Valuation of Havila ASA

Master Thesis

Cand.merc. Accounting, Strategy and Control
Copenhagen Business School 2018

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Pages: 118
STUs: 248 018

Hand in date: 15/05/2018

Executive summary

The overall aim of the thesis is to determine the fair value of the Norwegian offshore supply vessel ("OSV") company Havila Shipping ASA ("Havila" or the "Company") per 26/02/2018. Together with its subsidiaries, Havila manages and operates offshore service vessels in all major regions. As of 31/12/2017, the company's fleet consisted of 23 vessels including five within the anchor handling vessels, 14 within the platform supply vessels, one within rescue recovery vessels and three Subsea construction vessels.

The OSV industry is highly dependent on the global E&P spending of the petroleum companies which in turn is driven by the oil price. Even if the oil price and the projected increase in E&P spending look more promising than in years, it is unlikely that the oil price will reach its pre-crisis levels, meaning that the OSV industry will not be able to enjoy satisfactory demand in many years to come. That in combination with an overall oversupply which results in depressed utilisation and freight rates constitutes a rather gloomy outlook for the industry, characterised by high competition among the existing firms.

The challenging market in combination with Havila's high financial leverage leaves the thesis to believe that the company's share price will not recover in the foreseeable future. The intrinsic valuation approaches of this thesis result in a final share price of NOK 7.0 as per the valuation date, and when discounted forward to 26/02/2018 the share priced amounted to NOK 7.1. When comparing that to the traded share price of NOK 10.4 on 26/02/2018, a potential downside of 31% becomes evident. Consequently, this thesis concludes a SELL investment recommendation for Havila shares.

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1. Introduction and motivation

The motivation for conducting a valuation of the Norwegian offshore supply vessel company Havila Shipping ASA (HAVI) is based on multiple factors.

First and foremost, we think the OSV industry is a highly interesting industry due to its volatile, cyclical and capital intensive nature. As offshore service providers for the petroleum companies, the activity for the OSV companies is highly dependent on the offshore spending which in turn is highly contingent on the oil price and the exploration and production spending. Consequently, the oil price plunge in 2014 hit demand drastically, which in combination with an overall oversupply of vessels resulted in a major imbalance in the market with rock bottom day- and utilisation rates. The recent market condition and the overall debt burdens have forced many OSV companies into distress. However, the tide may now be turning with stabilized oil prices and a projected increase in E&P spending. It is this unique market dynamic that makes the OSV industry interesting, thus motivating us to develop a deeper understanding of the industry.

The Norwegian OSV companies operate the most advanced offshore fleet in the world, a fleet that is becoming increasingly globalised. Due to OSV companies' importance to the overall Norwegian maritime industry, contributing with technological know-how, proactive focus and employment, the future of these companies is certainly an area of interest. Being one of the oldest major offshore companies in Norway, Havila has in recent years been operating at the brink of bankruptcy. Also, in relation to the company's recent restructuring efforts, its size and its current market position, it would be interesting to investigate the company's capabilities to compete in the challenging market going forward.

Lastly, since both of us find the craft of valuation challenging and highly stimulating, we find this thesis extremely interesting as it lets us conduct a valuation on a company operating in a complex industry.

1.1 Methodology

1.1.1 Problem statement

The overall purpose of this thesis is to determine the fair value of Havila. In the pursuit of finding the most precise value several valuation methods will be applied. The subjective findings of this thesis will be presented as a recommendation to potential investors. Thus, the research question of this thesis is as follows:

What is the fair value of Havila per 26/02/2018, and is the future outlook of the company mirrored in the current share price?

1.1.1.1 Sub-questions

In order to comprehensively answer the chosen research question this thesis have defined multiple sub-questions which will be answered in there corresponding sections.

1.1.1.1.1 Strategic analysis

- To what extent does the identified key macro drivers affect the activity in the OSV industry?
- How big of an impact does the identified key macro divers have on the attractiveness of the OSV industry?
- Which of the internal drivers can be viewed as valuable resources, and to what degree do they affect Havila's future performance?

1.1.1.1.2 Financial statement analysis

- Which key drivers have affected Havila's historical financial performance?

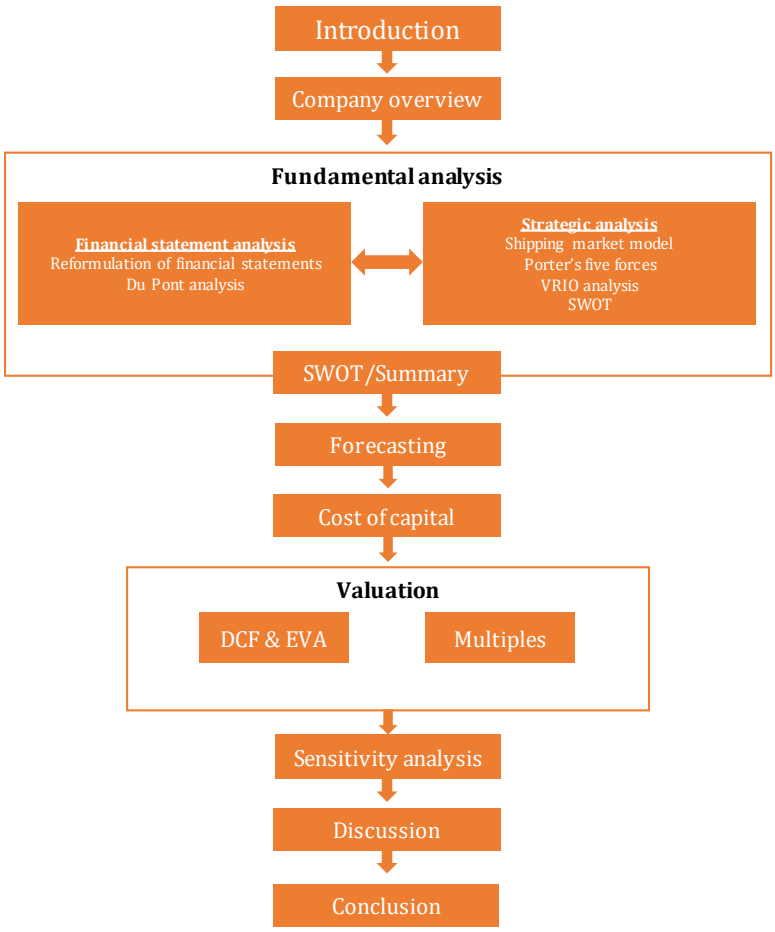
1.1.1.1.3 Valuation and sensitivity analysis

- What is the most accurate cost of capital for Havila?
- What is the trading range of Havila?
- How sensitive is the estimated share price to fluctuations in different company and market factors?

1.2 Structure of the thesis

The thesis structure illustrated below will be used as a guide for the research. Moreover, this thesis argues that, by following the structure, consistency throughout the thesis will be maintained.

Figure 1.1: Thesis structure



Source: Compiled by authors

1.3 Data collection

The data which the thesis bases its analysis on are exclusively public information, such as annual reports, industry databases and research from investment banks and economical institutions. The data have been chosen based from the perspective of an analyst, who will usually have access to this form of public information. When using secondary data, one has to be very careful against research biases, which could in turn lead to incorrect interpretation of the data and hence forge the analysis. This has always been at the top of our mind throughout the whole process of data collection. Thus, in order to ensure validity of the

data, the collection have been made from a considerable amount of different sources. One direct example is the collection of oil prices, where three different established institutions number were used and the average was taken. Furthermore, not just choosing different resources but also view every one of them as critical as possible have helped us in what we believe to be solid data foundation which the thesis is based on.

1.4 Models

1.4.1 Financial statement analysis

Following the strategic analysis, the financial statements (income statement and balance sheet) of Havila will be reformulated into so called analytical statements, in order to separate their financial activities from operational ones. This also aids the process of assessing the historical financial performance of the company. The Du Pont framework, will be used to investigate whether Havila's the historical performance has generated sufficient returns to its shareholders, meaning that the firm return the same or above its cost of capital (Petersen & Plenborg, 2012). Shareholders care about the return on equity (ROE), which is composed by three components; return on invested capital (ROIC), spread and financial gearing (FGEAR). Each of them will be analysed and dissected until their last driver has been identified. The Du Pont-analysis enables the breakdown of every ratio into its very last components and makes it possible to single out both internal and external factors which have been the drivers of financial performance prior to now. It is reasonable to assume that past drivers will have an impact on future performance and hence, by identifying them, they could then be used in the forecast. The thesis has classified the drivers as; macro, industry or internal.

1.4.2 Strategic analysis

In addition to the financial statement analysis, a strategic analysis will be conducted in order to investigate the drivers affecting the industry from another perspective. The analysis will be conducted top-down and divided into three segments as follows; macro-, industry- and internal/company analysis.

1.4.3 External analysis – Shipping Market Model

When analysing a company in the OSV sector, one has to make an extensive macro analysis since the industry is heavily influenced by macro-factors. The Shipping Market Model was developed by Martin Stopford and is used to explore these drivers which are very important for the shipping industry in general. The model works as a tool for revealing the relationship between supply and demand in commodity

industries (Stopford, 2008). The OSV industry can be defined as a "commoditised industry" since it is a global business containing many players, where there offering is in general the same and the main assets (vessels) are mobile. The model aims to incorporate the factors determining supply and demand which in turn affects the OSV day rates and vessel utilisation and the finding will be applied in the forecast section. However, since the model is mainly intendent for the shipping industry, it been modified in order to better suit the aim of the thesis, which is to valuate an OSV firm.

The most common model used when analysing a firm's external environment is the PESTEL framework. Nonetheless, the choice of the Shipping Market Model came naturally since it limits itself to be applied to shipping related industries and thus captures more important factors as compared to a more general model.

1.4.4 Industry analysis – Porter's Five Forces

To analyse the dynamics of the OSV industry, the thesis has applied the model of Porter's Five Forces, one of the most common strategic models (Grant, 2013). What the framework tries to achieve is to assess whether or not the case company operates in an industry which is attractive and if there is a chance of earning abnormal return, meaning ROIC > WACC. This is made by examining the five forces in the model which have an impact on the intensity of competitiveness in the industry (Porter, 2008). The findings will later be used when forecasting the future profitability of Havila. The thesis finds the model as the most appropriate one to investigate the OSV industry since it covers the many variables that affect the industry and hence Havila.

1.4.5 Internal analysis – VRIO framework & SWOT

The internal analysis is conducted through applying the VRIO framework, which in turn is based on Barney's VRIN framework from his 1991 article "Firm Resources and Sustained Competitive Advantage". The model is used to highlight the capabilities and resources of Havila. According to the model, the main source for long-term profitability is to have a competitive advantage, thus it is of highest importance to understand what can potentially create this advantage (Grant, 2013). The value chain of Havila will be examined in order to explore the key factors related to competitive advantage and in addition to classify the resources into physical, financial and organizational. The resources will be examined according to the model where the questions of *value, rarity, imitability* and if Havila have the organisational capability to capture the possible competitive advantage. Then the resources examined will be classified as providing Havila with a

competitive disadvantage, competitive parity, temporary competitive advantage or a *sustained competitive advantage*, all in accordance with the model (Barney & Hesterley, 2012).

According to the creators of the VRIO framework, the model is a valuable instrument when trying to understand the internal setting of the firm. In order to see if a firm possess a resource that could be a source of competitive advantage these question have to be asked and answered (Ibid):

- Question of **Value**: *"Does a resource enable the firm to exploit environmental opportunity, and/or neutralize an environmental threat?"*
- Question of **Rarity**: *"Is a resource currently controlled by a small number of competing firms?"*
- Question of **Imitability***: "Do firms without a resource face a cost disadvantage in obtaining or developing it?"*
- Question of **Organisation**: *"Are a firm's another policies and procedures organized to support the exploitations of its valuable, rare and costly-to-imitate resources?"*

Lastly, a SWOT matrix will be conducted, summarising the findings from the financial statement analysis of Havila and the strategic analysis of the OSV industry. The matrix is a common tool when trying to map the internal factors, which are a company's strengths and weaknesses, against its external factors, namely the opportunities and threats (Grant, 2013).

1.4.6 Forecasting & regression analysis

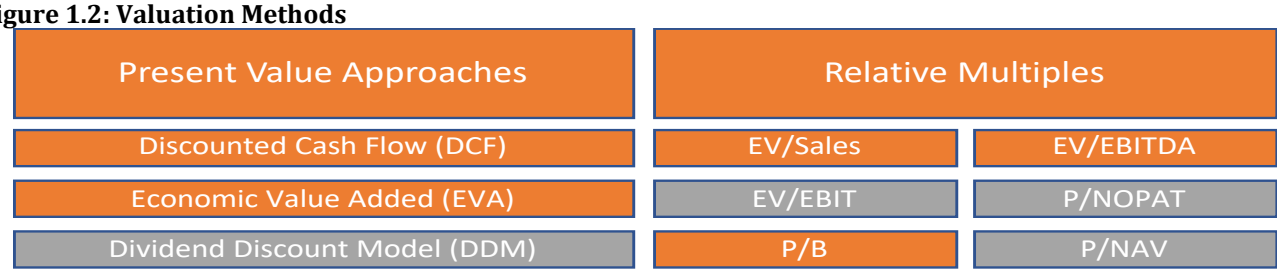
A multiple regression analysis was performed in the forecasting section in order to estimate the future day or spot rates for the AHTS high-end segment. The time series used was between the years 2001–2012, due to lack of newer data. However, it is argued that these years gives a good representation of the typical up- and downswings of the industry, since it contains more than a typical business cycle of 8–10 years. In addition, no real technical advancements have not been hitting the industry since 2012, meaning that the relationship between the explanatory variables *oil price, number of rigs* and *number of AHTS vessels* and the independent variable *spot rate* should be the same in 2017 and the near future. Although, it should be mentioned that technical changes can come very quick and disrupt whole industries, yet it is impossible to foresee them and take them into consideration when forecasting (Christensen, Raynor & McDonald, 2015). The multiple regression analysis was performed in order to check if there was a linear relationship between the independent and dependent variables. The different geographical areas and the low-end AHTS as well

as the PSV rates have then been based on high-end AHTS segment. This is explained further in the section 5.

1.4.7 Valuation methods

There is a vast number of techniques in the universe of company valuation but there are two very common ways that are nearly almost used when trying to estimate the enterprise value (EV) of a firm: the present value approaches and relative valuation by using multiples. Techniques that have been deemed out of this thesis scope but should be mentioned are liquidations models, contingency models as well as leveraged by out models (Pearl & Rosenbaum, 2013). One could argue that a liquidation model could have been in place since the case company have found itself in financial distress lately and are under an ongoing restructuring plan (Havila ASA, 2017). However, the thesis are conducted with the assumption of Havila as a going concern and hence the liquidation approach have been overlooked. Further, the price to net asset value (P/NAV) valuation technique is a classical approach when valuating firms in the OSV sector, since the business model is regarded as "asset heavy" (Pareto, 2015). It would add a valuable angle to the project, however, since it nearly impossible to find updated market values of the firms' vessels, the model will have to be neglected. Therefore, in order to answer the main problem statement, several present value approaches and relative multiples will be used, which are illustrated in figure 1.2 below.

Figure 1.2: Valuation Methods



Source: Compiled by the authors

All present value models are based on the less popular dividend discount model, subsequently, they are all yielding the same result if the input is identical (Petersen & Plenborg, 2012). Thus, by using more than one model it can work as a validation that it has been properly executed. This also implies that using more than two models is unnecessary since it will not additional output. The without doubt most common method is the so called DCF model which calculates the EV by discounting the forecasted free cash flow to the firm (FCFF) by the weighted average cost of capital (WACC). Havila's EV will be estimated through summing the present value of the budgeted period (2018–2022) and the terminal period. The terminal value is found by

using the Gordon's Growth Model (GGM) (Ibid). Calculations and further explanations can be found in section 7.1.

As been mentioned, applying two present value approaches which yield the same result works as a validation of the technique used. The EVA model will be used to assure the output from the DCF model. The EVA model is explained by Petersen & Plenborg (2012, p. 220) *"According to the EVA model the value of a company is determined by the initial invested capital (book value of equity plus net interest-bearing debt) plus the present value of all future EVAs."* More in-depth explanations and calculations will be described in section 7.2.

The relative multiple valuation are far more easy and less time consuming than the present value approaches and they can also be used as a stress-test of the PV-methods (Ibid). In this thesis, forward looking multiples have been used instead of trailing, since they corresponds better to the future-looing PV-methods (Koller et al., 2010). Both levered and unlevered multiples will be used and all will be explained more thorough in their own section.

1.4.8 Sensitivity analysis

Since the analysis of this thesis is to some degree based on subjective assumptions, potential biases in estimating the share price is possible. By reason of this, it is beneficial to conduct a sensitivity analysis to show how changes in certain factors affects the estimated share price of Havila. Moreover, this thesis deemed four assumptions most precarious and these will be discussed in the corresponding section. The analysis will provide the reader with information regarding how sensitive the estimated share price is to changes in both company and market factors, while also adding credibility to the valuation.

1.4.9 Delimitations

- The analysis is solely based on publicly available information.
- The cut-off date of 31/12/2017 is applied, which is the end of the last fiscal year, and any information after that date will not be taken into consideration.
- Due to the complexity of forecasting the oil price, the forecast applied in this thesis will be based on multiple external reliable sources.
- Due to insufficient information regarding when Havila will deploy its laid-up vessels, this thesis assumed that the laid-up vessels are to be sold in 2018.

- Several company vessels have an option to extend their contract, however due to the difficulties of predicting if the options will be exercised or not, this thesis assumes that the vessels will be available on the spot market when the contract expires.
- This thesis has used the North Sea AHTS spot rates as the basis for all other forecasted rates.
- The regression data input for the forecasted rates are based on the last available information which in this case is 2001–2012.
- Future exchange rates will not be forecasted in this thesis due to the complexity of such an exercise.

2 Company overview

Rooted back to the early 1980s, Havila is one of the first major offshore companies in Norway. Today the company is part of the Havila group of companies through its main shareholder Havila Holding AS and is listed under the ticker HAVI on the Oslo Stock Exchange. The company is headquartered in the small town of Fosnavåg, Norway, with additional offices in Brazil and Asia. As of the end of 2017, the group employed 429 employees both at sea and on land, whereof 31 employees are working out of the Fosnavåg office responsible for the operations of the fleet and the management of the company (Havila Q4, 2018).

Together with its subsidiaries, Havila manages and operates offshore service vessels worldwide, but primarily in the North Sea, Asia, Brazil and Africa. At 31/12/2017, Havila operated a fleet of 23 vessels, including five within the anchor handling vessels, 14 within the platform supply vessels, one within rescue recovery vessels and three Subsea construction vessels. At year-end, the fleet is expected to decrease to 20 vessels through the sale of three platform supply vessels. Moreover, in the end of 2017, Havila's operating income amounted to NOKm 598 with an operating profit (EBIT) of NOKm -239 (Ibid).

2.1 History

The first offshore vessel was acquired in 1981, which established the foundation from which Havila emerged. The company have since its inception been operated by the Sævik family who have been an influential player in the OSV sector ever since. Today's Havila was established in 2003, after the acquisition of ten standby vessels from Group Bourbon, and today the company operates 23 of the most modern offshore vessels in the industry (Havila ASA, 2005; Havila.no, 2018). Following the listing in 2005, Havila have been engaged in multiple fruitful contracts and agreement as well as asset purchases and disposals,

which have helped the company to secure a position as a leading worldwide supplier of quality assured supply services to the OSV industry (Marketline, 2017).

2.2 Board of Directors and Management

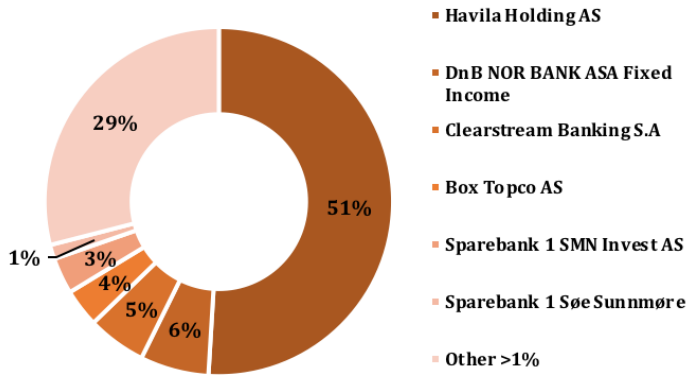
2.2.1 Board of Directors

The Company's Board of Directors consists of five board members, whereof four have no commercial or personal association with either the management or the principal shareholder and none holds a senior executive position at Havila. Moreover, the board is legally responsible of the overall control and management of the company. The following paragraph will briefly introduce the Chairman of Havila Shipping ASA (Havila ASA, 2017). See Appendix 6 for information about the rest of the board and the corporate management.

Chairman of the Board, Jostein Sætrenes have been at the position since May 9, 2017. He is currently CEO of Shipsinvest AS and prior to that Sætrenes has held various c-suite positions at several ship owning companies, he has also been CEO of KredittBanken/Glitnir Bank. Sætrenes owns no shares in the company (Havila.no, 2018).

2.3 Ownership structure

Figure 1.3: The largest shareholders



Source: Havila.no, 2018

The above figure shows the six different shareholders who all hold more than one percent ownership, together the major shareholders own around 70% of the company's shares. The lion share, 51%, is owned by Havila Holding AS, which in turn is controlled by the founder of the company Per Sævik, this in turn

means that the Sævik family have controlling interest of the company. The second largest shareholder is DnB Bank ASA followed by Clearstream Banking S.A, who holds 6% and 5% respectively (Havila.no, 2018).

