,62%	53,21	1,80%	1325,49	5,76%
Jan-13	874,46	4,83%	36,26	8,60%	59,57	11,95%	1378,92	4,03%
Feb-13	967,47	10,64%	42,70	17,76%	64,58	8,41%	1406,92	2,03%
Mar-13	1040,34	7,53%	41,90	-1,87%	66,66	3,22%	1444,48	2,67%
Apr-13	1069,11	2,77%	39,69	-5,27%	60,82	-8,76%	1438,81	-0,39%
May-13	1170,39	9,47%	43,85	10,48%	63,23	3,96%	1508,02	4,81%
Jun-13	1132,61	-3,23%	42,93	-2,10%	62,10	-1,79%	1463,83	-2,93%
Jul-13	1152,95	1,80%	43,63	1,63%	63,27	1,88%	1500,53	2,51%
Aug-13	1086,10	-5,80%	46,95	7,61%	55,99	-11,51%	1508,80	0,55%
Sep-13	1071,57	-1,34%	49,82	6,11%	58,41	4,32%	1546,52	2,50%
Oct-13	1067,69	-0,36%	51,97	4,32%	64,91	11,13%	1570,34	1,54%
Nov-13	1194,93	11,92%	56,23	8,20%	55,96	-13,79%	1621,50	3,26%
Dec-13	1206,65	0,98%	50,13	-10,85%	57,74	3,18%	1598,22	-1,44%
Jan-14	1217,39	0,89%	50,90	1,54%	58,77	1,78%	1659,34	3,82%
Feb-14	1000,66	-17,80%	53,57	5,25%	61,07	3,91%	1650,12	-0,56%
Mar-14	1008,47	0,78%	55,19	3,02%	61,92	1,39%	1641,13	-0,54%
Apr-14	997,73	-1,06%	60,50	9,62%	63,11	1,92%	1664,85	1,44%
May-14	991,72	-0,60%	62,85	3,88%	63,62	0,81%	1683,69	1,13%
Jun-14	993,70	0,20%	67,61	7,57%	65,25	2,56%	1726,99	2,57%
Jul-14	1049,07	5,57%	71,86	6,29%	69,60	6,67%	1751,51	1,42%
Aug-14	1036,21	-1,23%	68,42	-4,79%	72,63	4,35%	1714,26	-2,13%
Sep-14	998,64	-3,63%	67,29	-1,65%	71,67	-1,32%	1732,55	1,07%
Oct-14	929,92	-6,88%	51,17	-23,96%	57,57	-19,67%	1592,60	-8,08%
Nov-14	850,00	-8,59%	55,08	7,64%	58,24	1,16%	1717,20	7,82%
Dec-14	832,00	-2,12%	38,11	-30,81%	45,60	-21,70%	1655,52	-3,59%
Jan-15	861,00	3,49%	39,13	2,68%	43,48	-4,65%	1675,15	1,19%
Feb-15	936,50	8,77%	44,19	12,93%	47,45	9,13%	1752,91	4,64%
Mar-15	970,50	3,63%	40,52	-8,31%	43,62	-8,07%	1740,09	-0,73%

Source: *Compiled by authors, DataStream (2015)*

A.33. Beta

The following sections will focus on the different approaches used in deriving the most representative measure of the two segments beta in relation to the cost of capital calculation. The calculations and scatter-plots are based on the stock price data form section A.26.