2.4 Fleet

The company's total fleet consists of 23 vessels, and can be divided into four segments AHTS, PSV, RRV and Subsea vessels. Havila operates five AHTS, 14 PSV, one RRV and three Subsea vessels. Moreover, the company has three PSVs available for sale as part of the recent restructuring, which will be explained in section 2.5.1, and no planned deliveries (Havila Q4, 2018).

2.4.1 Platform Supply Vessels (PSV)

PSVs are built to facilitate the daily transportation needs of the OSV industry. This includes full transportation and logistics service of goods/equipment and supplies to and from the offshore rigs. The vessels are equipped with large tanks capable of carrying water, drilling mud, chemicals, fuel and other liquid goods (Havila.no, 2018). The PSV vessels is characterized by their large deck space, and the size varies from small ships (<500m^2) to large (900+m^2). Further, the unit of measurement for the vessels is deadweight tons (DWT), and PSVs with a measurement over 4.000 DWT is classified as a high-end ship, and vessels with lower measurement is classified as low-end ships (Pareto, 2015).

2.4.2 Anchor Handling Tug Supply Vessels (AHTS)

The AHTS vessels are designed to handle anchors for oilrigs, and to move different oilrigs such as jack-up rigs, semi rigs and floating rigs. The vessels are also capable of transporting supplies to and from offshore installations. Due to its functionality, the AHTSs are more complex than the PSVs, thus demand a higher degree of technical complexity and specifications and as a result, the unit of measurement called boiler horsepower (BHP) of the AHTS vessels is significantly higher than PSVs. A vessel with BHP of 20.000 or above is considered high-end, while BHP of 15.000 or below is considered low-end, everything between is classified as middle-end vessels. In addition, the construction and superior motor power enables the AHTS to operate underwater vehicles as well as provide assistance during tanker loading and rescue services (RS Platou, 2015).

2.4.3 Construction and Maintenance Vessels (CSV or Subsea)

CSVs are constructed to support complicated offshore Subsea and platform construction work; the vessels are also used to support installations and maintenance of the drilling process. Moreover, compared to the PSVs and AHTSs the CSV vessels possesses superior technical capabilities supporting its wide range of application. Being the largest vessel in the OSV industry, the CSVs have higher BHP than the other vessel types (Havila.no, 2018).

2.4.4 Rescue and Recovery Vessels (RRV)

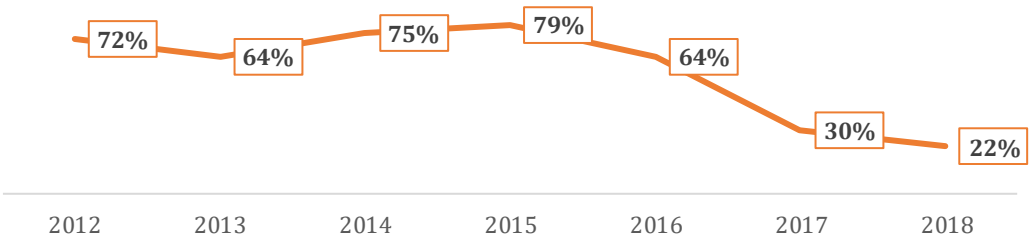
Equipped with large pickup boats, helipads and firefighting equipment the RRV vessels are built to provide security services to the OSV industry, services include oil spill preparedness, fire protection and operation of rescue- and recovery at offshore oil installations (Ibid).

2.4.5 Weighted average fleet age

Havila has during the last couple of years invested in the modernisation of their fleet; this in turn has resulted to a modern fleet with a weighted average of 10.7 in 2017. The PSVs have a weighted average age of 11.2 years, and the AHTSs and CSVs are on average 9.8 and 9 years old respectively. Moreover, the single RRV is 15 years old (Havila Q4, 2018).

2.4.6 Contract coverage

Figure 1.4 Contract coverage



Source: Havila Annual Report 2012–2017, Complied by authors

Havila's contract coverage excluding charter options was 64% in 2016. Moreover, based on the latest available figures derived from the 2016 annual report the contract coverage in 2017 and 2018 was forecasted to be 30% and 22% respectively.

2.5 Key company highlights

2005	Havila Shipping was listed at Oslo Stock Exchange.
2007–2011	New build program initiated, resulting in 13 vessels delivered from different shipyards.
2011	Havila acquired five PSVs and carried out a share issue resulting in NOKm 368 in gross proceeds.
2012	Entering an agreement with Subsea 7 for the sale of the joint venture Acergy Havila Ltd. Also, Havila carried out a private placement resulting in NOKm 200 in gross proceeds allowing for the repurchase of the ownerships interest in two AHTSs.
2013	Carried out a repair issue totalling NOKm 10 in gross proceeds.
2015	Entered into an agreement with its bank lenders on 31/12/2015 to reduce amortisation for the next coming three years, delay maturities and substitute existing financial covenants. The agreement was called "Master Agreement".
2016	Havila announced in mid-February that the Master Agreement was had been disapproved. As a consequence, the company entered a new agreement with its creditors to not pay the accrued interest between 16/02/2015 – 30/09/2016, the accrued interest amounted to NOKm 135. Further negotiations resulted in the term sheet for the Restructuring Plan on 08/11/2016.
2017	An extraordinary shareholders meeting approved the Restructuring Plan on the 4th of January. The purpose of the Restructuring Plan will be explained below.

Source: Havila ASA, 2018

2.5.1 Restructuring plan

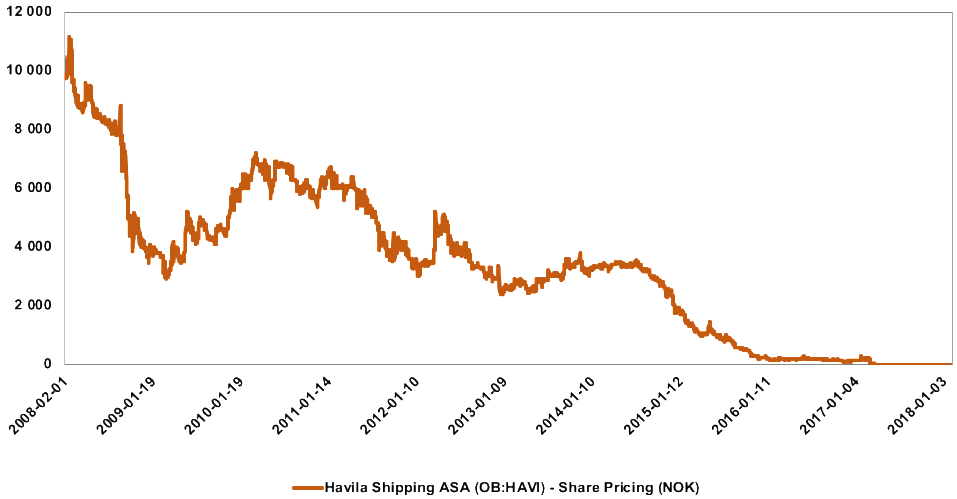
The recent decline and expected continuing turmoil in the OSV industry have affected Havila's financial position substantially, without the implementation of the restructuring plan the company would almost certainly be forced to file for bankruptcy within short time. The suggested refinancing solution from the restructuring plan allows Havila to maintain necessary liquidity to operate through 2020.

The Restructuring Plan covers the elements below:

1. A share capital reduction from NOK 15.089.800 to NOK 301.796 by reducing the shares nominal value from NOK 0.50 to NOK 0.01.
2. The Cash Private Placement: a private placement of 615.663.840 new shares paid by Havila Holding AS at the price of NOK 0.125 per share totalling NOK 76.957.980 in gross proceeds.
3. The Anti-Dilution Protection Loan: a convertible loan of NOK 41.242.020 from Havila Holding AS, with the purpose of providing Havila with cash and protect the Cash Private Placement against dilution.
4. The Conversion Private Placement: private placement of 561.340.560 new shares issued and subscribed by secured creditors with settlement in the form of reduction of debt / set off against accrued unpaid interest totalling NOKm 135.
5. The Convertible Loan: convertible loan from Havila Holding AS of NOK 46.200.000 with the purpose of providing Havila with cash as well as provide dilution protection for Havila Holding AS following certain equity transactions.
6. The Subsequent Offering: offering up to 240.000.000 new shares at the price per share of NOK 0,125 with maximum gross proceed of NOK 30.000.000.
7. The issuing of warrants comprising the 318.410.324 NCV I Warrants and the 113.145.766 NCV III Warrants, subscribed by creditors as a settlement for debt. The warrants may be exercised if Havila suffer losses in connection with sale of non-core assets.
8. The issuing of 500.000 unsecured warrants to unsecured creditors as part of the settlement of debt.
9. Future conversion to Shares of Non-Performing Core Vessel Debt; if any core vessel fail to produce the defined minimum EBITDA, the creditors having financed the vessels may in some cases start a sale process of that particular vessel i.e. any shortfall may be converted to equity (Havila ASA, 2018).

2.6 Havila share price development adjusted for splits

Figure 1.5: Share price development



Source: Compiled by authors, CapitalIQ

2.6.1 2005 (IPO)–2007

The company enjoyed a satisfying increase in share price from 2005 to the end of 2007; the upturn in oil price and the positive outlook for even higher oil prices characterized the increase. By virtue of the positive oil development, the spot rates for both AHTS and PSVs increased significantly, also the overall contract coverage increase to higher levels (RS Platou, 2015). During the timespan, the share price developed from NOK 4.150 in 2005 to reach the highest peak of NOK 11.750 in the end of 2007.

2.6.2 2008

Departing from high levels of NOK 11.000 in the beginning of 2008 the share price development took a hard hit resulting in a share price of NOK 3.650 in the end of 2008. The downturn was mainly influenced by the financial crisis, which consequently led to a global demand reduction for oil and gas. This in turn, caused cost reduction in the oil industry and scaled downed E&P spending resulting in a drop in demand for supply vessels. With decreased demand and increased supply, the spot rates decreased considerably (Havila ASA, 2009).

2.6.3 2009–2010

In the beginning of 2009 the share price development started to recovery from the previous downturn, and during 2010 the share price where somewhat stabilized at levels around NOK 6.500. The development was primarily influenced by the increase in oil price and spot rates (RS Platou, 2015).

2.6.4 2011–2014

The decrease from NOK 6.500 in the beginning of 2011 to NOK 1.900 in the end of 2014 can partially be explained by high newbuilding activities in the market creating increased competition. However, the development is mostly due to a sharp decline in oil price and high oversupply of vessels in the market (Havila ASA, 2012–2015).

2.6.5 2015–present

During the timespan, the share price decreased from NOK 1.950 to NOK 10.36 at 26/02/2018. This is mainly due to the market being out of balance, there was and still is an excess of vessel capacity in the market, which is a result of the reduction of operational oilrigs. Due to its lagging nature, the positive increase in oil price has not materialized an upturn in offshore activity. For Havila this has meant increased lay-ups, lowered utilisation of the fleet, and increased risk taking due to the company's exposure to the volatile spot rates (Havila ASA, 2016; Annual Report, 2017).

All things considered, Havila's share price is highly responsive to the changes in oil price and fluctuations in E&P spending, two factors that in turn influence the rates in the OSV industry. The dynamics between these factors is explained in the Shipping Market Model section.

2.7 Peer group

Looking at the global OSV market, one can conclude that the market is very fragmented, thus comprised of multiple players competing globally. The applied peer group will be limited to publicly listed OSV-players on the Oslo Stock Exchange, which will in turn mitigate for pitfalls in relation to benchmarking. Moreover, the selected peer companies are comparable in operating activities, earnings segmentation, outlook, market risk, characteristics, operating areas and have same accounting policies. A summary of the peer group is presented in table 1.1 below.

2.7.1 Siem Offshore ASA

The company is traded under the ticker SIOFF on the Oslo Stock Exchange and was founded in 2005. The company had by the end of 2016 1058 employees onshore and offshore and has its headquarter in Kristiansand, Norway. In the end of 2017, Siem's fleet was comprised of 43 vessels where of 10 in the AHTS segment, 11 in the PSV segment, five in the CSV segment and 17 other. The company operates mostly in the North Sea, Asia and Brazil (Siem, 2017; Siem Q4, 2018).

2.7.2 DOF ASA

DOF was founded in 1981 in Austevoll, Norway where DOF's headquarters still is located, and the company is traded under the ticker DOF. The company had by the end of 2017 3953 employees onshore and offshore. The company's fleet consists of 67 vessels where of 20 in the AHTS segment, 16 in the PSV segment, 29 in the CSV segment and 2 other. DOF operates mostly in the North Sea, Asia, Brazil and Africa (DOF Q4, 2018).

2.7.3 Solstad Farstad ASA

Solstad Farstad is the result of the completed merger of Deep Sea Supply, Farstad Shipping and Solstad Offshore in June 2017. The new entity is now traded under the ticker SOFF on the Oslo Stock Exchange and is headquartered in Skudeneshavn, Norway. As of the end of 2017 the company had approximately 3.000 employees and operates a fleet of 148 vessels, including 52 AHTSs, 63 PSVs and 33 CSVs. Solstad Farstad operates mainly in the North Sea, Asia and Brazil (Solstad Farstad Q4, 2018).

Table 1.1: Peer group summary

Norweigan Offshore Supply Vessel Companies										
	Company									
	Havila Shipping ASA		**Siem Offshore ASA**		**DOF ASA**		**Solstad Farstad ASA**		**Eidesvik Offshore ASA**	
Ticker	HAVI		SIOFF		DOF		SOFF		EIDE	
MC (NOKm)	190		1.978		2.109		1.703		420	
Fleet	**No of vessels**	**%**	**No of vessels**	**%**	**No of vessels**	**%**	**No of vessels**	**%**	**No of vessels**	**%**
PSV	14	61%	11	26%	16	24%	63	43%	9	41%
AHTS	5	22%	10	23%	20	30%	52	35%	0	0%
CSV	3	13%	5	12%	29	43%	33	22%	4	18%
Other	1	4%	17	40%	2	3%	0	0%	9	41%
Total	**23**	**100%**	**43**	**100%**	**67**	**100%**	**148**	**100%**	**22**	**100%**
Operating Area	North Sea, Brasil, Asia, Africa		North Sea, Brasil, Asia		North Sea, Brasil, Asia, Africa		North Sea, Brasil, Asia		North Sea	
Peer	N/A		✓		✓		✓		✘	

Source: Compiled by authors

3 Strategic analysis

The strategic analysis will outlay the most significant drivers of the industry and how these in turn affects the ratios will be focused on in the financial statement analysis section. This section will be divided into three layers; one exploring the macro and external environment, one looking into the competitive environment of the industry and one looking into the firm specifics of Havila. The shipping market model will be used to analyse which macro drivers are the most significant. Further the Porter's Five Forces model will be used to map the drivers affecting the OSV industry. Lastly, the VRIO framework will be conducted in order to highlight the most important factors in relation to the company's internal resources and compare those in relation to its peers.

3.1 Macro analysis

3.1.1 OSV industry

The overall function of the Offshore Supply Vessel companies is to provide service and support for the energy companies. OSV are nautical ships used for transporting equipment and personnel as well as providing offshore exploration and production in the vicinity of platforms. The OSV value chain consists of three key steps. Firstly, the energy or drilling company must explore potential areas on the seabed that may contain petroleum and gas. Secondly, a positive discovery in step one will result in drilling activity. Third and lastly, the petroleum is extracted and transported to shore by either shipping companies or pipes. The industry conducts support to the oil and gas industry and thus is highly dependent on activity in that sector. In this section the macro factors that affects the OSV industry will be analysed.

3.1.2 The Shipping Market Model

The usual model for revenue is; *price * quantity = revenue*. The prices in the OSV industry are called *freight rates* and is what is being charged by the company for the transportations of cargo from one place to another. In the OSV industry, these prices are set from negotiations between cargo owners and the OSV players. Thus, the prices stem from the balance between supply and demand, as in almost all free markets. The OSV industry is however characterised by a very complex interplay between the supply and demand and they are both influenced by several factors, which makes this a market mechanism difficult to understand. The most important aspect of the balance between the demand and supply in this sector is the pace of change. Demand is very quick in reaction to economic drivers, whilst supply responds very slowly

to changes in demand (Stopford, 2008). This makes the slow supply constantly chasing the quickly moving demand, meaning that the industry can seldom count on these factors to balance and steady earnings over several years are quite rare (Ibid). The Shipping Market Model is deemed to be the most appropriate model to examine the factors that determines the supply and demand in the OSV sector. Further, the examination of these factors will help to fully understand what drives supply and demand and hence the future *freight rates* and profitability of the industry.

The Shipping Market Model aims to provide an understanding of substantial factors that influence supply and demand. The model states a total of ten factors, five affecting supply and demand respectively. By analysing the five respective factors of supply and demand, the Shipping Market Model allows for examination of industry environment and competitiveness. Of course, only using ten factors is a simplification of the very complex maritime economics, however, Stopford (2008) suggests that *"detail should not be ignored, but rather to accept that too much details can hinder a clear analysis"* (Stopford, 2008 p. 136). See table 1.2 below of the ten factors:

Table 1.2: Demand and supply factors in the Shipping Market Model

Supply and demand factors in the Shipping Market Model			
Supply		Demand	
1.	World fleet	1.	The world economy
2.	Fleet productivity	2.	Seaborne commodity trade
3.	Shipbuidling production	3.	Average haul
4.	Scrapping and losses	4.	Random shocks
5.	Freight revenue	5.	Transport costs

Source: Stopford, 2008, p. 136

In accordance with the Shipping Market Model an examination of the ten individual factors will follow below.

3.1.2.1 Demand for OSV

As mentioned earlier, demand is suggested to be mercurial and changes quickly. The change can be up to as much as 10–20% in a year and is often hard to predict (Stopford, 2008). Though, demand in the shipping sector in general and the OSV industry in specific is also subject to longer-term changes in trends. Examples are the steady increase in demand during the 1960's and the stagnation following the oil crisis in 1973

(Ibid). The following five factors; *the world economy, seaborne commodity trades, average haul, random shocks* and *transport* affect the demand in the OSV market. Next follows discussion on each separate factor.

3.1.2.1.1 The world economy

The state of the overall world economy is without no doubt the factors that is most influential on the demand for shipping. The correlation between the world economy and the shipping demand is so strong due to much of the world's trade of raw material for the manufacturing industry or the trade of manufactured products are sea transported. The positive correlation between the metric for economic growth, namely gross domestic production (GDP) and demand for trade by sea transport is evident when taking a historical perspective. Below is a graph mapping the relationship between the two factors from 1966 to 2006. One can conclude by looking at the graph that economic growth is an important factor, however, not solely affecting the demand for seaborne trade.

Figure 1.7: Relationship between GDP growth and sea trade

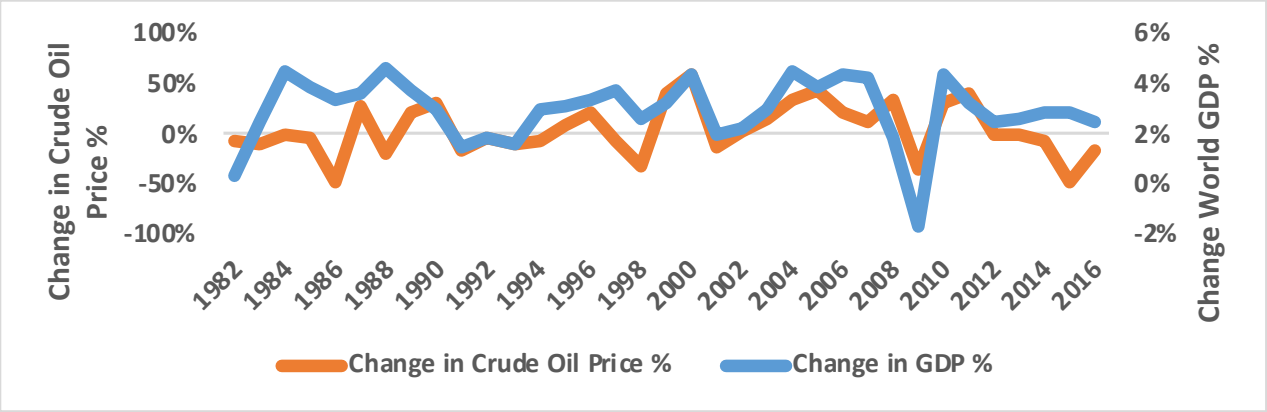
Source: Stopford, 2008 p. 140

As mentioned before, the world economy is driven by a large number of factors. However, this thesis aims only to investigate those that are most important for the OSV demand. One could try to analyse all factors that could affect the world GDP but that would rather make the analysis vague and not add any further value. Thus, the Shipping Market Model's framework will be used, where *GDP growth, oil price* and *investments in exploration and production (E&P)* have been deemed the most influential on the demand for the OSV industry.

3.1.2.1.1.1 GDP growth

The first of the three factors that will be analysed in the world economy part is the world GDP growth. Whilst not being the most important factor, it has two very important interactions with the OSV industry. Firstly, as mentioned above, seaborne trade and growth in world GDP has historically been highly correlated. Secondly, the GDP growth is the most important driver of oil demand and hence the price of oil, which is the strongest factor affecting demand for OSV services (Bank Islam, 2015). Therefore, one can expect that an increase in GDP will likely increase the demand for energy and in turn, all things being equal, increase the demand for OSV companies (Stopford, 2008).