Beta from Comparable Firms - Defense

	Levered	Unlevered	Re-levered
Lockheed Martin	0,4309	0,4045	0,3836
Raython	0,3573	0,3354	0,3180
General Dunamics	0,4430	0,4158	0,3943
Northrop Grumman	0,4714	0,4425	0,4196
Average	**0,43**	**0,40**	**0,38**
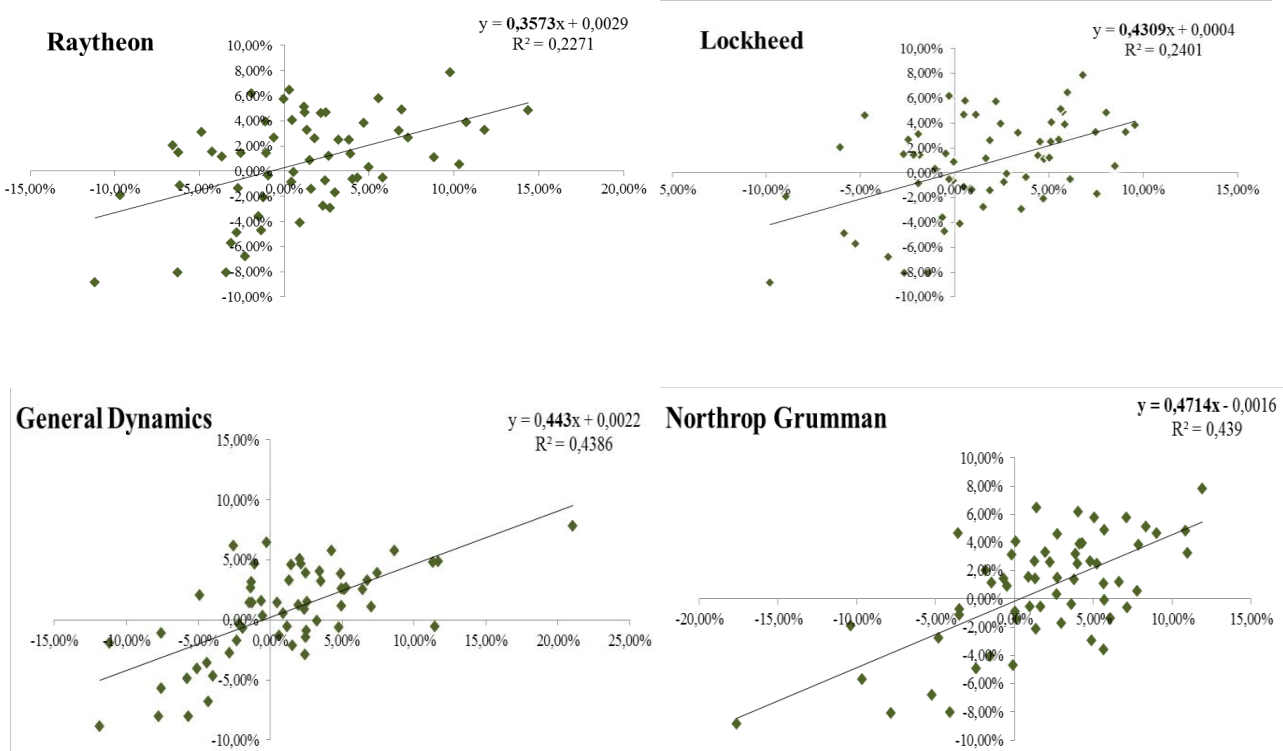
Beta from Comparable Firms - Maritime