Figure 1.8: Growth in world GDP and oil price



Source: World Bank, BP, Compiled by authors

3.1.2.1.1.1.1 Long term

In 2015, the UN agreed upon Sustainable Development Goal (SDG) 7.1; *universal access to electricity and clean cooking*. In 2017, 1.1 billion or 14.5% of the world population are living without electricity, according to the World Energy Outlook report which is conducted annually by the International Energy Agency (IEA) (IEA, 2017). That is a decrease of 0.1 billion since the goals was set in 2015. The second objective which relates to the 2.8 billion that do not have access to energy suitable for indoor cooking but rely on traditional biomass, where there has been an increase of 0.1 billion since 2015. The majority of this group, that lack the form of energy channels mentioned above, are located in the sub-Saharan Africa and the "developing" parts of Asia (Ibid). The fact that approximately one seventh of the world population live their lives without access to electricity creates room for an increase in future energy demand. This would in the long term be beneficial for the OSV industry. Nonetheless, IEA forecast only a modest increase of world energy demand of 2% until 2025 and 1% until 2040 (Ibid). One can draw the conclusion that providing these areas with energy could be difficult and the objectives of the UN might not be realistic.

3.1.2.1.1.1.2 Short term

In their latest World Economic Outlook (WEO) report from October 2017, the International Monetary Fund (IMF) states that the economic growth forecast has improved since their last report in April. However, the economic growth is forecasted to be 3.7% (compared to 3.6% in 2017) in 2018 and 2019, which still are quite modest numbers from a historical perspective. The upward revision is driven by increased economic confidence in both advanced economies as well as emerging markets and developing economies. IMF forecasts that the advance economies will grow by 2.2% in 2017 and 2.0% in 2018, compared to 1.7% in 2016. The numbers implicate that the advanced economies have recovered in 2017 but will stagnate in 2018. The main drivers are the recovery of the Euro Area and Japan – which has tuned from negative growth in 2014 - more than offsetting the downward revisions for the United States and the United Kingdom. The recovery in 2017 have been driven by notable pickups in investment, trade and industrial production coupled with strengthening business and consumer confidence. The quantitative easing performed by the ECB has also helped in the recovery. However, the slowdown in 2018 are based on a drop-off of the almost overheating American economy as well as a sluggish forecast from UK, due to economic aftershocks resulting from Brexit. This is amplified by the fear of increased interest rates, continued low inflation and the fragile Euro Area financial system. The recovery of the oil price has helped countries as Norway and Canada to recover from a very low growth. Overall, IMF expects a modest growth for the advanced economies in the medium-term (IMF, 2017).

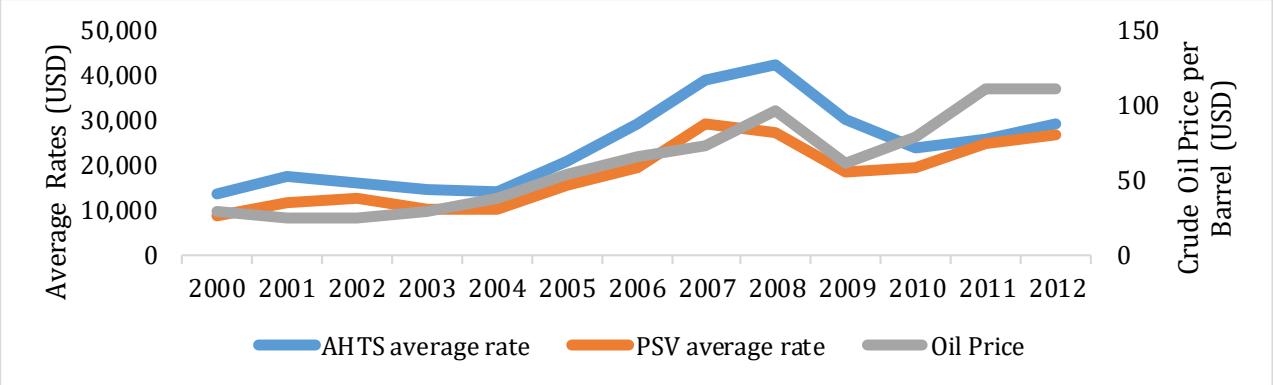
The emerging market and developing countries are forecasted to grow by 4.9% in 2018 compared to 4.6% in 2017. The main drivers are the recovery of China, emerging Europe and Russia, which more than offsets the slowdown in India and the Middle East. The increase in 2018 is the second consecutive year of growth increase which is driven by several factors and unevenly distributed by different regions. Firstly, the weakening US dollar have eased the financial pressure on many emerging market countries with either their currency pegged to the US dollars or their loans nominated in the US dollars. Secondly, financial conditions have generally been supportive of a pickup in economic activity. Equity markets have been strong, whilst long-term interest rates on local-currency bonds have declined in combination with spreads closing up. Thirdly, capital flows to emerging market economies have continued to increase since the sharp decline in 2015, especially to China. This is a direct result of a more positive global economic outlook. Fourthly, the strengthening of the Chinese economy in combination with broader cyclical rebound in manufacturing and trade are drivers that supports the recovery. Lastly, growth in commodity exporters are forecasted to recover further, which will have significant contribution to the WEO projection between 2016 and 2022.

However, the growth in commodity exporting countries are forecasted to remain well below its historical average and will account for only a modest share of total growth for emerging market and developing economies as a group (IMF, 2017). It should be mentioned that the report was released in October 2017 and commodity prices have rallied since then, due to the increased factory activity around the globe. This has made the overall commodity prices to reach a 3-year high in beginning of January, which could fuel economic growth for developing economies (Blas and Matthews, 2018). To conclude, IMF projects the growth in emerging markets to be roughly 5% in the medium-term, which is lower than the last decade (2005–2015), nonetheless, greater the decade before the last (1995–2005) (IMF, 2017).

3.1.2.1.1.2 Oil & gas price

According to the Shipping Market Model and from empirical evidence from DBS Bank, oil price is the most important world economic variable affecting the demand in the OSV sector (DBS, 2017; Stopford, 2008). Due to the positive correlation between oil price and demand for OSV services, the price can be used as an indicator of the activity in the industry. Further, this implicates that future oil price can be used in order to forecast the future activity level of OSV services, meaning that low and unstable future oil prices will often indicate future low demand for OSV service, and vice versa (Ibid). Figure 1.9 below mapping the relationship between the oil price and the rates for the AHTS and PSV segment can be used as further support to the theory oil price and OSV demand contingency.

Figure 1.9 Oil & OSV Rates Development



Source: Compiled by authors

Even though the oil price has dropped over 30% since it started to fall seriously in September 2014 until today, we have seen a remarkable recovery in the late 2017 and the price of Brent Crude is at its highest in three years in mid-January 2018 (DiChristopher, 2018). The fundamental factors that caused the oil price to drop in 2014 have in many ways changed. Firstly, the Iran lifting of the Iran sanctions which flood the

market with roughly 4.5 million barrels a day (September 2017) and increased the supply have been questioned due to the political instability in the country (Ibid; Ycharts.com, 2018). Secondly, the deal made between OPEC and non-OPEC producing countries led by Russia to cut supply until the end of 2018 has further amplified the decrease on the supply side (U.S., 2018). Lastly, the increased economic projection and manufacturing activities mentioned before is another factors helping the oil price to recover (IMF, 2017). Although the fundamentals have turned in favour for higher oil prices in the short term, one should be careful not to believe in a full recovery in many years to come. This is obvious when taking the IEA World Energy Outlook into account, where they believe that prices will not return over USD 100 barrel until 2040, due to the technical advancements which have led to lower cost of oil production in addition to the increased usage of alternative energy resources (IEA, 2017).

Whilst the biggest commodity price driver for the OSV demand is oil, many offshore exploring companies also extracts gas, which is then transported by vessels. Thus, the evolution of the gas price will also have an impact on the OSV industry, and should therefore be explored. Most influential fundamentals influencing the oil price will also affect the price of gas. Since gas can be a substitute product for oil and vice versa, the demand for gas will increase when the price of oil increases, pushing the price upwards. Oil and gas prices are highly correlated but there is usually a time lag for the natural gas market to adjust to changes in crude oil prices (Hartley, B Medlock, III and Rosthal, 2008). As the gas and oil price are roughly determined by the same fundamental factors the thesis will focus on the development in the oil price.

Even though the oil price is very hard to forecast, all influential economic institutions try to make projections, both in the short- and long-term. One could try to make this projection by one's own; however, this would add no further value. The thesis will use two different sources and take the average of their estimates and then these numbers will later be used in the forecast section. The two sources that will be used are; World Bank and IMF. On the 8th of January 2018, the price of one barrel of Brent Crude is USD 67.5 (NASDAQ.com, 2018). In comparison to the consensus estimated future price, the oil is expected to decrease by 13.5% until 2022. Table 1.3 below summarizes the future estimations of the oil price in USD per barrel.

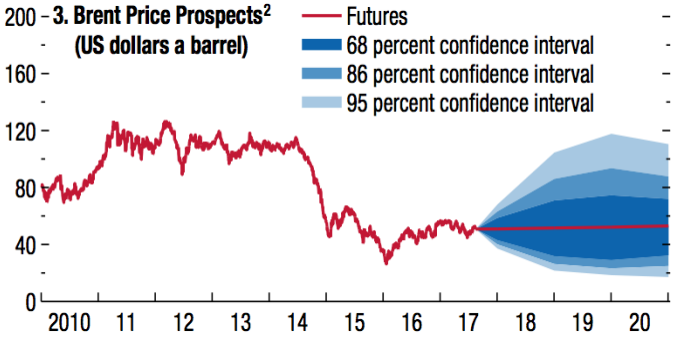
Table 1.3: Estimated future oil price

Estimated future oil price (USD)				
2018	**2019**	**2020**	**2021**	**2022**
52.3	54.7	55.9	57.1	58.4

Source: World Bank & IMF, Compiled by authors

It is important to remember that these numbers are only an estimation and absolutely no certainty. Although they are projected by the best scholars there is, one could almost be sure that the price of oil will be different than what has been projected. This is obvious when looking at IMF's projection of the future oil price in the medium-term. They estimate the price of Brent oil to be USD 53.3 when reaching 2021.

Figure 2.0: IMF's projection of future oil price



Source: IMF, WEO April 2017

However, when taking the 95% confidence interval into consideration, the price range is between USD 18 and USD 110 (IMF, 2017). This implies two things; first, the price of oil could be 26% or 164% of today's price, a huge range to consider, where the bottom price would send the oil as well as the OSV industry in total disaster and the top price would make the same industries blossom. Secondly, it evidents that no statistical models can predict something as complex as the future oil price with accuracy. In order to get the full picture of the future oil price, the thesis will use futures prices in addition to the projections made by economic institutions. This is used since this mirrors the market's as well as investors' view on the oil price. As can be seen from the table below, there are some differences compared to the estimations made from the institutions. The earlier years' prices are higher, which could be explained by the new information in late 2017 and early 2018, which was not included in the forecasts made during mid-2017. Further, the market also believes the price will drop in the mid-term, which could stem from many different factors, which are hard to dissect.

Table 1.4: Oil futures prices Brent crude oil

Futures prices brent crude oil (USD)				
2018	**2019**	**2020**	**2021**	**2022**
64.6	61.2	59.2	58.3	58.2

Source: CME Group

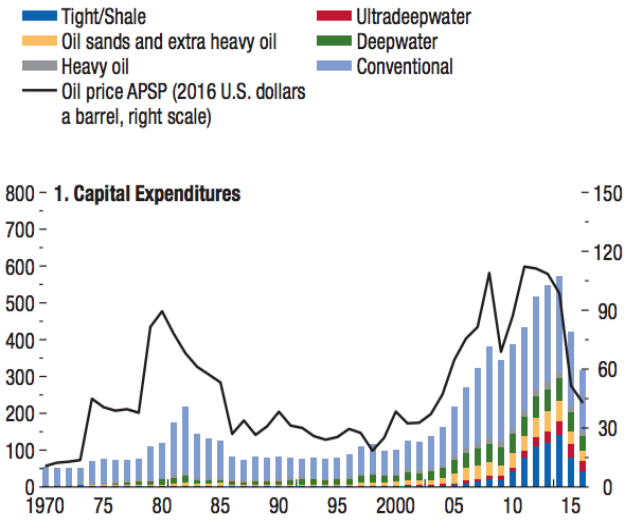
In conclusion, late 2017 was when the oil as a commodity seen to have gain momentum once again after several year of historical low prices coupled with high volatility (OilPrice.com, 2017). As both prices and volatility of oil have stabilized and are believed to continue that way in 2018, there is room for increased demand for OSV services in the years to come, following an increase E&P spending (Ibid). Nonetheless, both

the scholars as well as the market do not project the oil to return to pre-crises levels in the mid-term (IMF, 2017).

3.1.2.1.1.3 Investments in exploration and production (E&P)

The third and last element of the world economy affecting the demand in the OSV sector significantly is the investments in exploration and production by the oil companies. The E&P spending which is almost the same as the oil companies' capex, is directly linked to the current and future oil price and is highly correlated with the demand for OSV services. During stable and increasing oil prices, the investments in E&P will increase, leading to an increased activity throughout vessel types such as Subsea, PSV and AHTS and vice versa when the price declines (Stopford, 2008). When looking at figure 2.1, it becomes evident that the investments made by oil companies clearly follows the development in the oil price. This comes naturally since the investment budgets are determined on the current price and beliefs of future prices (DBS, 2017). In their Global 2017 E&P Spending Outlook, Barclay's survey from 200 oil companies shows that an average of USD 55 per barrel in 2017 have been used when projecting cash flows and capex in their budgets (Barclays, 2017). At this price level, they expect the increase on E&P spending to be 8%, a modest growth, however a turn from the negative growth years of 2015 and 2016. In the same report, they forecasted the growth to be only 4% in 2018 with roughly the same price (Ibid). In an updated report from November 2017, DBS Bank forecast the E&P spending to be 6–7% by looking at the eight biggest oil explorers who contribute to over a third of the total investments in the industry (DBS, 2017). If the crude oil price stays over USD 60 per barrel, the E&P spending should increase by the second half of 2018, providing some succour to the OSV sector (Ibid). Most of the growth driven by onshore exploration and offshore investments are still holding back, due to the capital expenditure usually being higher when extracting offshore (GmbH, 2017). At this modest E&P spending growth, the OSV sector will not really see any change in activity. As mentioned, a stabilization of the crude oil price above or around USD 60 per barrel and continued low volatility should increase the willingness of increase capital expenditure in offshore drilling and hence higher demand for offshore supply vessels (DBS, 2017). The CEO of Petrobras, the world's biggest

Figure 2.1: Oil price and E&P spending



Source: IMF, WEO April 2017

offshore extractor and a major customer for many Norwegian OSV companies, explains in an interview that they will increase their investments if the oil price stabilizes between USD 55–65 during 2018 (DiChristopher, 2017).

4.1.2.1.2 Seaborne commodity trades

In order to further explore the relation between the OSV demand and the industrial economy, the second variable of the Shipping Market Model will be examined, namely the *seaborne commodity trades*. The activity of commodities traded by sea fluctuates both in the long and short-term, where seasonality is a cause of volatility in the short-term trades. For instance, agricultural commodities as grain, sugar and citrus fruits, are subject to seasonal variations caused by harvest. For example, trade can vary with as much as 50% between September and the end of the year (Stopford, 2008). Even though this thesis is not concerned by the trade of commodities other than oil and gas, the same logic applies for analysing trends in the OSV sector as in shipping of other commodities.

4.1.2.1.2.1 Short-term

There are three variables that affect the short-term demand for the OSV industry; seasonal factors, amount of vessels deployed and number of active offshore oilrigs (Clarkson Platou, 2017). When investigating the effect of seasonality on the OSV industry, one finds an inverse relationship between the demand for oil in the Northern Hemisphere and the activity in the OSV sector. During the winter the weather with ice and sub-zero temperatures creates unique risks and these conditions complicate the work for offshore vessels (OCIMF, 2014). Hence, the oil companies delay the inessential work related to offshore exploration until the weather has becomes less harsh (Pareto, 2016; Stopford, 2008). At the same time the energy consumption in the area is high, leading to oil companies focusing on onshore rather than offshore drilling in order to satisfy the higher demand (Stopford, 2008). As mentioned, the second factor affecting demand in the OSV industry in the short-term is the number of vessels deployed. The current fleet deployed globally is estimated to consist of approximately 2.337 AHTSs and 1.567 PSVs (Havila ASA, 2017). The downturn in demand have not been adjusted in number of deployed ships and thus there is an oversupply in the market, putting downward pressure on the OSV rates (Staff, 2017).

Lastly, the third factor affecting the short-term demand in the OSV industry in the number of active offshore oilrigs, which is largely dependent on the E&P spending and hence the price of oil. This stems from the fact that oil companies close down oil rigs which are no longer profitable due to a decrease in oil price or an

increase in drilling costs. The closing of rigs is not directly responding when the price drops, but usually there is a time lag between three to six months, due to the high costs related to investments and divestments in oil rigs (IMF, 2017). Further, uncertainty about future oil price as in later years results in companies deferring investments in new rigs. Evidence for the relationship between the oil price and the number of active rigs as well as the time lag adjustment can be seen in the below graph. When the oil price started to drop in September 2014, there was 333 active offshore oil rigs outside the US. However, the number of active oil rigs started to drop significantly first in May 2015. Further, when the price was at its lowest in January 2016, there was 242 active rigs, a drop of 23% compared to the oil price drop which was almost 70%.

Table 1.5: Number of offshore oil rigs

Number of offshore oil rigs (excluding US)								
Sep-14	**Nov-14**	**Jan-15**	**Mar-15**	**May-15**	**Jul-15**	**Sep-15**	**Nov-15**	**Jan-16**
333	341	314	316	284	264	268	259	242

Source: Baker Hughes, Compiled by authors

70% of the OSV fleet are involved in products support rather than E&P activities, and thus should be protected against cuts in oil companies' capex budgets (Pareto, 2015). However, during times of decreased investments in exploration and production, oil companies decrease their spending though out the whole supply chain, putting downward pressure on demand for the services of OSV companies. The activity in the Subsea segment is not driven by rigs but of Subsea tree awards. The investment in Subsea trees hit a low in 2016 with 83 Christmas tree awards, compared to a yearly average of 351 since 2000. In 2017 there was a trend shift and 150 new awards was installed, however, those will not be installed until 2019 and hence the outlook for the CSV segment remains bleak (Clarkson Platou, 2017).

4.1.2.1.2.2 Long-term

In the long-term perspective, there are two influential factors affecting the trends in the OSV industry; the level of investments and the number of new ships entering the fleet. In later year, the demand for higher-end vessels, which usually operate in the regions of Brazil and the North Sea (Pareto, 2016). At the same time, Asian shipyards have changed their production strategy in the last decade, from building low-end vessels suited for local markets to selling high-end vessels to Europe (Pareto, 2015). This have created a situation where new ships have entered the market whilst demand have dropped, creating an imbalance,

which have made the OSV rates decrease. For example, the rates for large PSVs have dropped by 69% since September 2014 (Dvbbank.com, 2018). This will be discussed further in the supply section.

To conclude the discussed trends, one can see that the reduced E&P spending in combination with an oversupply in the market have caused lower rates in the industry. However, we have seen a rebound in the oil companies' E&P spending which theoretically should increase demand for the OSV industry, yet this has not been seen in practise. The demand for OSV services have probably reach is bottom but one should not believe in a full recovery in many years to come and thus the outlook remains mediocre.

3.1.2.1.3 Average haul and ton miles

The demand for transport can be explained by a matrix of distances which determine the time it takes to complete the voyage. For example, a ton of oil transported from the Middle East to Western Europe via Cape will travel up to five times as far as the same amount of oil shipped from Ceyhan in Turkey to Marseilles (Stopford, 2008). This distance effect is referred to as *average haul* and is measured in *ton miles*. Stopford (2008, p. 146, 2008) defines it as *"tonnage of cargo shipped, multiplied by the average distance over which it is transported"*. In history, the ship demand has been affected by changes in average haul. One example where demand was positively affected is the closing of the Suez Canal, which increased the average distance by sea form the Arabian Gulf to Europe from 6.000 miles to 11.000 miles (Stopford, 2008). Once again, when trying to applying the Shipping Market Model's components on the OSV industry, one has to determine the relevance of the different elements. For OSV companies, what determines the demand is the geographical location of the deployment rather than the distance. This comes naturally, since the OSV rates are dependent on the environmental conditions of the operational area as well as the type of vessels being used. Low-end vessels are used in locations where the waters and weather conditions are easily managed, for example in Asia. In the opposite, where the water is deep and weather conditions are harsh, rates become higher due to more vessels per rig as well as the need for operating high-end vessels (Clarkson Platou, 2017). The most important geographical segment for Norwegian OSV companies is the North Sea, which is synonymous with tough conditions (Pareto, 2015). In history, OSV companies have preferred to operate in areas as the North Sea, where the need for ships adjusted (high-end) for the condition have increased the barriers to enter these markets and thus lead to stable earnings. These stable earnings have not been certain in later years, however, the projected increased drilling activity as well as new contracts in the PSV segment by Statoil have created optimism in the industry that rates in the area are to be less volatile and increasing in 2018 and onwards (Offshore Energy Today, 2018).

3.1.2.1.4 Random shocks

The fourth element affecting the demand in the Shipping Market Model is random shocks, which refer to events that upset the stability of the economic system. Example of random shocks are wars, new resources and commodity price changes. What differs economic shocks from cycles are that they are unique and often triggered by a certain event, as well as the severe impact they usually have on the shipping market. The form of shock most influential on the shipping market are the economic ones. Such events are impossible to project and they cause demand to change unexpectedly and often rapidly. Examples of such shocks are the oil price shocks which happened in 1973 and 1979, which had severe effects on the shipping industry (Stopford, 2008). Seaborne trade activity was falling dramatically on both occasions, causing a shipping depression as can be seen in figure 1.7 above. The latest and probably one of the most severe shocks hitting the world was the financial crises the emerged in 2008, starting with the subprime loan crises in the US (The Economist, 2018). Before the crises, a barrel of Brent crude oil was selling for USD 143 in July 2008, which was the highest price in history (Macrotrends.net, 2018). Due to the crises, global demand fell drastically leading to a decrease in the oil price and thus cut in the E&P budgets. The last years' crises in the OSV sector have been characterised by the same trends as during the financial crises, with low oil prices and E&P spending.

As mentioned, another type of random shock is political events as wars or revolutions. They rarely cause any direct effect on the shipping market, however, they can have serious consequences. The war between Israel and Egypt in 1967 had no direct effects on the shipping market, yet it led to the closing of the Suez Canal which directly affected seaborne trade (Stopford, 2008). The stability of the energy markets is often affected by the geopolitical climate of important oil producers. The "Arab Spring" in 2011, which was followed by the Syrian war as well as general tumult in the Middle East have caused problems in those oil rich areas. These tensions have eased out during 2017, however, there is at the moment new problems arising in Iran and Venezuela, which have increased the price of oil in late 2017 (IMF, 2017). Geopolitical tensions create a demand for stock building of oil, thus pushing up the price since the supply decreases. One should notice that these are short-term effects and the overall negative consequences geopolitical tensions have on the world economy and GDP growth and hence the demand for oil. In total, the OSV industry will in the long-term benefit from geopolitical stability (Ibid). To summarise, the pick-up in E&P spending as well as the ease of geopolitical tensions have made the outlook for the OSV market better in years, however, this is balancing on a silver thread. Nonetheless, random shocks are unable to predict and thus the probable consequences on the OSV industry cannot be modelled.

3.1.2.1.5 Transport costs

The last factor affecting shipping demand that will be examined is the transport costs. Developments in sea trade are often dependent on the economics of shipping operations, meaning that revenues have to exceed the costs in order for an order to be carried out. Raw materials and commodities will only be sourced if the transport will result in a profit or some major benefit is obtained in quality of product. Transport cost is a significant factor for the industry and can account for as much as 20% of total costs (Stopford, 2008). OSV companies have somewhat of a different cost structure than traditional cargo shipper and crewing related expenses are often accounting for more than 50% of the operating costs. This stems from the need for trained employees in order to operate the vessels and sustain high quality work standards when performing offshore services. The second largest operating expense item for OSV companies is the maintenance of the current fleet. The cost of maintenance and layup have a positive correlation with the age of the vessel. In order to reduce the operating costs, the OSV companies can invest in a modern fleet, however, this will of course increase capital expenditures. It is hard to find the right balance between investments and operational costs and one of the main tasks for the management in an OSV company is the mange this balance efficiently (Pareto, 2016). Since a modern fleet is less costly to operate, and usually means a cost structure with more fixed costs, there is room to operate the vessels on lower rates and still be profitable during unstable times. Moreover, the crewing expenses differs between the geographical markets. In order for a company to conduct its operations in Brazil, the firm is ought to have an operating license as well as hiring local employees. There is a lack of educated personnel in Brazil, which have made OSV companies compete for the employees, pushing salaries upwards (Havila ASA, 2017). This has been amplified by the general increase of salaries in the country (Tradingeconomics.com, 2018). This is an example showing that local regulations and politics can affect the costs of operating in different regions.

3.1.2.1.6 Regional demand

In extension to the model, the thesis will investigate if there is variation in the demand of the three main regions Havila operates in; the North Sea, (UK, Denmark & Norway), Asia Pacific and Brazil.

3.1.2.1.6.1 Asia Pacific

The Asian OSV market is to a large extent fragmented and mainly consist of smaller local companies, which usually operate around three to five vessels. Due to the shallow water, the need for high-end vessels are low

and the supply is primarily made up of low-end AHTSs and PSVs. Due to low demand for high-end vessels the average day rates in the area are low compared to for example the North Sea where weather conditions are more demanding (DBS, 2017). As have been the case for the global industry in the last years, where demand have been shrinking whilst the market at the same time have seen an increasing supply (mostly of PSVs), this has been most evident in the Asia Pacific region. Before the oil price drop utilisation rates were high around 80%–90%. Those days are over and in 2017, the average utilisation fell below the 50% mark (DBS, 2017). Further, the regional day rates have plummet since 2014, especially for medium-sized PSVs where the market have trying to deal with a price drop from USD 22.000 to USD 10.000, a decrease of 55% (Ibid). As discussed earlier, the demand collapse is driven by the slowdown in oil rig activity. From September 2014 until December 2017, the number of active offshore rig have fallen by over 30% (Wire, 2017). Overall the demand in the region will remain low, yet increasing during 2018, mainly driven by increased demand from Malaysia (DBS, 2017).

3.1.2.1.6.2 Brazil

The weather conditions are demanding in the waters of Brazil, which calls for larger as well as higher-end vessel to operate in the area. It has for long been an area characterised by stable demand for OSV companies, however this have changed during later years, due to weakening market conditions and the oversupply mentioned earlier. The problems of the area can also be derived to the specific problems of Petrobras, the biggest OSV customer in the world and the largest oil extractor in Brazil. The company have been dealing with mismanagement as well as a broad corruption scandal which have caused reassignment as high as up governmental level (DiChristopher, 2017). Further, the government has tried to improve the local OSV operators' ability to gain contracts by making it more difficult and costly to acquire or renew the operating license for foreign firms (Lloyd's List, 2016). This has shifted the supply to other markets, since many non-Brazilian OSV firms have exited the market. As in Asia, the consensus view of the Brazilian market is that the bottom has been reached and demand will increase from now on. The Brazilian Real have regained some strengths since the record low in mid-2015 and Petrobras have managed to decrease its break-even cost to USD 30 per barrel in 2017 from USD 43 in 2014 (Portfolio, 2018). This should increase the demand in the medium-term, however this recovery is forecasted to be quite slow.

3.1.2.1.6.3 The North Sea

The North Sea is also characterised by harsher weather conditions and deeper water and thus the market demands high-end vessels. The region is one of the more expensive areas regarding break-even price of

extraction, hence, the oil rig operations are sensitive to downward changes in the oil price. Since the oil prices have been low in later year, so have the demand for OSV activities in the region. As in Asia and Brazil, there has been a sharp drop in both rates and utilisation. The drop has not been as dramatic as in Asia due to the long-term contracts in the region. Utilisation hit its bottom in early-2017 and have climbed since, to almost 57%. This is however a fall of over 30 percentage points compared to pre-crisis levels. The PSV segment have managed to keep the utilisation higher since many companies have shift their supply to West Africa (DBS, 2017). Many experts have expressed the need for restructuring of the North Sea OSV operators and in early February of 2017, Farstad, Solstad and Deep Sea Supply revealed plans of a merger which would create the world's largest OSV company (Liang, 2017). The merger has been seen as evidence of a bleak market outlook, a view which is shared by the thesis. However, reports from the beginning of 2018 shows an increase in rig activity and demand for OSV services are expected to increase (Upstream Online, 2018).

3.1.2.2 Supply in the OSV market

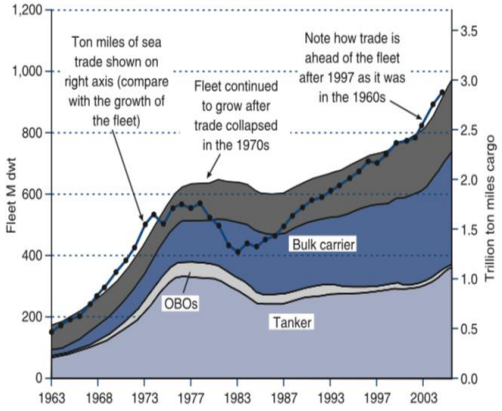
As in all markets, what creates equilibrium is how supply and demand changes to one another. In the shipping market generally and the OSV market specifically, the supply seldom catches demand. This stems from the supply of ships being utterly slow and it usually takes two to three years from the order to delivery of a new ship. Furthermore, this is amplified by the fact that a vessel's lifetime is between 15–30 years, which hampers the quick adjustments from the supply side in order to meet the volatile demand side (Stopford, 2008). As in the demand side, the Shipping Market Model outlines the five most influential factors affecting the supply side of the OSV industry; *world fleet, fleet productivity, shipbuilding production, scrapping and losses* and *freight revenue*. All factors characteristics and their implications on the OSV market will be discussed below.

3.1.2.2.1 The merchant fleet

The most significant factor affecting the supply side in the OSV industry is naturally the world fleet since the number of ships in the market is what constitutes the supply. Long-term adjustments are adjusted by the net change of newbuilding ships and scrapping, whilst in the short-term the supply adjusts through laying up and storage of ships, affecting the number of active or deployed ships in the market. As mentioned,

the long time frame between order and delivery makes the adjustment from the supply side to changes in demand very slow. The pace of adjustments in the market is measured in years and not months, since the average economic life of a ship is considered to be about 25 years. Hence, only a very small fraction of the total world fleet is scrapped each year (Stopford, 2008). Figure 2.2 above displays the supply's endless attempt of catching up with the changes in demand, though mapping the cycles of oil tankers. The first term of the cycle, starting in 1962 caused the demand for tanker to quadruple until 1974.

Figure 2.2: World fleet



Source: Stopford, 2008

Despite the expansion of shipyard capacity, they could not keep up with the accelerated demand and there was an acute shortage of tankers, leading to the second hand prices being twice the price of their original. The situation was reversed during the 1973, when the oil shock hit the global market and during the next decade, tanker demand fell by 60% (Stopford, 2008; Federalreserve.gov, 2004). At the same time new ships ordered during the peak were entering the market and it took over 10 years before this imbalance was somewhat restored (Stopford, 2008). The number of tankers are not directly applicable for the OSV market, though it paints a picture of the general shipping market and can therefore be applied in this analysis. Instead of focusing on number of tankers, the examination will take its place in the three different types of OSV vessels; AHTS, PSV and CSV (Subsea). Today, most of the OSV vessels are produced in Asia, a consequence of the discounted price, which could sometimes be as high as 30% compared to its European competitors (Pareto, 2015). However, the risk of late deliveries and slippage have made placing orders in Asian yards to be considered speculative (Carnegie, 2015). The segment with lowest barriers to entry is the PSV segment, which can be seen from the huge numbers of new ships. Between 2005 to 2015 there were a huge amount of deliveries of PSVs, which has caused an immense oversupply (Clarkson Platou, 2016). The current fleet as well as the order book for the three segments can be seen below:

Table 1.6: Current merchant fleet

Number of ships per segment				
	PSV	**AHTS**	**Subsea**	**Total**
Current	1576	2337	580	4493
Order book	203	144	71	418
Growth	12.9%	6.2%	12.2%	9.3%

Source: Compiled by the authors, Havila ASA; DBS, 2017

Following the increased E&P spending in Subsea installation and deep-water explorations during the last decade, the OSV companies have shifted a lot of their exposure from the AHTS and PSV segment into Subsea (Pareto, 2016). However, deep sea explorations are seldom profitable under USD 80 per barrel and hence a lot of projects have been deferred, causing oversupply in the segment (DBS, 2017). There has practically been no orders for PSVs and AHTS since 2015 and the order book is almost exclusively containing deferred orders, which can be compared to a yearly average of roughly 300 units before the crisis (Ibid). Even though the order book has shrunk, the willingness to scrap is still far from what is needed to force supply into balance with the current demand. IHS Markit has reported that over 1000 vessels need to be scrapped in order to create balance until 2020, whilst the current scrap speed at 13% of that number displays this unwillingness (Fairplay.ihs.com, 2017). Another common measure which illustrates the oversupply is the vessel-to-rig ratio, which peaked in 2017 but are forecasted to decline during 2018 (DBS, 2017).

As has been mentioned throughout the whole section of the Shipping Market Model, the slow adjustment of the supply to the quickly changing demand is the main cause of the ongoing industry crisis. Despite the stop in new orders, the supply have been kept constant since the level of scrapping have been to slow. Due to the slow scrapping and hence high level of supply, the recovery will continue to be slow and hence the outlook will improve however quite modest.

3.1.2.2.2 Fleet productivity

Albeit the world fleet is fixed in size in the short- to medium-term, the usage rate or productivity of the ships can be flexible. When the oil companies' demand for OSV changes, the managements' have the opportunity to adjust the capacity in the short-term. During quick and unexpected upward trends in demand, OSV firms can deploy all ships in lay-up, as well as let vessels spend less time on non-operating activities as maintenance and repair. However, this cannot be done indefinitely since vessels need to be maintained on a regular basis to work properly. Consequently, the same logic follows when demand shrinks, meaning that firms will then increase the time spent on non-operating activities and lay-ups (Stopford, 2008).

From a recent Clarkson Research report, there are a so called "ghost-fleet" of 1.389 OSVs without a running certificate and there are over 100 vessels in lay-up in the Northern region alone (Brooks and Brooks, 2017; Fairplay.ihs.com, 2017). However, recent data displays an increase of rig activity at a level not seen since 2008 in the North Sea, which according to experts should lead to deployment of currently laid up ships in the region. Furthermore, laid up North Sea vessels are expected to be used in Russian and Mediterranean

campaigns, which would further tight the supply in the region (Osjonline.com, 2018). This implies an increase in utilisation and freight rates, which will be discussed further in later sections.

Although there has been lay-ups and demand have turned, the utilisation rates are currently around 60% for both PSVs and AHTS in the North Sea (DBS, 2017). The rates have increase in 2017, but from a historical perspective this is very low numbers, where the region saw utilisation rates above 90% before 2014. The Subsea segment is characterised by more term contracts and due to the nature of its core market in maintenance, inspection and repairs, it is usually more stable. However, the backlog of contracts has decreased since the oil price drop and the segment is also experiencing low rates (Dvbbank.com, 2017). As discussed, the activity in the OSV market is dependent on the oil price and therefore the utilisation rate should have a positive correlation with the price of the commodity. However, where the price of oil has increased by 150% since its low in January 2016 until mid-January 2018, there has only been a slight correspondence in utilisation (OilPrice.com, 2018). This can be explained by three factors. First, there is usually a time lag between oil price changes and E&P spending, especially when the price has been volatile as in 2017 (IMF, 2017). Second offshore drilling is more expensive and during low and unstable oil prices, the extractors tend to focus on onshore projects (IEA, 2017). Last, as have been mentioned several times in the above sections, the time lag between order and delivery have led to an oversupply which the increased demand have not been able to absorb (Stopford, 2008).

3.1.2.2.3 Shipbuilding production

The third factor affecting supply, which relates to both previous elements of the merchant fleet and ship productivity is the *shipbuilding production*. Shipbuilding is the most influential factor on the long term level of supply in the industry, since it is the determinant of how the number of new ships entering the market. The only way for supply to adjust to changes in demand in a more structural way is to vary the number of new ships produced. When demand increases, new orders are placed and vice versa when demand is shrinking. As been mentioned, the time lag between order and delivery is the constant factor which creates the everlasting imbalance in the industry (Stopford, 2008). For instance, even though the market has been in a downturn since 2014 and almost no orders have been placed since then, the total supply have increased until the end of 2017 where a net decrease in deliveries (additions less scrapping) was seen for the first time in many years (DBS, 2017).

When the demand suddenly changes, the OSV companies can cancel or delay their orders to head off the increasing supply and hence lower their future costs. A large portion of AHTS order have been deferred in 2017 and that trend is expected to continue in 2018 (Ibid). The last decades shift to Asian shipyards is another amplifying effect to the oversupply now seen. The discounted price led to an even higher order pace before the crisis (Pareto, 2015). For example, Chinse yards accounted for 58% of the PSV order book in the beginning of 2017 (Havila ASA, 2017). Moreover, there are at the moment at least 400 OSVs to be delivered out of China in 2018, however, there is a great chance of them being deferred (Splash 247, 2018).

3.1.2.2.4 Scrapping and losses

The fourth factor affecting supply in the OSV market is *scrapping and losses*. The growth of the merchant fleet can be equated as; *net growth = newbuilding – scrapping and losses*, and therefore scrapping can be seen as the offsetting force against newbuilding. Usually, four variables affect the decision to scrap a ship. First, the maturity of the ship is the most common one, since with age follows increased cost of maintaining the ship. Second, as new technical advancements result in vessels becoming obsolete, the firms need to upgrade their fleet in order to stay competitive. Third, the scrap prices are a determinant for the level of scrapping and are volatile, due to its dependence on the demand for steel. The last but most important factor is the firms' projection of future operating profitability of the vessel and its current financial stability (Stopford, 2008).

The number of scrapped ships in later years have been 26 in average, which is only 13% of the needed rate in order to reach equilibrium in 2020 (Alix Partners, 2017). Although there has been net decrease of seven AHTSs between Q1–16 and Q3–17, which is stemming from high slippage rather than increased scrapping rate (DBS, 2017). Even though the last years' business environment has called for increased scrapping, the firms have been reluctant due to three reasons. First, there has been low value in scrapping and hence companies prefer other options instead. Second, vessels have been shifted to other sectors, which have the same effect as scrapping. Third, laying up vessels are done quite effortless and is relatively inexpensive (Lloyd's List, 2016). In the beginning of 2016, the Norwegian Maritime Directorate exempted the lay-up fee of USD 4.010 (NOK 35.000) further reducing the cost related to lay-ups (Lloyd's List, 2017). When considering the fact that a normal vessel has an average lifetime of 25 years and that 30% of the merchant fleet was built before 1984, one can argue that there should be an increase in scrapping (Pareto, 2015). However, the consensus view among analysts covering the OSV market when the crisis started in 2014 was that scrapping would surge. Firms have however been reluctant to do so and vessel owners remain stuck in

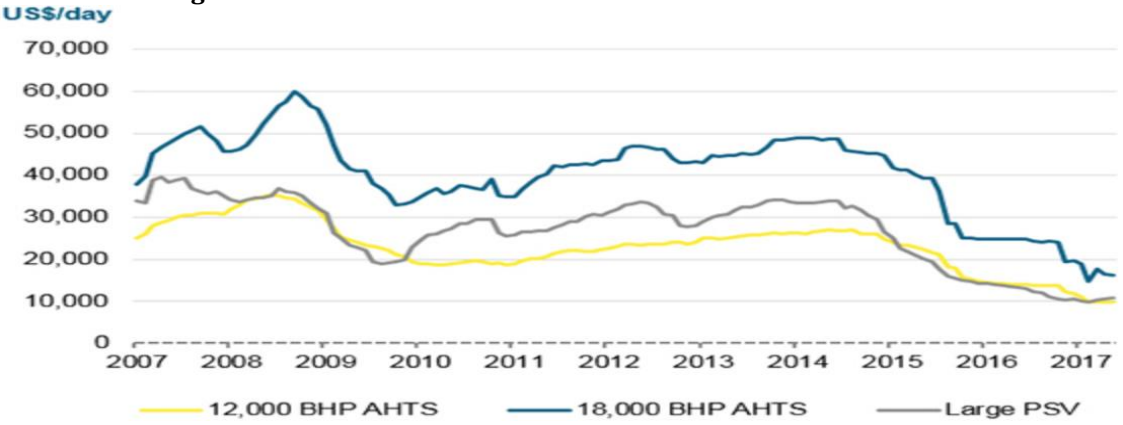
a type of game theory thinking where no one has incentives to be the first (DBS, 2017). Since the oil price is forecasted to stay under USD 70 per barrel, the demand will not increase sufficiently in order to absorb the oversupply, hence the OSV firms have to start scrapping or they will go bankrupt. Thus a scrapping rate of 2–5% of world fleet in the nearest years are adequate to forecast, compared to roughly 1% seen in later years (Pareto, 2015; Clarkson Platou, 2017).

3.1.2.2.5 Freight revenue

The final factor impacting the level of supply in the OSV industry is *freight revenue*, also known as freight rates and needs to be taken into consideration both in the short- and long-term perspective. As have been described above, when rates fluctuate in the short-term, ship owners try to adjust capacity, for instance by laying up vessels. In the longer perspective, the freight rates create incentives for decision-makers to reduce their costs and improve their service offerings by investing in a more modern and advanced fleet (Stopford, 2008). Consequently, as in all free markets, the rates are determined of the balance between supply and demand. As in all industries, surplus on the demand side leads to surging rates, and vice versa when characterised by oversupply, as have been and the case and continue to be in the OSV industry.

As the oil price peaked before the financial crisis hit in 2008, the OSV freight rates surged and reached a height of USD 60.000 (large AHTSs) in mid-2008, followed by a collapse during 2009 with a drop of 45% to USD 33.000 (Dvbbank.com, 2017). Following the rebound of the oil price in 2010, the OSV rates grew steadily until 2014, when they collapsed again. The downturn can especially be explained by the flood of new vessels entering market as a result of the boom of orders during the years of increased demand. Further, not just did the market see an oversupply but the main demand driver E&P spending was falling from close to USD 675 billion to USD 365 billion in 2016, due to projection of sustained low oil prices, pushing utilisation to close to 50% in many markets (SEB, 2016; Cushman & Wakefield, 2017). Even though rates seemed to have bottomed out in most markets, many firms are operating their vessels at spot markets rates which is below or just above their operating costs (DBS, 2017). Overall, data of falling rates have been observed in all segments and all geographical markets, where the AHTS and PSV is illustrated in the graph below.