	Levered	Unlevered	Re-levered
Rolls Royce	0,3203	0,3606	0,3278
Halliburton	0,2805	0,3000	0,2845
Cameron	0,2648	0,2648	0,2648
Average	**0,29**	**0,31**	**0,29**
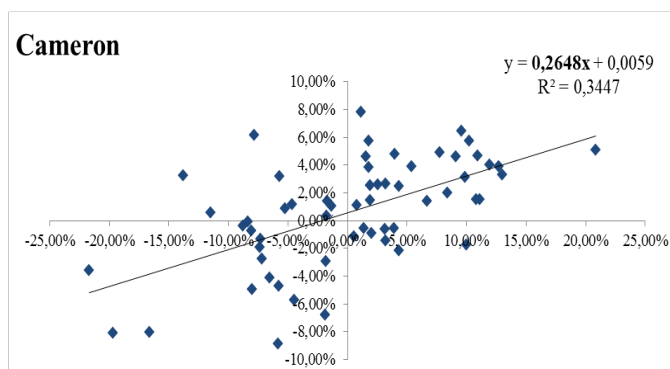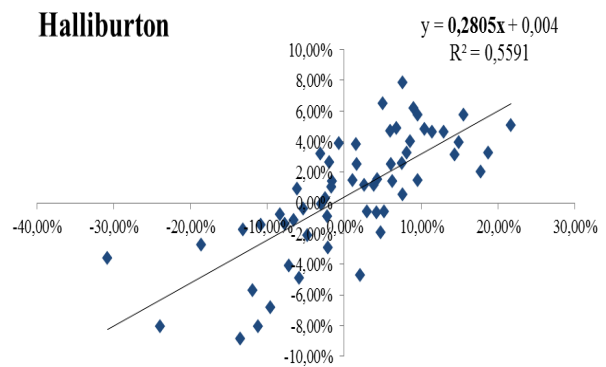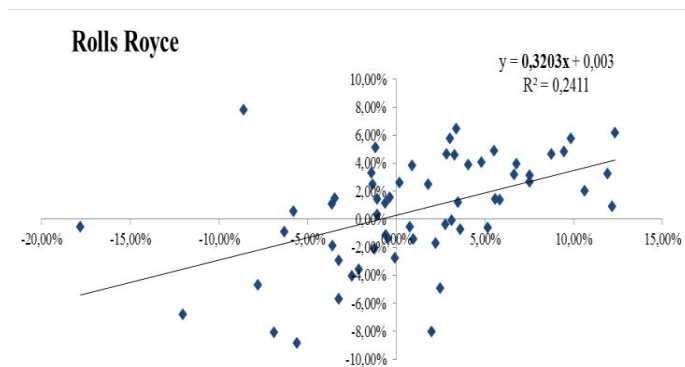
Industry Betas (Damodaran)

Industry	# Frims	Beta
Electronics (Equipment & Supplies)	126	1,24
Software (Engeneering)	259	1,1
Shipping	21	0,86
Oil service & Equipment	161	1,54
Shipbuilding & Marine	14	1,36
Average		**1,22**
Aerospace and Defense	**94**	**1,16**

A.34. Market Risk Premium

The following section presents the data used when calculating the market risk premium. Individual market risk premiums are gathered from Damodaran (2015) and weighted with the generated geographic revenue distribution of KOG.

Market risk premium by region

Region	Market Risk Premium
Norway	5,8%
Europe	7,6%
North America	5,8%
Asia	8,0%
South America	10,7%
Rest of the world	11,6%

Source: Compiled by authors based on Damodaran (2015)

Market risk premium calculated based on geographical revenue distribution

	Revenue	Split	Premium
Norway	3.821	23,0%	5,8%
Europe	3.489	21,0%	8,6%
North America	3.489	21,0%	5,8%
Asia	4.652	28,0%	8,8%
South America	498	3,0%	12,0%
Rest of the world	665	4,0%	12,4%
Total	**16.613**	**100%**	**7,7%**

Source: Compiled by authors based on Damodaran (2015).

A.35. Cost of Debt

Public Bond	KOG 07
Currency	NOK
Face Value	100
Fair Value	111,10
Type	Fixed
Coupon	4,8%
Settlement Date	11.09.2012
Maturity date	11.09.2019
Years to Mauturity	7
Payment frequency	1
YTM	**3,02%**

A.36. Capital structure

This section will provide the formulas and input to the iterative calculations of the respective WACC through estimation of company target debt ratio.

V_F: Segment value
$FCFF_t$: Free cash flow to segment each year t
WACC: Weigthed cost of capital
N: Number of years in forecast period
G: Prepituity growth rate
R_D: After tax cost of debt
W_D: weigth of debt in the target capital structure or target debt ratio
R_E: Cost of Equity
V_E: Value of Equity
V_D: Value of Debt

(1) $V_F = \frac{FCFF_1}{(1+WACC)^1} + \cdots + \frac{FCFF_N}{(1+WACC)^N} + \frac{FCFF_{N+1}}{(WACC-G) \times \left(\frac{1}{(1+WACC)}\right)^N}$

(2) $WACC = R_D \times W_D + R_E \times (1 - W_D)$

(3) $V_E = V_F - V_D$

(4) $V_D = W_D \times V_F$

The circularity issue is dealt with by solving for V_E, using the common textbook formulas. Equation 4 is substituted into equation 2, equation 2 into equation 1, and equation 3 into equation 1 for V_F. We then arrive at the final formula (5):

$$V_E = \frac{FCFF_1}{1 + \left(R_E \times \left(1 - \frac{V_D}{V_D + V_E}\right) + R_D \times \left(\frac{V_D}{V_D + V_E}\right)\right)^1} + \cdots + \frac{FCFF_N}{1 + \left(R_E \times \left(1 - \frac{V_D}{V_D + V_E}\right) + R_D \times \left(\frac{V_D}{V_D + V_E}\right)\right)^N}$$
$$+ \frac{FCFF_{N+1}}{\left(R_E \times \left(1 - \frac{V_D}{V_D + V_E}\right) + R_D \times \left(\frac{V_D}{V_D + V_E}\right)\right) - G} \times \frac{1}{1 + \left(R_E \times \left(1 - \frac{V_D}{V_D + V_E}\right) + R_D \times \left(\frac{V_D}{V_D + V_E}\right)\right)^N} - V_D$$

Defense – Iterative process with inputs

Input							
Growth	Rd	Re	Vd	Ve	Wd	Beta	ERP
3,03%	3,02%	15,00%	-753	9000	-0,0913	1,16	7,7%
FCFF1	FCFF2	FCFF3	FCFF4	FCF5		Rf	Tax
-403,49	703,17	796,55	821,28	863,49		1,43%	2,84%

Output							
Atempt	Beta UL	Beta Re-L	Beta adj.	Re	WACC	Begining VE	FCF Firm Value	FCFF Equity value
1	1,234	1,131	1,087	8,25%	8,80%	9000,000	12103,753	12856,753
2	1,211	1,140	1,093	8,28%	8,67%	12856,753	12423,056	13176,056
3	1,209	1,140	1,094	8,29%	8,66%	13176,056	12441,165	13194,165
4	1,209	1,140	1,094	8,29%	8,66%	13194,165	12442,166	13195,166
5	1,209	1,140	1,094	8,29%	8,66%	13195,166	12442,221	13195,221
6	1,209	1,140	1,094	8,29%	8,66%	13195,221	12442,224	13195,224
7	**1,209**	**1,140**	**1,094**	**8,29%**	**8,66%**	**13195,224**	**12442,224**	**13195,224**
8	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224
9	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224
10	1,209	1,140	1,094	8,29%	8,66%	13195,224	12442,224	13195,224

Maritime – Iterative process with inputs

Input							
Growth	Rd	Re	Vd	Ve	Wd	Beta	ERP
3,03%	3,02%	15,00%	-1224	9000	-0,16	1,22	7,7%
FCFF1	FCFF2	FCFF3	FCFF4	FCF5		Rf	Tax
1264,32	987,26	870,02	619,56	695,28		1,43%	28,43%

Output							
Atempt	Beta UL	Beta Re-L	Beta adj.	Re	WACC	Begining VE	FCF Firm Value	FCFF Equity value
1	1,352	1,168	1,112	8,40%	9,25%	9000,000	10936,049	12160,049
2	1,315	1,182	1,122	8,46%	9,17%	12160,049	11067,551	12291,551
3	1,314	1,183	1,122	8,46%	9,16%	12291,551	11078,080	12302,080
4	1,314	1,183	1,122	8,46%	9,16%	12302,080	11078,913	12302,913
5	1,314	1,183	1,122	8,46%	9,16%	12302,913	11078,979	12302,979
6	1,314	1,183	1,122	8,46%	9,16%	12302,979	11078,984	12302,984
7	**1,314**	**1,183**	**1,122**	**8,46%**	**9,16%**	**12302,984**	**11078,985**	**12302,985**
8	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985
9	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985
10	1,314	1,183	1,122	8,46%	9,16%	12302,985	11078,985	12302,985

A.37. Weighted Average Cost of Capital

Weighted Average Cost of Capital

	Applicable to both	**Defense**	**Maritime**
Tax			
Effective Tax Rate	*28,43%*		
Capital Structure (target)			
D/EV		-6%	-11%
E/EV		106%	111%
Debt Cost of Capital			
Debt CoC	*3,02%*		
Equity Cost of Capital			
Risk-free rate	*1,43%*		
Adjusted Beta		1,09	1,12
Market Risk Permium	*7,70%*		
Equity CoC		**8,29%**	**8,46%**