Figure 2.3: Global Average Rate 2007–2017



Source: DVB Shipping & Offshore Research, 2017

The contract density in the Subsea market worked as a shield against falling utilisation and freight rate in the beginning of the crisis, however, the backlog is shrinking and many contracts have been cancelled, especially in the Brazilian region (Dvbbank.com, 2017; DiChristopher, 2018). Thus, the CSV segment rates will probably continue to fall, since deep water exploration usually have a break-even price at USD 80 per barrel (DBS, 2017). Further, the competition for skilled labour is strong and term rates are now below break-even levels. This mostly affect the more sophisticated units, whilst less sophisticated unit which core market of maintenance, inspection and repairs are relatively stable (Dvbbank.com, 2017).

As mentioned, rates have bottomed out and especially the North Sea market should experience an increase in 2018. However, many firms are heavily indebted and will experience financial troubles and due to the oversupply, a lot of firms will struggle with continued negative cash flow. This should lead to increased M&A activity as the merger between Solstad, Farstad and Deep Sea Supply, but also to bankruptcies and scrapping (DBS, 2017). The factors mentioned should work as an increasing force for freight rates and this is also the consensus view among analysts (Ibid).

3.1.2.3 Summary

In order to answer the sub question: *"To what extent does the identified key macro drivers affect the activity in the OSV industry?"* the following section will conclude the findings of the Shipping Market Model. The industry outlook remains bleak, although the bottom has been reached and a slow recovery should take place in the nearest years to come. The demand side of the industry looks better in years, with higher oil price, projected increase in E&P spending and a slight upward revision of the GDP growth. However, the oil

price needs to stabilise at this level in order to see a proper increase in E&P spending and hence expansion of the rig fleet, as well as deep water exploration. In addition, the increased fracking in the US as well as lower production cost will hinder the oil price to reach its pre-crisis levels, meaning that demand for OSV services will not reach the same levels in many years to come. When including the supply side in the outlook it obviously becomes worse. Even though 2017 was the inflection point of growth in the merchant fleet, the industry is still very much oversupplied and scrapping needs to increase or the depressed utilisation and freight rates will continue. On top of this, many OSV companies are dealing with distressed balance sheet, and there has been of lot of restructuring. In total, the outlook remains weak yet there is some positive signs and there should be a slow recovery in the mid-term.

3.2 Porter's five forces

This section will analyse the OSV industry including its strategic environment and the competitive landscape. The model of Porter's Five Forces is investigating an industry's capacity to earn so called abnormal returns, meaning that ROIC is higher than WACC (Petersen & Plenborg, 2012). It is highly relevant to analyse and understand the forces affecting competition and hence the industry's attractiveness when conducting a market analysis (Porter, 2008). First, the bargaining power of buyers' demand for newbuilds and their ability to push down the contracted rates. Further, the power of labour has been affecting the market due to the rare selection of skilled workers. Moreover, the PSV market has been threatened from entrance of AHTS ships since the AHTS vessels can be deployed in the same way. Essentially, the market is considered to be attractive if the competitive forces are weak and hence a great chance of earning abnormal returns. The opposite applies when the forces are strong, meaning lower possibilities of high industry returns. The model consists of five forces: *threat of substitution, bargaining power of suppliers, bargaining power of buyers, threat of potential entrants* and *rivalry among existing firms*, which will be examined below (Porter, 2008).

3.2.1 Threat of substitute's products

The E&P spenders, namely the big oil companies' willingness to pay for OSV companies' services are dependent on the availability of substituting services (Porter, 2008). The threat from substitutes in the OSV industry are low, since the services provided by the OSV vessels are greatly specialised and cannot be performed by other forms of ships. Although the oil extractors total budget dedicated to OSV services are considerably low, they cannot perform offshore exploration without them. The combination results in oil companies' demand being relatively inelastic to changes in prices of OSV services. However, one can see an

increased usage of non-fossil energy such as renewables in the recent decade, resulted from the reported negative ecological effects of oil (IEA, 2017). Nonetheless the global energy consumption is mainly reliant on traditional sources as oil and gas which constitutes roughly 85% of the total usage, whilst the projected share in 2035 is 81% (Ibid). Therefore, the consensus view is that oil will be the main source of energy for many years to come. Overall, the threat of substitutes is considered as low.

3.2.2 Bargaining power of suppliers

The degree of power of the suppliers to an industry will have an impact since it may affect the firms' margins and hence it will influence the industry attractiveness. In the case of few suppliers and scarcity of their products/services, naturally prices will be higher, meaning lower margins for the companies inside the industry. In regards to the OSV industry, the supply side contains two main players, *shipyards* and *labour*, which can be measured in crew expenses.

Naturally, the key supplier of the industry is the one building the vessels later used by the OSV companies in their operating business. The shipyards' prices, performance in quality and reliable delivery time will impact the OSV industry's profitability. This is in turn depend on the market's current state in terms of demand. In times of high demand, as was the case before 2014, the shipyards' order books increase and the capacity of the yards will quickly be reached. Thus, their bargaining power in relation to price, quality and delivery time become higher. However, when the market started plummeting, many orders were cancelled and the number of new orders have been closed to zero, followed by falling prices and especially Asian shipyards have been struggling for survival (Sea Europe, 2017).

As mentioned in earlier sections, the number of Asian shipyards have increased during the last decade, increasing the competition among the vessel suppliers, which naturally has led to lower bargaining power (Pareto, 2015). Further, the Asian producers are responsible for the majority of the slippage and late deliveries, making them less differentiated compared to their European and American peers (Clarkson Platou, 2017). Late deliveries will of course have serious consequences for OSV firms who will be left without possible income due to failure of meeting contract capacity. One should also differentiate between low-end and high-end vessels, where the lion's parts of the Asian shipyards' output is low-end PSVs and AHTSs, fairly easy to construct. The low level of complexity and differentiation between the suppliers results in fairly low switching cost for the OSV companies (Porter, 2008). The leading manufacturers of high-end AHTSs and CSVs are few and based in Norway and the US. The production and output of these

yards are specified and hence their power are stronger compared to their Asian peers. However, at current state the demand for high-end vessels is low, leading to lower bargaining power of these suppliers as well.

The supply of labour is second most important since crewing expenses usually accounts for the more than 50% of operating costs and thus are the most influential cost driver (Havila ASA, 2016). New regulations in important geographical OSV markets as Brazil and West Africa where local workforce need to be used in operating the vessels. Lack of skilled labour and high cost of training have led to a disequilibrium between demand and supply, causing wages to rise in these regions (Pareto, 2016).

The above arguments lead the thesis to conclude that the current state results in suppliers having low bargaining power, however on average, the bargaining power is considered to be medium. As discussed, the question of high- or low-end output will also affect the level of suppliers' power.

3.2.3 Bargaining power of buyers

The degree of buyers' bargaining power can be analysed with the same logic but reversed order as with power of suppliers. When the bargaining power of buyers is high, the possibility of earning high returns will be lower and vice versa (Porter, 2008). The intensity of the OSV market's buyers bargaining power in basically determined by two factors; relative bargaining power and the buyers' price sensitivity. The main customers for the OSV companies are the oil extracting companies and their price sensitivity are in turn dependent on the ratio of cost related to OSV services to their total budget (Grant, 2013). As mentioned, the ratio is low making the buyers quite insensitive to changes in the price of OSV services.

Undifferentiated services lead to low switching cost, which is the case for the lower-end segment of PSVs and AHTSs (Grant, 2013). Higher-end AHTSs and CSVs related to Subsea are more differentiated and will imply high switching cost for the offshore extracting companies, meaning lower buying power. Historically, the biggest customers for the high-end AHTS and PSV segment have been Petrobras and Statoil (Pareto, 2015). However, many international vessels have left the Brazilian market due to regulations under the Brazilian Shipping Act (Brazilian Law 9.432/97), favouring ships sailing under domestic flag, although these regulations have been eased during 2017 (Osjonline.com, 2017; Havila ASA, 2017). Petrobras and Statoil play an important role in the demand for OSV services, which causes them to have quite high degree of power in relation to OSV companies. In 2017, Statoil controlled 70–80% of crude oil production in the

Norwegian Continental Shelf and voices have been raised about governmental interaction to hinder this monopoly-like situation (Norwegian Shipowners' Association, 2017).

When extracting oil from areas of more demanding nature, the oil companies demand technical advanced vessels and they are unwilling to enter contracts where the vessel are above 10–15 years (Havila ASA, 2017). In order to win contracts in more challenging areas as Brazil and the North Sea, the OSV firms need to operate a modern fleet, somewhat increasing the bargaining power of the buyers.

The market situation is also a determinant of the degree of supplier power. During times of low demand, the vessel-to-rig ratio surge and more vessels are competing for contracts, pushing down the rates, since supply is fixed in the short-term. Naturally, the opposite situation appears in times of high demand for OSV services.

The final factor affecting the degree of buyers' power is the possibility of vertical integration (Porter, 2008). The main customers of the OSV industry are large oil corporation with access to both equity and debt capital. In addition, most of them possess the capabilities needed to operate the vessels on their own, which if so was the case would reduce the dependency on the OSV firms. However, a scenario where the oil companies realise a strategy of forward integration is unbelievable. First, it would reduce their flexibility of choosing among OSV firms. Second, since both businesses are so heavily correlated with the oil price, it would have an amplified effect when the price was low, resulting in even bigger losses.

The thesis argues from the above stated arguments that the bargaining power of buyers should be considered medium to high.

3.2.4 Threat of entry

The fourth and probably most important force affecting the attractiveness of the OSV industry is the threat of potential entrants. As in above segments, low barriers to entry means higher threat of new players and hence lower possibilities of abnormal returns (Grant, 2013). Since there is difference in regards to usage, complexity and capital requirements between the vessel segments, one has to analyse them differently. However, the same factors deciding the level of threat are the alike and as follows: *capital intensiveness, shipyard capacity and expertise, complexity of operations, economies of scale* and *global and local regulations*.

Overall, the OSV industry is regarded as a capital-intensive industry where most main players are operating a relatively large fleet across all segments, in order to stay competitive. However, in theory as well as in practise, one can start operating in the business with just one or few vessel, which is commonly seen in the shallow waters of Asia where the demand for high-end vessels is low (DBS, 2016). In regards to capital-intensiveness, the threat of new entrants is considered medium.

The PSV is the most common, as well as standardised type of vessel segment. As been described in section 2.4.1, the operations are characterised by low complexity since it is mainly used in transportation of cargo and personnel to the rigs. Since the PSV lacks differentiating features, almost all shipyards have the capabilities to produce them. Due to the increased demand for new vessels before 2014, many Asian shipyards started to produce PSVs due its low complexity. With low complexity follows a low price and PSVs from Asian shipyard usually cost between USD 30–60 million, which lowers the barriers to enter (Clarkson Platou, 2014). In addition, operating a PSV demands limited know-how and technical expertise compared to the other vessel segments. In total, the threat of entry in the PSV segment is considered to be medium.

When analysing the AHTS segment, one has to divide the analysis between high- and low-end vessels, since they can almost be considered as two different segments. Low-end AHTSs are nearly as standardise as PSVs therefore Asian shipyards are involved in the majority of the newbuilds. As mentioned in the Shipping Market Model, the oversupply of capacity has led to lower prices and in combination with the current market state, the low-end segment is considered to have medium entry barriers (Pareto, 2015). High-end AHTS vessels are designed to operate in harsh environment and are generally more complex to construct (Ibid). Thus they are more expensive and fewer yards have the capacity and technical know-how to construct them. Further, the complexity of operating an AHTS results in the need of highly educated worker in comparison with a PSV. In conclusion, the overall threat of entry in the AHTS segment is considered low.

The most complex and specialised vessels are the CSVs, which are the segment performing services related to Subsea exploration. The high level of refinement means that the Subsea vessels are the most expensive and the vessels can cost over USD 100 million to construct (Clarkson Platou, 2014). During times of crisis, banks are reluctant to provide capital and hence only well-established firm are able to raise amounts of that sort. Due to the segment being relatively new, combined with the complex production of the vessels, there are only a few yards supplying Subsea OSVs (Pareto, 2015). Further, Subsea vessels are also the most complicated segment to operate and it requires an even more skilled workforce than AHTS vessels.

Consequently, these two factors create a need for high capital requirement in order to engage in the segment. Therefore, the threat of entry in the Subsea segment is considered to be low.

When considering the potential threat of new entrants, one should examine the impact of economies of scale. If large enterprises can achieve scale economies important to stay profitable, this will mean higher barriers to enter the industry (Porter, 2008). The OSV firms have limited capabilities to achieve economies of scale in their operations, since most vessels are dedicated to a specific task or segment. Nonetheless, in regards to purchase of new vessels, buying in bulk will most likely create cheaper prices among the suppliers. Owning a large homogenous fleet will reduce cost in educating the workforce since they would likely have the ability to operate among the different vessels of the firm without further training. Overall, economies of scale have no serious contribution to the barrier of entry.

The threat of potential entrants might be impacted by both local and global regulations that OSV companies need to comply with (Porter, 2008). As mentioned in the macro-analysis, the legislation in Brazil requires the OSV firms to operate by governmental permission, as well as using local personnel, creating barriers (Lloyd's List, 2016). The BP scandal in 2010, also known as the Deepwater Horizon, led to new environmental regulations as well as extensive health and safety standards (Bsee.gov, n.d.). Rigid regulations usually mean high cost in education and knowledge, in this case meaning that it reduces the potential threat of new entrants.

Overall, the threat of entry for the AHTS and Subsea is considered as medium, whilst low-end segments, mainly consisting of PSVs is set as high.

3.2.5 Rivalry among existing firms

The last force of Porter's model is the intensity of the rivalry among the competing firms, where the higher intensity means lower chance of high returns. According to Grant (2013) there are six factors affecting the rivalry, however, the thesis finds only three of them relevant; market composition, market state and exit barriers.

Market compositions affects the rivalry and the theory says that many firms in roughly the same size will enhance the level of competition, meaning less attractiveness (Petersen & Plenborg, 2012). The OSV market is characterised by high fragmentation, where over 200 operators are competing in within the large and

medium sized segment (Farstad ASA, 2015). However, analysts are certain of industry restructuring, which have already started and the number of players will have to drop, either by consolidation, liquidation or bankruptcy. The largest geographical markets for high-end medium and large OSVs are in order; Asia-Pacific, the North Sea and Gulf of Mexico (Ibid). The fragmentation of the market indicates that the industry rivalry should be considered as high.

Naturally, the current market state will have a direct impact on the level of rival intensity. During times of high demand of OSV services following high E&P spending, the competition declines, since supply will take time in order to adjust. Consequently, the OSV companies will see increased bargaining power against the oil companies. Contrarily, the current market can be used as evidence where supply exceeds demand and competition for contract are historically high. The prevailing scenario where supply exceeds demand, rivalry is considered high.

The final factor influencing the industry intensity is the exit barriers. When the barriers to exit are high, many companies will persist in the market although operations might be unprofitable, intensifying the industry competition (Petersen & Plenborg, 2012). The second hand market is also affected by lower industry demand and the prices have been very low since 2014 (Danish Ship Finance, 2017). Further, when firms invest in new vessels they are typically built for a certain customer or contract, meaning that they are hard to resell. As mentioned in the Shipping Market Model, the oil companies require modern vessels when entering contracts creating problems when trying to sell older vessels. The factors mentioned leave the firms with no other option than to scrap if divesting, which they are reluctant to do (Ibid). Once again, one has to consider the current low demand, where more and more vessel owners try to sell their ships whilst the potential buyers become lower. In total, the barriers to exit in the industry is high.

3.2.6 Summary of porter's five forces

By applying the Porter's Five Forces model, the industry dynamics and attractiveness have been examined and the sub-question *"How big of an impact does the identified key macro divers have on the attractiveness of the OSV industry?"* have been answered. The current market state has constantly affected the outcome of the analysis, hence it is important to remember that the fallout could have been very different if made during another state, for example during the years before the 2014.

3.3 Internal analysis – VRIO

The following section sets out to analyse the internal environment of Havila with the purpose of uncovering potential sustainable competitive advantages compared to its peers. By doing so, this thesis will apply the VRIO model which is a framework used to identify resources and their competitiveness. The internal financial resource derived from the Du Pont section will be analysed along with Havila's fleet, crew, geographic positioning and management. The goal of the analysis is to determine if the resource is valuable, rare, costly to imitate and if Havila is capable of capitalize the resource in order to create value in comparison to their peers (Jurevicius, 2018).

3.3.1 Fleet

The fleet is one of the core resources for almost all companies operating in the OSV-industry, and there is no exception for Havila. It is therefore crucial to analyse the fleet of Havila in order to distinguish if the company possess any competitive advantages over its peers.

The average fleet age is one metric used to compare the competitiveness related to the fleet of the peers since a young fleet minimises the risk for delays, breakdowns, unexpected maintenance and other one-off incidents and costs. The occurrence of such events would impose significant extra operating costs for the company and in turn their customers. Consequently, a modern fleet with more reliable vessels mitigate the risk for increased unplanned operating costs and facilitates for a more efficient service. Thus, increasing the company's reputation as well as the chance of acquiring new business contracts. By reason of this, part of Havila's restructuring plan described in section 2.5.1, is to dispose a number of vessels built before the millennium in order to modernize the fleet, however compared to its peers Havila holds the oldest fleet with 10.7 years in total (Havila Q4, 2018). Also, as mentioned in the external analysis, the demand for modern vessels has increased in the past and will continue to do so in the foreseen future.

Today, the offshore drilling companies pressures and demand their suppliers to operate in accordance with their safety and environmental regulations. The emphasis on such demands have amplified since the BP oil disaster in 2010, where an explosion at the Deep Horizon oil rig resulted in the cost of 11 lives and the discharge of 4.2 million barrels of oil into the Gulf of Mexico. Since then several regulations, safety standards and new technology have been introduced to equip companies with all the necessary tools to prevent such disasters, and in turn protect the companies from costly litigations (BP was fined USD 18.7 billion) and damages to their reputation (Rushe, 2015). One of these new regulations were indirectly forced upon the

offshore oil companies, since the consequences of not following the regulations would lead to loss of current operation licenses and hinder the gain of new licenses (The Globe and Mail, 2012). By reason of this, it is crucial for Havila to be aligned with the present environmental protection regulations.

Havila was ISO 14001:2204 certified in 2007 by Norsk Akkreditering, the certification commits the company to defining environmental aspects into an action plan. The company renewed their environmental action plan in 2016, adding milestones from every half-year. By presenting the milestones, the company can give updates that are more frequent on the development in relation to the set action plan. Moreover, in 2016 Havila's fleet consumed 40.263 ton of fuel, and the company is working actively to reduce emissions of damaging pollutants from combustibles, Havila has for example initiated the instalment process of catalytic converters on new vessels, and more specifically on the new vessels propulsion machinery, hybrid engine configuration, optimal hull designs and incinerator for waste (Havila ASA, 2017). Another environmental incentive include the conversion to hybrid power operations using batteries for two PSVs that were awarded long-term charter contracts by Statoil. The two vessels will be supplied with electrical power to the propulsion systems electrical networks to allow for environmentally friendly operations (Offshore Energy Today, 2017).

Due to the fact that Havila holds the oldest fleet in the peer group and since the level of environmental standards of the company is on par with the overall OSV-industry the resource is only a competitive parity due to the lack of rarity. Moreover, as mentioned before the level of environmental standards are more or less forced upon the OSV companies and are not costly to imitate. Consequently, if an OSV-company would possess superior levels of environmental standards compared to its peers the resource would only be views as a temporary competitive advantage since the maritime cluster in Norway facilitate for easy access of the required technologies. With that said, there is no hesitation that the resource is valuable for the company due to its influence on the operations.

3.3.2 Crew

Apart from the company fleet, Havila's crew is the most important resource. Historically the crew expenses have had the highest influence on the company operating income disregarding asset write-downs, which became markedly in 2015. In addition, the education, experience and quality of the crew have naturally a considerable effect on the business operations both offshore as well as onshore. Having a professional crew is an instrumental resource for being able to perform on a high-level, which is crucial in order to stay

competitive. The professionalism of the crew is reflected in the service, efficiency and safety of the day-to-day business operations. In addition, just like a modern fleet, a professional crew minimises the risk for delays, breakdowns, unexpected maintenance and other one-off incidents and costs. Also, due to increased pressure on environmental, safety and quality operations by customers, the OSV companies have to go the extra mile to obtain a professional workforce. Consequently, Havila focuses on three recruiting criteria to ensure professionalism namely, education, training and qualifications (Havila ASA, 2017).

In order to ensure development of expertise and training in the maritime sector, Havila is actively supporting the Global Maritime Knowledge Hub with both funds and knowledge. The project is a collaboration between several Norwegian research institutes and businesses in the maritime sector, and the goal is to create a maritime industry hub similar to the information technology hub in Silicon Valley (Havila ASA, 2017; Norwayexports.no, 2010). In addition, the company is also participating in the Centres for Research-based Innovation (SFI) marine operations, which goal is to support Norwegian research groups with close ties to innovative businesses (Havila ASA, 2017). Moreover, since the demand for highly competent personnel is ever increasing, Havila is co-owner of Fosnavåg Ocean Academy; the academy is a training and simulator centre for OSV operations and other maritime industries. Naturally, Havila's employees capitalize on the offered training promoting increased competence and professionalism of the personnel (Havila ASA, 2017; Fosac.no, 2018).

The company puts major emphasis on on-board health and safety, and the company has enjoyed a positive absence due to injury development, in 2012, the company had a total of six injuries which resulted in absence and in the end of 2016 the figure was reduced to only two (Havila ASA, 2017). A highly professional and competent crew is undoubtedly a valuable and crucial resource to remain competitive. Based in the above, it is evident that the company is engaged in several project to promote professionalism in their workforce, however this is not rare amongst the peers, who also are engaged in corresponding efforts. As a result, the crew resource is classified as a competitive parity.

3.3.3 Geographic positioning

Havila operates globally with vessels positioned in the Norwegian, British and Danish sectors of the North Sea, Asia, Brazil, Africa and Netherlands. As of the end of 2016, Havila's largest operation region was the North Sea accounting for approximately 70% of the total operational income, with almost 90% of the company assets located in the same region. The second largest operation region was Asia accounting for

roughly 20% of the operational income with 6% of the company assets, followed by Brazil (8% of operational income, 0% of assets), Africa (2% of the operational income, 0% of assets) and the Netherlands (0.5% of operational income, 0% of assets).

The fact that Havila is operating in diverse geographical areas are viewed as an important resource for the company. Even if all operating regions are largely affected by the global market development, each region have unique characteristics and dynamics influencing the demand and supply structures. By being exposed to several markets, Havila mitigates the operational risk since the different areas would react differently to the same event. Consequently, this thesis deems the resource of diverse geographical positioning a valuable resource for the company. Moreover, since almost all peers are operating within the same areas this resource cannot be viewed as a rare one (Havila ASA, 2017). All in all, the resource is only a competitive parity due to the lack of rarity.

3.3.4 Management and Board of Directors

Since the main objective of the Executive Management and the Board of Directors is to create value for the shareholders, it is possible to view the two as potential resources. While the Board of Directors is the governing body responsible for the overall management of the company, the Executive Management manages the day-to-day business operations including formulating and executing necessary strategic decisions in order to stay competitive. Thus, this thesis deems it important to evaluate if the composition of the board and management can be considered as a valuable resource and if so, it is competitive implication.

The articles of association provides that the Board of Directors shall be comprised of between three and seven directors. Havila's current board consist of five directors all elected by the company's shareholders. Two of the board members have extensive experience from the offshore shipping and oil industry. In addition, all of the board members have different background and have during their professional careers gained experience in various fields such as finance, law and business. Apart from the ever-valuable industry experience, the knowledge and experience from other fields contribute and complement the board in their pursuit to make substantiated value adding decisions. However, having a chairperson with hands-on experience from shipping companies, shipyards and financing institutions both in Norway and globally is seen as particularly beneficial for the company due to the facilitation of information and knowledge gathering within the cluster. Moreover, after the founder Per Sævik stepped down from the position as Chairman in 2017, the only board member with ownership in Havila Holding AS, the indirect controlling

shareholder of the company is Hege Sævik Rabben. Other than this, no one has any commercial or personal association with either the management or the principal shareholder and none holds a senior executive position at Havila (Havila.no, 2018; Havila ASA, 2018).

The Executive Management is comprised of the CEO, CFO, COO and the Human Resource Director. All of the key professionals have been with the company for more than 10 years, and prior to their positions at Havila, three out of four have had previous careers within the OSV industry. Due to their considerable experience and knowledge of the industry, one can describe the key professionals as OSV industry experts. In addition, taking their long-term commitment into consideration despite the difficulties Havila and the whole industry has experienced, one can argue that the management is fully committed to the company and its mission. Moreover, a part from Njål Sævik who owns 30% of Havila Holding AS and Kjell Rabben who is married to Hege Sævik Rabben no one else in the management group has any commercial or personal association with either the Board of Directors or the principal shareholder (Havila ASA, 2018).

By virtue of the Board of Directors and the Executive Managements' expertise and knowledge about the OSV-industry as a whole as well as in adjacent fields, this thesis deems the resource valuable for Havila. However, in the Norwegian OSV-industry it is more common than not that the management have similar profiles to that of Havila, and since most of the companies are family-owned the long-term commitment cannot be viewed as unique. Because of this, the resource is only a competitive parity due to the lack of rarity.

3.3.5 Financial resources

The final resource dealt with in this internal analysis, the financial resource of Havila cannot be viewed as a valuable resource, the company has a leverage ratio in market values in 2017 of 94.5%, and this implies that Havila is the highest leveraged company amongst the peers. Concerning the financial drivers, it can be concluded that in the foreseen future the leverage, depreciation and invested capital in relation to new builds will not increase due to Havila's empty order book.

3.3.6 Summary of VRIO analysis

By conducting the VRIO analysis the internal environment of Havila have been examined and the sub-question *"Which of the internal drivers can be viewed as valuable resources, and to what degree do they affect Havila's future performance?"* has been answered. A summary of the findings can be found in the table below.

Table 1.7: Summary of VRIO analysis

VRIO Summary					
Resources	**Valuable**	**Rare**	**Imitable**	**Exploited**	**Competitive Implication**
Fleet	✓	✗	✓		Competitive Parity
Crew	✓	✗			Competitive Parity
Geographic Positioning	✓	✗	✓		Competitive Parity
Manangement and Board of Directors	✓	✗			Competitive Parity
Financial	✗				

Source: Compiled by authors

3.4 SWOT

The analysed drivers in the strategic analysis section is summarised in the SWOT matrix below. The identified factors will later be utilised in the in the forecasting and the valuation of the company.

Table 1.8: SWOT matrix

SWOT Analysis	
Strengths	Weaknesses
Modern fleet	Negative ROIC trend
Professional crew	High spot rate exposure
Time of operation	Negative EBIT trend
	Increase in FGEAR
	Negative spread
	Financial position
Opportunities	Threats
Increase in oil price and E&P spending	Decrease in oil price and E&P spending
Stronger GDP growth	Unsatisfying GDP oulook
Decrease in global supply	Geopolitical tensions
Increase in global demand	Declining demand and excess supply
Exploration in new areas	Lower freight and utilization rates
Limited order book	Imposed global and local regulations
Lower interest rates	Increase in alternative energy
Appreciation of NOK	Higher interest rates
Lower threat of potential entrants	Depreciation of NOK
	Increases supplier power
	Increased buyer power
	High rivalry among competing firms

Source: Compiled by authors

4 Financial statement analysis

Prior to forecasting Havila's future cash flow, it is instrumental to gain a deep understanding of the historical performance of the company. In order to so, the income statement and balance sheet will be rebalanced to separate the main activities into either operational activities or financial activities. This is important since investors deem operational activities as the primary source for value creation, whilst financial activities is not considered a firm-specific advantage due to its easily imitated nature. Moreover, the reformulated numbers will allow for calculation of profitability ratios from the Du Pont Model. The historical performance ratios of Havila will be measured against the peer group with the purpose of conducting a comprehensive analysis of the main drivers behind the ratios influencing Havila's historical performance. These drivers in accordance with their future trends will subsequently be used as the starting point for the forecast (Petersen & Plenborg, 2012; Brealey, Myers and Allen, 2006).

The last six years i.e. 2012–2017 will be applied in the financial analysis. The timeframe covers different phases in the industry including, the expansion phase from 2012 after the financial crisis and the recession stage from 2013 with the shift towards a depression stage. Consequently, this thesis argues that the timeframe will contribute to a representative foundation for the analysis. Moreover, the financial analysis is built on annual reports from 2012–2016 as well as fourth quarter financial reports of 2017 from Havila and its peers.

4.1 Rebalancing financial statements for analytical purposes

In the interest of analysing a company's historical performance, reformulation and reclassification of the financial statements into analytical income statement and analytical balance sheet is beneficial. By rebalancing, the items in the financial statements are separated into items related to core operations or as financial items, the reason for the separation is to isolate the operational activities, which in turn are the main driving force for value creation. Moreover, the exercise let us determine important key ratios, which will facilitate for the financial analysis and valuation of the company (Peterson & Plenborg, 2012). See Appendix 1, for complete reformulated financial statements.

4.1.1 The analytical income statement

To gain a better understanding on how Havila creates value, this thesis will reformulate the company's income statement into core operating activities and financial items. Further, this is done since investors

deem operating profit as the main source of value creation, and lenders consider operating profit as the main source for servicing the provided debt. Also, by reformulating, one can calculate key performance measures showing the company's profitability from its core business regardless of its financial structure. Two operating profit measures will be calculated namely, operating earnings before tax and interest (EBIT) and net operating profit after tax (NOPAT), NOPAT will later serve as the base for the free cash flow calculation. Moreover, as the analysis set out to distinguish items related to the company's core operations, all items considered transitory will be placed after NOPAT in the income statement (Peterson & Plenborg, 2012). The following items presented in this section have a particular ground for clarification and discussion.

4.1.1.1 Gains and losses on sale of vessels / fixed assets

Gains and losses on sale of vessels are classified as core operations and will be included in the total line of revenue. Havila has historically sold vessels and other fixed assets continually, hence the item is deemed recurrent. Having an up to date fleet is crucial for the company's operations, and Havila considers sales of vessels to be part of the regular business operations (Havila ASA, 2017).

4.1.1.2 Net foreign currency gains and losses

This thesis classifies the item as a financial item. It could be argued that the item should rather be classified as an operating item since hedging activities are part of the company's regular business operations. However, due to the fact that hedging is not part of management's core competencies this thesis does not considered the item to be part of the core operations, thus the item is classified as an financial item (Peterson & Plenborg, 2012).

4.1.1.3 Other income

The classification of other income often depends on the industry the company operates in, the type of income/expense and where it stems from. This thesis will treat other income as an item related to operational activities rather than financial activities, the reason being that it only accounts for a minor part of the total income (ibid).

4.1.1.4 Tax on operations

The corporate tax rate in Norway is 24% (KPMG, 2018). However, there is no distinction between tax on operations and financial activities in the financial statements. By virtue of that, it is necessary to estimate the both taxes alone and then allocate the tax to operations and financial items separately. Firstly, this thesis will estimate the tax shield derived from net financial expenses applying the corporate tax rate of 24%. Secondly, the calculated tax shield will be deducted from the reported tax from the company's accounts (ibid).

4.1.2 The analytical balance sheet

The analytical balance sheet is divided into operating and financial item in the same fashion as the analytical income statement. However, operating activities are further split in to current assets and liabilities, and the financial items are divided into interest bearing assets and debt. The reformulation of the balance sheet allows for the calculation of invested capital, the sum of operating assets less operating liabilities, which represent the amount invested in the company's operating activities by equity and debt holders, which in turn requires a return (ibid). The following items presented in this section have a particular ground for clarification and discussion.

4.1.2.1 Cash and cash equivalents

It can be somewhat tricky to distinguish between cash appointed to operations and excess cash. The amount of cash considered excess can be used for non-operating activities such as paying out dividends, share buybacks or to service debt (ibid). Since Havila does not disclose the amount of cash used for operating activities, cash and cash equivalents will be classified as an interest bearing financial item.

4.1.2.2 Derivatives

Derivatives are used as instruments to hedge financial risks, and drawing on the discussion concerning net foreign currency gains and losses above, derivatives are classified as a financial item (ibid).

4.1.2.3 Deferred tax assets and liabilities

Deferred tax assets can be explained as the technical difference between book values and tax values (ibid). Due to the fact that the items stems from the firm's operations, the items are treated as an operating item.

4.1.2.4 Tax payables

Just like deferred tax assets, tax payables stems from the firm's operations. That in combination with no disclosed information regarding any imposed interest rate on unpaid taxes, this thesis deems the item related to operational activities (ibid).

4.1.2.5 Pension assets and liabilities

Havila's employees are covered by a defined benefit pension scheme, and the pension obligations are interest bearing. Consequently, pension assets and liabilities are treated as a financial item (ibid).

4.2 Historical analysis of profitability and performance

This thesis will look through the lens of the Du Pont model when analysing Havila's historical profitability and their ability to generate satisfactory returns for their shareholders. The model allows for the calculation of various profitability ratios. First, a snapshot of Havila's historical performance will be presented using profitability ratios not dependent on the reformulated financial statements. Then in order to analyse the return on equity (ROE) this thesis will analyse all of its components namely, ROIC, spread and financial gearing (Petersen & Plenborg, 2012).

When analysing operational results it is best to look at return on invested capital (ROIC) as it measures the operational results from the core business of the company. However, since the ratio is incapable of explaining if profitability is driven by better revenue/expense utilisation or improvement of the capital utilisation, it will be further decomposed into its components of, profit margin (PM) and turnover rate of invested capital (ATO). Eventually, the calculated ROIC ratio will be measured against Havila's WACC to investigate whether the company is value creating or value destroying. Furthermore, since the shareholder's return is influenced by both profit from operations and the financial structure, it is important to analyse how Havila's leverage impacts their bottom line. Thus, the financial components of ROE i.e. spread and financial gearing (FGEAR) will be analysed (Ibid).

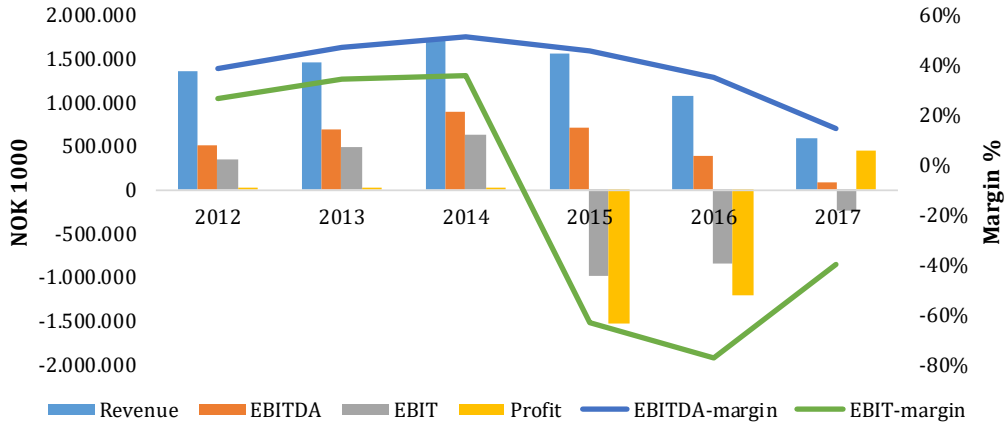
Additionally, an index analysis will be carried out to identify trends since one can easily see the development over time of specific items. However, in order to understand the items relative size and not just the individual items trends, a common size analysis will be applied. A common size analysis displays each line as a percentage of total operating income facilitating for comparison.

Throughout the analysis, the applied key figures will be based on after tax numbers. The reason for this is that return on equity, i.e. the return on investment for the owners is affected by tax payments.

The numbers and key ratios derived from the Du Pont model will be measured against the selected peer group. By comparing the figures in relation to the peers, one can gain a deeper understanding of the development than by simply isolating the figures. Furthermore, interpreting Havila's margins, growth rates, numbers and returns in relations to the peer group will contribute to the forecasting, since it can be used as a sanity check for future estimates. Throughout this performance analysis, several underlying key drivers will be identified as the main source for Havila's historical performance. These drivers are also expected to be the main source for future performance.

Havila's historical profitability and performance is depicted in figure 2.4 below, it is important to gain an understanding of the company's performance history as it can be used as an indicator for future performance. Looking at the figure it is evident that revenue, EBITDA and EBIT increased from 2012–2014, the overall increase can be attributed to a growing fleet, high contract coverage and relatively high spot rates for AHTSs. In 2015, a cost-cutting program was initiated as a result of a challenging market, the decrease in revenue can be explained by lay-ups and terminated contracts. Moreover, the dramatic plunge in EBIT is due to large impairments of fixed assets based on going concern values and consequently the profit also plunged to its historical low of negative NOKm 1.527. The following decrease in revenue in 2016 is a result of further lay-ups; more specifically nine vessels were laid-up, whereof three AHTS, five PSVS and one CSV. Havila continued to carry out impairments of their fixed assets in 2016, which subsequently explains the negative EBIT and the net profit. However, the net profit improved slightly in 2016 due to net currency profits. The challenging market especially in 2015 and 2016 as well as the expected continuing turmoil in the OSV industry affected Havila's financial position substantially, which forced the company to implement a restructuring plan, providing Havila with sufficient liquidity to operate through 2020. The refinancing solution included a redemption of debt to discount, which explains the positive profit in 2017. Furthermore, the decrease in revenue is caused by efficiency efforts, where parts of the fleet are lay-up or being sold (Havila ASA 2013–2017; Q4, 2018).

Figure 2.4: Historical profitability

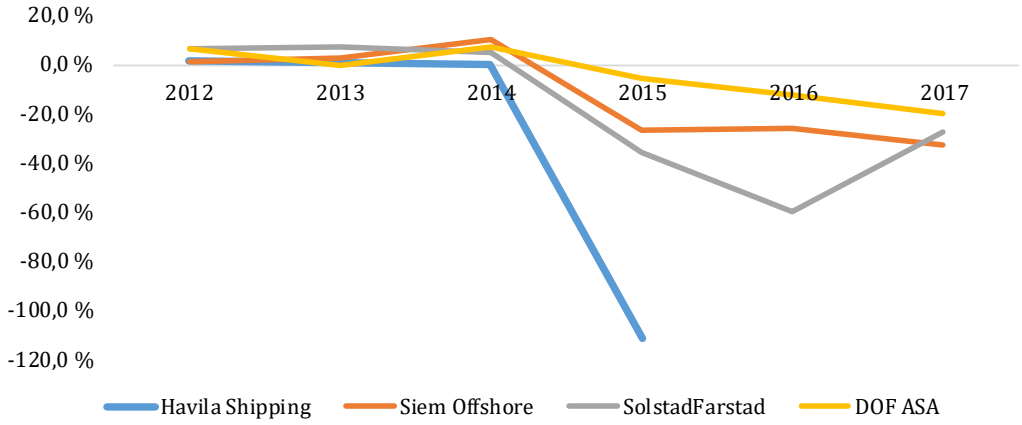


Source: Compiled by authors

4.3 Return on equity (ROE)

As mentioned before, return on equity is a profitability measure, and it signifies the company's ability to generate return on the investments received from its owners taking both operating and financial leverage into account. The measure is calculated as *ROIC + spread * financial gearing*. The ROE development for Havila and its peers is shown in the below figure.

Figure 2.5: ROE after tax



Source: Compiled by authors

As seen in the figure, all peers expect Havila had more or less similar ROE measures from 2012 to 2014 averaging around 5%. In the same period, Havila had an average ROE of 1%. When comparing to the more recent years, the ROE levels in 2012–2014 reflects some conformity in the industry. Moreover, in 2015 the consequences of the unbalanced market started to materialise, affecting the peers to different extents. For

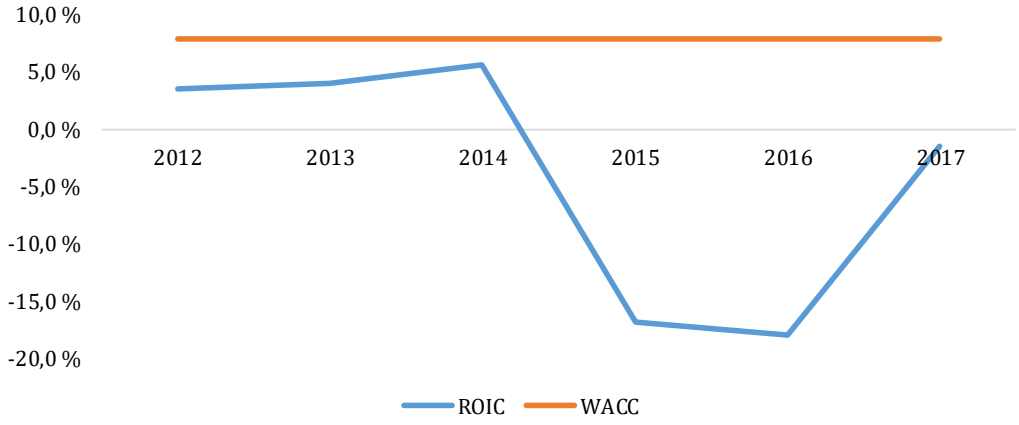
Havila the consequences were extensive resulting in a ROE of approximately -111%, this is almost three times as bad as the second worst performing peer i.e. Solstad Farstad. The unsatisfying ROE of -111% mirrors a negative ROIC and spread development as well as an increased financial gearing, a more detailed explanation of the components will be presented in sections below. In the period from 2015 to 2017 after having experienced different ROE measures, the peers converge around negative 25% in 2017, indicating some stability in the market. Havila's ROE measures in 2016 and 2017 are excluded in the analysis since the measures are distorted by negative equity in 2016 and positive transitory net financial items after tax in 2017.

Both Havila's profit margin and invested capital turnover rate increased moderately from 2012–2014 followed by a more dramatic decrease from 2015 until 2017. Moreover, in general all peers have experienced a negative spread development, DOF have however, managed to produce a stable spread during the whole period. In the first part of the period, all the peers produced positive ROIC and reasonable spreads, after 2014 however, more or less all peers started to produce negative ROIC as well as substantially worse spreads, this in combination with the overall increase in leverage explains the ROE development. To provide a more in-depth understanding of the ROE development, it will be decomposed and analysed in the section below.