= rf + Beta * (Rm-rf)

Weigthed Average Cost of Capital

		Defense	**Maritime**
WACC		**8,66%**	**9,16%**

=E/EV * E CoC + D/EV * D CoC * (1-T)

Source: Compiled by authors

WACC Distribution

Source of Capital	Proportion of Total Capital	Cost of Capital	Marginal Tax Rate	After-Tax Cost of Capital	Contribution to Weigthed Average
Defense					
Debt	-7%	3,02%	28,43%	2,16%	-0,14%
Equity	107%	8,29%			8,83%
WACC	**100%**				**8,69%**
Maritime					
Debt	-12%	3,02%	28,43%	2,16%	-0,25%
Equity	112%	8,46%			9,44%
WACC	**100%**				**9,19%**

Source: Compiled by authors

A.38. Segment Valuation

Defense

Discounted cash flows model

NOKm	E2015	E2016	E2017	E2018	TV
FCFF	-403	703	797	821	864
WACC	8,68%	8,68%	8,68%	8,68%	8,68%
Discount factor	0,92	0,85	0,78	0,72	0,66
Present value of FCFF	**-371**	**595**	**620**	**589**	**570**
Present value of FCFF in forecasting horizon	1.433				
Present value of FCFF in terminal period	10.015				
Estimated marked value of firm	11.448				
Net interest-bearing debt	-753				
Estimated marked value of equity	12.201				
Number of shares	120.000.000				
Estimated market value of equity pr. share (NOK)	**101,67**				

The Economic Value Added model

NOKm	E2015	E2016	E2017	E2018	TV
NOPAT	661	749	877	865	887
Invested capital, beginning of period	-311	754	800	880	924
WACC	8,68%	8,68%	8,68%	8,68%	8,68%
Cost of capital	-27	65	69	76	80
EVA	688	684	807	789	807
Discount factor	0,92	0,85	0,78	0,72	0,66
Present value of EVA	**633**	**579**	**629**	**565**	**532**
Invested capital (book value), beginning of period	-311				
Present value of EVA in forecasting horizon	2.406				
Present value of EVA in terminal period	9.353				
Estimated marked value of firm	11.448				
Net interest-bearing debt	-753				
Estimated marked value of equity	**12.201**				
Number of shares	120.000.000				
Estimated market value of equity pr. share (NOK)	**101,67**				

Maritime

Discounted cash flows model

NOKm	E2015	E2016	E2017	E2018	TV
FCFF	1.264	987	870	620	713
WACC	9,19%	9,19%	9,19%	9,19%	9,19%
Discount factor	0,92	0,84	0,77	0,70	0,64
Present value of FCFF	**1.158**	**828**	**668**	**436**	**459**
Present value of FCFF in forecasting horizon	3.090				
Present value of FCFF in terminal period	7.500				
Estimated marked value of firm (aka enterprise value)	10.590				
Net interest-bearing debt	-1.224				
Estimated marked value of equity	**11.814**				
Number of shares	120.000.000				
Estimated market value of equity pr. share (NOK)	**98,45**				

The Economic Value Added model

NOKm	E2015	E2016	E2017	E2018	TV
NOPAT	870	789	721	794	814
Invested capital, beginning of period	4.616	4.221	4.023	3.874	4.048
WACC	9,19%	9,19%	9,19%	9,19%	9,19%
Cost of capital	424	388	369	356	372
EVA	446	401	352	438	442
Discount factor	0,92	0,84	0,77	0,70	0,64
Present value of EVA	**408**	**337**	**270**	**308**	**285**
Invested capital (book value), beginning of period	4.616				
Present value of EVA in forecasting horizon	1.323				
Present value of EVA in terminal period	4.651				
Estimated marked value of firm	10.590				
Net interest-bearing debt	-1.224				
Estimated marked value of equity	**11.814**				
Number of shares	120.000.000				
Estimated market value of equity pr. share (NOK)	**98,45**				