4.3.1 Return on invested capital (ROIC)

As previously mentioned, ROIC measures the operational results from the core business of the company. The measure can be compared to the company WACC in order to determine if the company is creating or destroying value for its shareholders (Petersen & Plenborg, 2012). The figure below shows Havila's historical ROIC development in comparison to the company WACC, it is evident that the company ROIC has been below the WACC during the course of the whole period. Thus, one can conclude that the company has been destroying value for its owners. Furthermore, in 2015 the company ROIC turned negative, and has since stayed negative. The negative development can be explained by the negative NOPAT, which is mainly influenced by large impairment costs as a result of the overall challenging market.

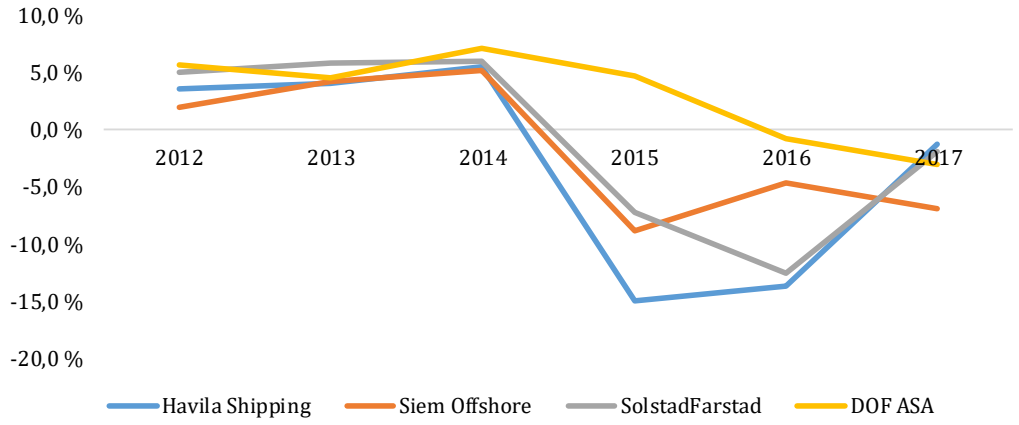
Figure 2.6: ROIC vs WACC



Source: Compiled by authors

A peer group comparison of ROIC after tax is shown in the figure below.

Figure: 2.7 ROIC after tax



Source: Compiled by authors

Havila experienced a slight increase in ROIC from 2012 to 2014 from 3.65% to 5.62%. And in 2015 the ROIC plummeted down to negative 15%, followed by a minor improvement in 2016 and a more substantial increase in 2017 ending on negative 1.27%. As mentioned before, the negative ROIC measures in 2015 and 2016 is mainly due to impairment costs of NOKm 1.388 and NOKm 900 respectively, which reflect the challenging market. To be more precise, from 2015 and onwards, there was a massive oversupply in the market, which led to increased lay-ups, lowered utilisation of the company fleet, and increased risk since the company was more exposed to the volatile spot rates. As a reaction to the market situation, Havila initiated a cost-cutting program, which was implemented in 2015 (Havila Q4 Presentation, 2016).

As depicted in figure 2.7 above, Havila's overall ROIC trend has been negative, from positive 3.65% in 2012 to negative 1.27% in 2017. When looking at the peers, this downward trend is typical for the industry. Moreover, the peer group managed to increase their ROIC from 2012 to 2014, and all peers except DOF experienced a negative ROIC from 2015 to 2017. In addition, in 2017, all peers produced a negative ROIC and reached some sort of conformity with an average ROIC of approximately negative 3%. To gain an even better understanding of the company's ROIC, the components of profit margin and turnover rate of invested capital will be analysed in the following sections.

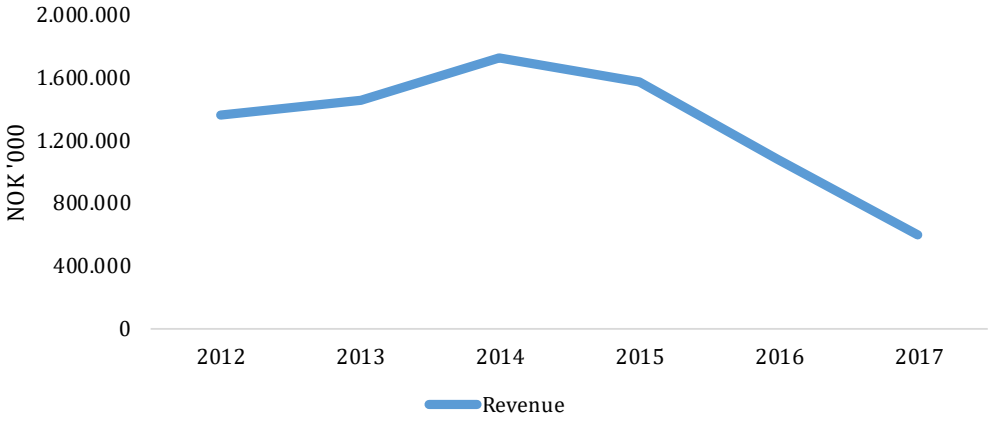
4.3.1.1 Profit margin

To comprehend the drivers of profit margin it needs to be separated into Revenues and EBIT/EBITDA. The formula for profit margin is as follows, *profit margin = EBIT/Revenue.*

4.3.1.1.1 Revenue

As shown in the figure 2.8 below, Havila's revenue i.e. total operating income have decreased over the time period with a CAGR of negative 15%. Moreover, the peer group had an average CAGR of negative 6%. The decrease in revenue for Havila is mainly due to the divestment of vessels. However, to further investigate the drivers of the overall revenue, the revenue streams per vessel type and geographical area is analysed below.

Figure 2.8: Havila revenue development

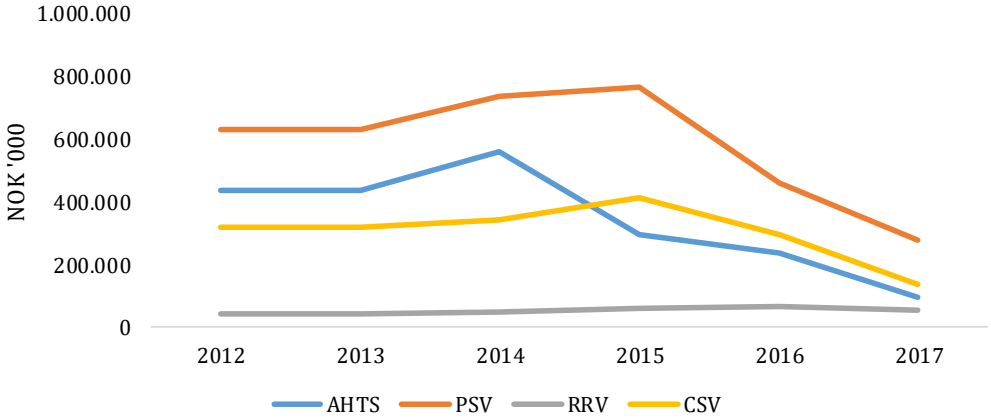


Source: Compiled by authors

4.3.1.1.1.1 Revenue by vessel type

As shown in the figure 2.9 below, the total revenue is on average generated by PSV vessels with 41%, followed by AHTS with 24%, CSV with 21% and RRV contributing with 4%. The revenue split can be explained by the number of vessels in total and in each vessel segment as well as by their specific rates. Havila's average composition of their total fleet in the period from 2012 to 2017 was 51% PSVs, 30% AHTS, 11% CSV and 4% RRV, this average split can partly explain the total revenue distribution mentioned above. Moreover, the overall decrease (18%) in numbers of vessels from 28 in 2012 to 23 in 2017 can furthermore partly explain the negative total revenue development.

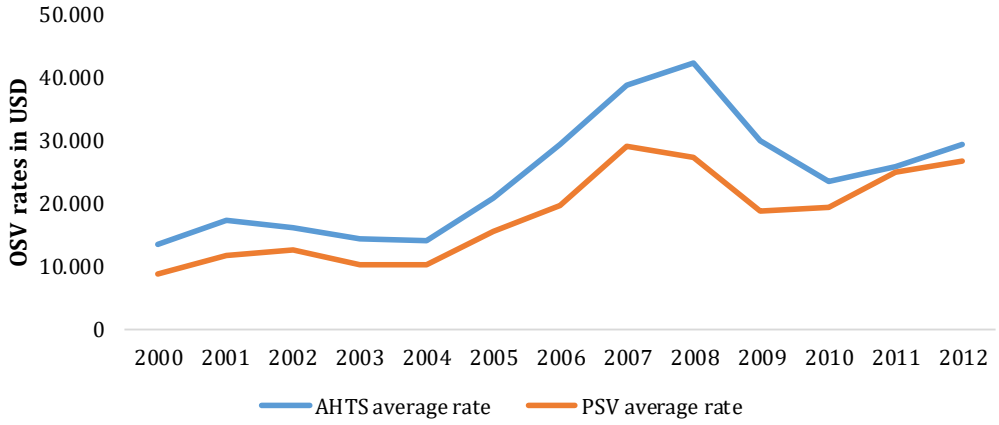
Figure 2.9: Revenue by vessel type



Source: Compiled by authors

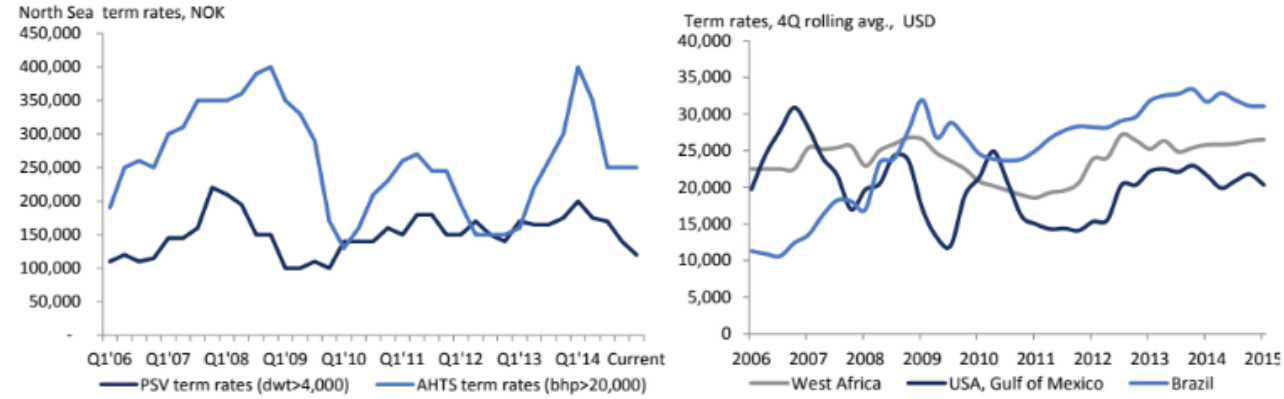
In addition, another explanatory factor for the revenue distribution is the specific rates for the different vessels. The vessel types have different rates depending on their geographical operating area and type, in the figures 3.0 and 3.1 below show that the rates for AHTS vessels average 26% higher than for the PSV vessels. Moreover, the rates also vary between operating areas, it is evident that the average rates for vessels operating in Brazil were approximately 20% higher than West African.

Figure 3.0: OSV average rates development



Source: Compiled by authors

Figure 3.1: Rates development

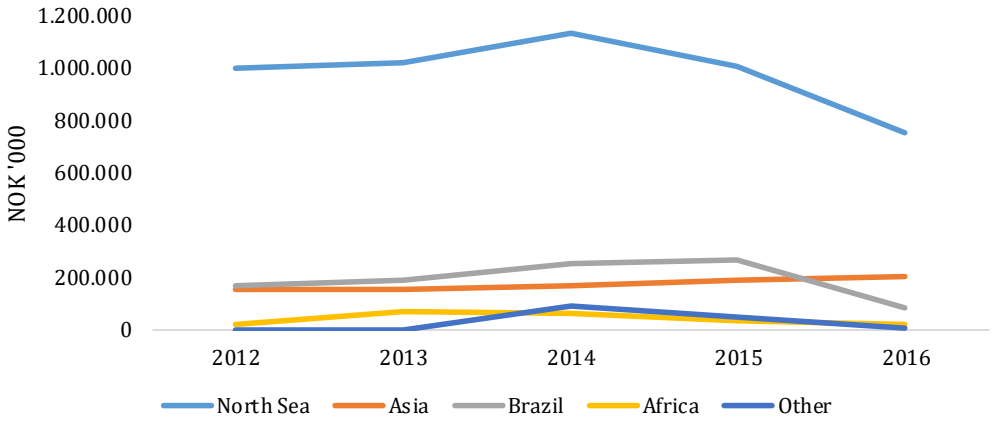


Source: Pareto Securities "OSV/Supply Report 2015"

4.3.1.1.1.2 Revenues by geographical segment

As shown in figure 3.2 below Havila's revenues can be divided into five geographical operating areas, the category "Other" is a collection of revenue streams from other regions than the main operating areas of North Sea, Asia, Brazil and Africa. Moreover, the North Sea is Havila's largest market generating on average 74% of the total revenue, followed 14% in the Asian market, 13% in Brazil, 3% in Africa and 2% in other. It is reasonable to assume that the divide is mainly influenced by the numbers of vessels operating in the different regions; it is further evident that Havila's vessels operate primarily in the North Sea (Havila ASA, 2017). Moreover, as mentioned in the revenue by vessels type analysis above, the different spot rates per vessel and region influence the revenue by geographical segment as well.

Figure 3.2: Revenue by geographical segment



Source: Compiled by authors

4.3.1.1.1.3 Revenue drivers

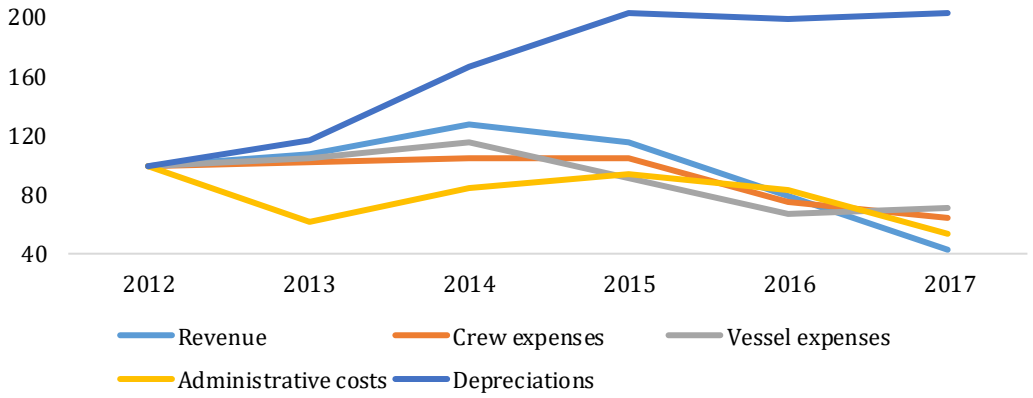
Based on the above analysis, one can identify the different revenue drivers. The main drivers include number of vessels, vessel type, operating area and rates. As a consequence, it is beneficial to gain a deeper understanding of the drivers behind the different rates for each vessel type and geographical area.

4.3.2.1.1 EBIT

As revenue have been dissected into its main drivers, this process has to be applied on EBIT, therefore EBIT is broken down into the major cost drivers, which are: crew expenses, vessel expenses, overall administrative costs, depreciation and in later years also impairments of fixed assets. By analysing the development of the posts just mentioned, one should get a full view of what drives the profit margin of Havila. A common-size and index have been conducted in order to investigate the costs and depreciation of the firm.

4.3.2.1.1.1 Costs and depreciation

Figure 3.3: Index analysis of costs and depreciation



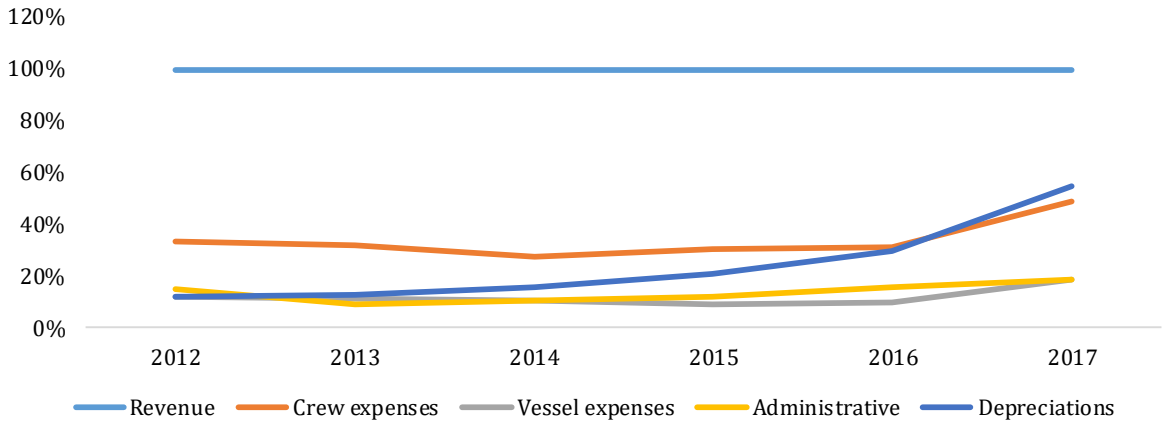
Source: Compiled by the authors

As can be seen from the graph, revenue have decreased by 57% between 2012 and 2017. At the same time, crewing expenses have only decreased by 36%, naturally depressing the operating margin. The trend of higher crewing cost can be seen throughout the whole peer group and it stems from three main reasons. Firstly, the overall increase of minimum wages in one of the OSV firms' main market Brazil (Havila ASA, 2017). Secondly, the companies have not been able to cut their crew expenses in the same rate as the revenue. This could both stem from management not being responsive enough, however, the magnitude of the decline in the demand for their services have been hard to foresee. Lastly, the increased competition for specialised workers due to the rapidly growing global fleet have put general upward pressure on salaries for experienced personnel (Ibid). Vessel expenses have decreased by only 28% meaning that it too have been decreasing at slower pace than the revenue. These costs mostly relate to the fuel and needed maintenance of the vessels. Since Havila have put many vessels in lay-up, a big part of the costs could be explained by that. The firm tries to redeploy the crew members when vessels are expected to stay inactive for a longer period, yet there are no guarantees that it will succeed, which has been the case in later years (Ibid). Administrative costs have decreased by 46% since 2012, which is also not in line with the lower revenue. However, this is where the firm have been able to slim most efficiently. This have been part of their cost reduction program where the number of administrative work force have been cut by 35% from 2015 to 2017, with lay-offs especially outside Norway (Ibid).

The depreciation doubled between 2012 and 2015 and have been steady since. It mostly stems from the investment new building program of 13 new vessels, which was implemented between 2007–2011 (Ibid).

Included in the new vessels were three Subsea vessels, which have a higher acquisition price compared to the other segments (Pareto, 2015). This was amplified by the decreased residual value of the fixed assets (vessels) which was a result of the new market conditions, which put downwards pressure on the price in the secondary market. Compared to other items, the depreciation have not developed accordingly among the peers. Havila have had by far the highest increase of depreciation costs, which naturally have affected the profit margin. Siem have also have increased cost related to depreciation, whilst both Solstad Farstad and DOF have seen their cost decrease.

Figure 3.4: Common size analysis of costs and depreciation



Source: Compiled by the authors

Compared to the index analysis, the so-called common size analysis recognises the most important drivers of cost and its share of total revenue (Petersen & Plenborg, 2012). The average of the main cost drivers have been summarised in table 1.9 below.

Table 1.9: Cost driver part of revenue

Cost Drivers of Revenue		
	Average	**2017**
Crew expenses	34%	49%
Vessel expenses	12%	19%
Adminstrative	13%	18%
Depreciation	24%	55%

Source: Compiled by the authors

When looking at the average compared to the last year's numbers, it becomes evident that Havila have not been able to adjust the costs in accordance to the drop in revenue. Crewing expenses make up roughly half of the revenue and the depreciation cost even exceeds and compose 55% of total revenue. Vessel expenses

and administrative costs have also grown at a higher rate than revenue, however not in the same pace. As mentioned, this stems from Havila's inefficiency of cutting cost. However, this has been the case for all the peers and thus one can conclude that it do not only origins from mismanagement but from the fact that OSV firms' generally have a static business model unable to change from rapid changes in demand. Further, the enormous impairments made in 2015 and 2016 of NOK 1.388.300 (88% of revenue) and NOK 900.500 (83% of revenue) respectively was a major blow and resulted from the change in market factors as day rates and utilisation (meaning lower future cash flows) but also from an illiquid and down turning secondary market (Havila ASA, 2017). In addition, the WACC was increased from 8–9% between 2014 and 2015 (Ibid). All peers reported impairment losses during these years, yet Havila was the firm with the highest reported losses in relation to its revenue.

In order to investigate the development of the efficiency more carefully, a summary have been conducted which examines the development of several items per vessel and employees. The findings can be seen in table 2.0 below.

Table 2.0: Item per vessel

NOK 1000	2012	2013	2014	2015	2016	2017	Change %
Vessels	28	27	27	28	27	23	-18%
Employees (crew)	649	643	683	599	552	429	-34%
Employees (admin)	35	37	45	48	43	31	-11%
Total employees	**684**	**680**	**728**	**647**	**595**	**460**	**-33%**
Revenue/vessel	48.486	53.955	64.005	56.228	40.184	25.990	-46%
Opex/vessel	21.927	23.441	24.470	22.328	16.568	17.661	-19%
Employees/vessel	24	25	27	23	22	20	-18%
Crewing cost/vessel	16.288	17.292	17.665	17.178	12.607	12.731	-22%
EBIT/vessel	12.927	18.602	23.201	-35.360	-30.996	-10.403	-180%

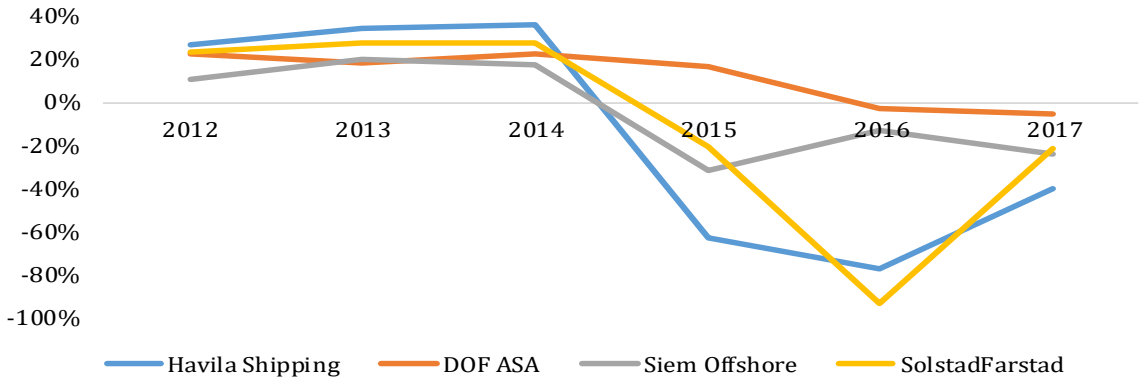
Source: Compiled by the authors

The information from the peer vessel analysis both confirms some of the findings in the index analysis yet it pose some new questions. Firstly, the cost of operating the vessel per employee as well as per vessel have not been decreased in the same pace as the revenue drop per vessel. Nonetheless, the management have been able to reduce the operating cost per vessel showing that the vessels are operating more efficiently than before. Therefore, the management of Havila have reduced the cost through its implemented cost cutting program, which for example included a decrease of employees per AHTS vessel from five to four (Havila ASA, 2017). In the index analysis, it was mentioned that the crewing wages had increased because of the low supply of skilled workers. This cannot be seen when looking into the numbers. This could in part

be explained by the lower activity in Brazil in later years. Moreover, the revenue per vessel have decreased more than costs and number of vessels, resulting in the substantial change in EBIT per vessel of negative 180%. The results also indicates that the OPEX per vessel is not fully related to changes in revenue per vessels, meaning that Havila are extremely vulnerable to day- as well as utilisation rates.

4.3.2.1.1.2 Cost drivers

Figure 3.5: EBIT-margins



Source: Compiled by the authors

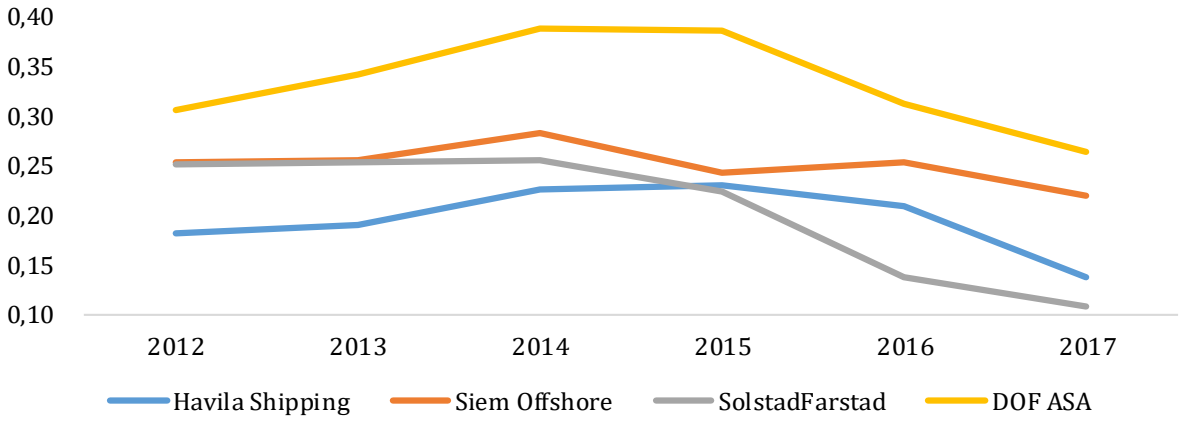
When investigating the profit margin, it will be calculated by using the operational margin (EBIT) rather than the EBITDA-margin. Using the EBITDA-margin would deny the fact that the OSV industry is very influenced by its highly valued ships, which in turn causes depreciation costs to be of interest.

Havila is the firm in the peer group with initially the highest as well as best growing EBIT-margin, however this changed dramatically as a consequence of the drop in the oil price in late 2014. The margin dropped from 36% in 2014 to negative 63% in 2015. As can be seen from the graph, all peers experienced sharp declines in their margin and only DOF was able to keep it positive. DOF have overall kept their margin above the others, probably due to its high exposure against the Subsea segment, which are more stable than the PSV and AHTS. As has been mentioned, the lower EBIT-margins stems from both lower gross margins as well as hefty impairment losses for all peers including Havila. However, in 2017 the margins have started to converge, a trend, which will most likely continue as the market stabilises.

4.3.1.2 Invested capital turnover rate – ATR

Invested capital turnover rate or asset turnover rate (ATR) is the second component, which, together with the profit margin, composes ROIC. In general, it is a ratio which measures a company's ability to utilise the invested capital. Companies should strive for as high ATR as possible, however not in the expense of product or customer quality. The turnover rate is expressed as *Net Revenue / Invested Capital* and a ratio of for example two means that for one dollar invested, it generates two dollars in revenue. Moreover, *Turnover Rate / 360 (days)* results in the number of days the invested capital is tied up in the business (Petersen & Plenborg, 2012).

Figure 3.6: Asset Turnover Rate



Source: Compiled by the authors

Figure 3.6 above reveals two distinct things about the industry. Firstly, there is an overall downward trend in the ATR. Secondly, the industry is characterised by a low turnover rate, caused by the high fixed asset based needed in order to operate an OSV fleet. Havila had the lowest ATR of roughly 0.2 between 2012 and 2015 when they were surpassed by Solstad Farstad. The graph highlights the fact that the OSV firms in general and Havila in particular have not been able adjust their investments to the falling revenue. One explanation could be the long delivery time of vessels, which have been discussed in the strategic section. Another reason was the managements' overinvestments with too much leverage seemingly without any historical perspective of the volatility of the oil price. As the CEO of Havila points out: *"But we have also made many mistakes. The most significant was that we walked straight into the same trap the shipping industry has done for hundreds of years: We built too many ships when times were good."* (Havila ASA, 2017, pp. 4)

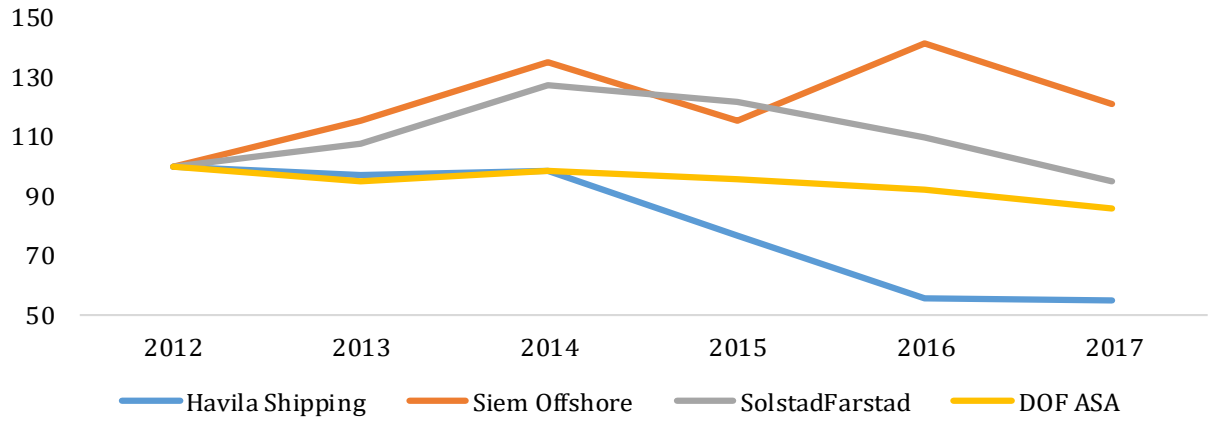
One cannot investigate the ATR of an OSV company without looking into the vessel-to-invested capital ratio. Since the vessels are the prime source of revenue, concentrating the invested capital in vessels will, all things being equal, lead to a higher ATR. The development of the ratios differs between the companies. Havila and Solstad Farstad have kept their vessel-to-invested capital ratio close to 100% and quite stable over time. DOF have a negative development and in 2017, they have just above 80% of their invested capital invested in vessels, whilst Siem have had a positive development and reaches 100% in 2017. Furthermore, Havila have divested 18% of their fleet, which is more than any peer, yet they have far lower ATR than both DOF and Siem which have only divested 9% of theirs. Overall, it is hard to detect any explanations of the difference in the ATR by looking at the numbers. The most probable reason is the different segment mixes, where Subsea vessels and "other services" generally have higher revenue per vessel than the other segments.

Since invested capital have decreased for all firms except Siem, the negative development in ATR can be derived from lower revenue. However, the changes in invested capital is not coherent among the peers and a deeper analysis is needed to explain the variations. This is best performed through conducting an index and common-size analysis on the invested capital development.

4.3.1.2.1 Index and common size analysis of invested capital

Figure 3.7 below illustrates the trends in invested capital and will work as a foundation for the index analysis of the peer group.

Figure 3.7: Index analysis of invested capital



Source: Compiled by the authors

As can be seen from the graph, only Siem have a higher invested capital in 2017 than in 2012. Havila have managed to trim their invest capital more than any peer and have almost halved theirs. This stems from the sharp drop in demand for OSV services, which was firstly apparent in the number of 2015. DOF have been best in class to keep their invested capital in exact accordance with their revenue decrease. Siem have also managed to keep their invested capital close to the changes in revenue, which explains the volatility. Solstad Farstad have barely divested any of their assets, which, in combination with a sharp decline in revenue, explains their extremely low ATR. One common trend is that all firms cut their invested capital in 2017, due to the continued slow market sentiment. This have been the case for all firms except Siem, which have not experienced any falling revenue. In addition, the low debt ratio in the early years resulted in a financial leeway, which the other peers did not possess. Even though the rate of development differs between the peers, some overall trends can be found. Firstly, the invested capital was stable or increased until 2014, when the oil price dropped and market conditions changed. Secondly, the invested capital have moved in the same direction as the revenue for all firms, however at different pace. The increase in invested capital as well as the inability to reduce it stems from the orders made before the oil price drop. The long delivery time of 2–3 years caused the vessels to enter the market just when the demand turned and continued to do so, even in 2017 (Sanchez, 2017). Furthermore, the need to operate a modern fleet in order to win contracts have also increased the number of new ships. This origin from the contractors demand for newer vessels in order to avoid environmental damages (RS Platou, 2013). Thus, older ships have experienced low term rates or no contracts at all. This have particularly been the case in hard-operating areas as the North Sea and Brazil, which are main markets for all the peers (Ibid).

As was mentioned, the vessels make up the lion share of total invested capital, which can be seen in the common size analysis (Appendix 1.2.5). Net working capital constitutes only a minor part for all firms. The huge share of assets being tied up in vessels work as a demonstration for its importance as revenue generators. The years after the financial crisis up until 2015 was characterised by surplus in demand for OSV services. At the same time, the level of investments was high, which could be used as evidence of the idea that the level of demand steers the level of investments. The demand for OSV services is in turn driven by the oil extractors' investments in E&P and hence the oil price is the ultimate determinant for investments in the OSV sector (Farkas and Jones, 2014).

Table 2.1: Revenue and ATR development

	2012	2013	2014	2015	2016	2017
Revenue	100	107	127	116	80	44
Invested Capital (average)	100	103	102	91	69	58
Asset turnover ratio	100	104	125	127	115	76

Source: Compiled by the authors

The table above show the development of Havila's revenue and invested capital. The relationship have varied over time and deviates substantially in 2014 and 2017. The increase in revenue until 2015 can partially be explained from increased rates for all vessel segments across the main operating areas of Havila (Pareto, 2015). The invested capital only increased slightly since Havila did huge investments before 2012 and thus cannot be seen here (Havila ASA, 2017). The rates are, as have been discussed, the primary driver of revenue and an indicator on the level of demand for OSV services. Together with the utilisation rates, they explain both the increased ATR, which was the case between 2012 and 2015, and then the drop, due to Havila not being able to divest in the same pace as the revenue shortage.

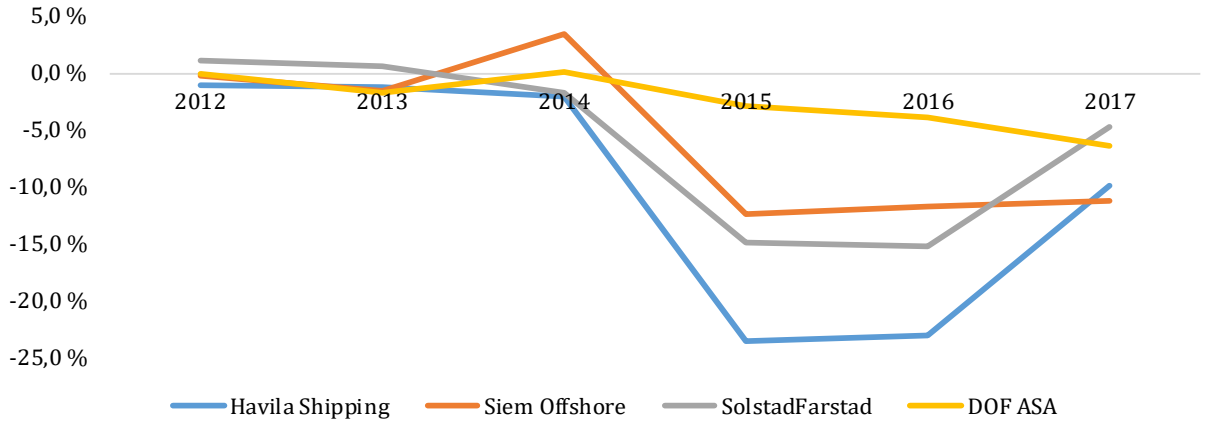
4.3.2 Spread

The spread is the second element of ROE and could be calculated by subtracting the net borrowing cost (NBC) from the ROIC. The firm's NBC is rarely the same as the borrowing rate, since it is usually affected by financial items other than the interest costs (Petersen & Plenborg, 2012). The spread could be viewed as the financial profitability of the firm in contrast to the ROIC, which expresses the operating profitability. The formula of ROE: ROIC *+ (ROIC – NBC) * Financial Leverage* implies that a positive spread will increase ROE when adding more financial leverage and naturally the opposite when the spread is negative. In order to compare the core NBC of the different peers, extraordinary posts have been adjusted for. More specific, the item *"Redemption of debt to discount"* of NOK 887.647 for Havila in 2017 have been excluded, since it was a result of the restructuring of their debt. The other item adjusted for is DOF's *"Restructuring of bonds"* in 2016 of NOK 1.043.000, which also was a result of a debt restructuring.

Figure 3.8 below maps the development of the peers spread in the measured years and it reveals that all firms have had a very low or negative spread before 2014. Havila have had a negative spread thought the period. This partly explains its very negative ROE, due to increase leverage and unsustainable growth. Solstad Farstad had a positive spread in 2012 and 2013, whilst Siem only managed a positive spread in 2014. DOF have had a negative spread in all years except 2014, however, there is more stable and have not

seen such an extensive fall as the other peers. As in most ratios, the spread became largely negative after 2014, due to falling operating results, which cause already have been explained.

Figure 3.8: Spread



Source: Compiled by the authors

The spreads were much more aligned between the competitors before they started to fall and in 2015 and 2016 they deviated a lot between the firms. In 2017, the spreads were brought into line, a trend that might continue when the market sentiment stabilises. When comparing the spread graph with the one illustrating the development of ROE, it can be concluded that the spread have played a major role in the peers' falling return on equity.

Table 2.2: ROIC, NBC & Spread

	2012	2013	2014	2015	2016	2017	Average
ROIC	3,5%	4,1%	5,7%	-16,8%	-18,0%	-6,4%	-4,7%
NBC	4,5%	5,3%	7,6%	6,8%	5,1%	3,5%	5,5%
Spread	-1,0%	-1,2%	-2,0%	-23,6%	-23,1%	-9,9%	-10,2%

Source: Compiled by the authors

The table above outlines the evolution of Havila's ROIC and NBC of the measurement period. As can be seen, the three first year saw an increasing ROIC, due a surging market. However, at the same time, the NBC increased at a higher pace, leading to a negative spread. From 2015 and onwards, the ROIC have been significantly negative. The calculation of NBC can be expressed as *net financial expenses after tax / NIBD (net interest bearing debt)*. It was very high in 2014 and 2015 which could mainly be explained by heavy currency losses during those years, albeit Havila use derivatives in order to smooth currency fluctuations (Havila ASA, 2017). However, the currency losses have turned into gains in the later years and together with a decreasing NIBD, the NBC was only 3,5% in 2017, two percentage points below the average. Havila have

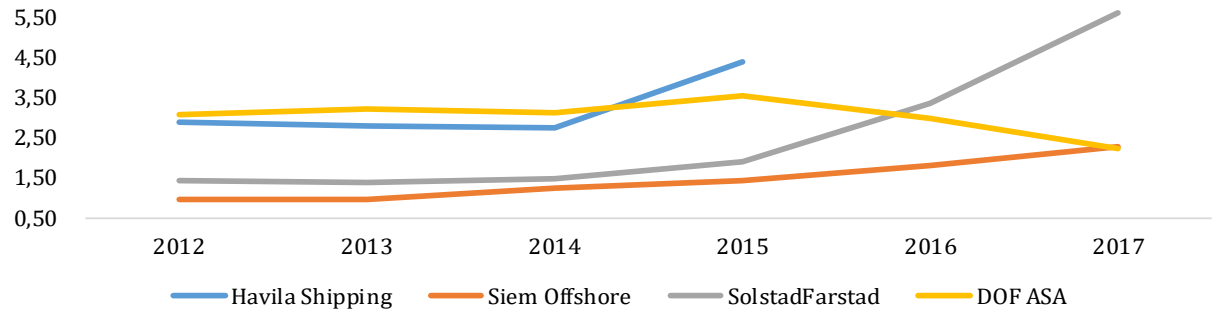
income exposure in USD, Euro, GBP and Brazilian Real. Moreover, they have debt denominated in USD and NOK, meaning that an appreciation in the USD will lead to higher NBC (Ibid). An OSV firm should not try to speculate in currency movements (since it is not part of their core business and skills) but should only use derivatives in order to enhance their ability to foresee cash flows. Havila describes their usage of hedging instruments and debt in currencies other than its domestic as something that will improve the company's earnings over time (Ibid).

Overall, the financial expenses and income have been stable over time, excluding 2017, when the debt arrangements were renegotiated and resulted in better terms for Havila. Furthermore, the high costs were a result of debt arrangements made before 2012 in order to finance the new vessels built between 2007–2012 (Ibid). In addition, low Norwegian interest rate have reduced the financial expenses, since Havila pays a spread above NIBOR (Ibid; Norgesbank.no, 2018). Low interest rate naturally leads to lower return on financial assets, nevertheless, Havila have such small income on those assets that a low interest rate will always be preferred. In conclusion, the interest rate and currency development is what have been driving financial performance and will continue to do so in the future.

4.3.3 Financial gearing (FGEAR)

The final element of return on equity is the financial leverage or financial gearing (FGEAR). It is calculated as *NIBD/BVE (Book value of equity)* and is therefore it measures the ratio between a firm's debt and equity. As was mentioned in the last section, when a firm operates with a positive spread, more leverage will lead to an improved ROE and vice versa. Nevertheless, this will increase the so-called financial distress, which is a concept that takes investors' worrying about financial trouble into consideration (Brealey, Myers and Allen, 2006).

Figure 3.9: FGEAR



Source: Compiled by the authors

DOF and Havila are the firms which historically have had the highest FGEAR, due to high investment rate in new vessels financed almost exclusively with debt. This has however changed after 2014 when the market turned. For Havila, the market downturn resulted in a negative equity in 2016, meaning that the average equity for 2016 and 2017 becomes negative, making it useless to calculate the FGEAR. To give an idea of Havila's FGEAR in the last year, the BVE/NIBD has been calculated by using the 31/12/2017 balance sheet numbers, which gives a result of 9.2. This is by far the highest FGEAR in the peer group. DOF have managed to decrease their FGEAR, due to keeping their equity stable by capital injections from their owners (DOF ASA, 2016). Solstad Farstad has seen a sharp increase in their financial leverage, which could be explained by the negative result, which have resulted in a decrease in equity of two thirds since 2012. At the same time, the NIBD have increased from roughly NOKbn 20 to over NOKbn 27. Lastly, Siem have always kept their FGEAR lower than the peer average, however slightly increasing. This stems from the same attributes as the other, namely investments in vessels financed by debt along with negative results decreasing equity.

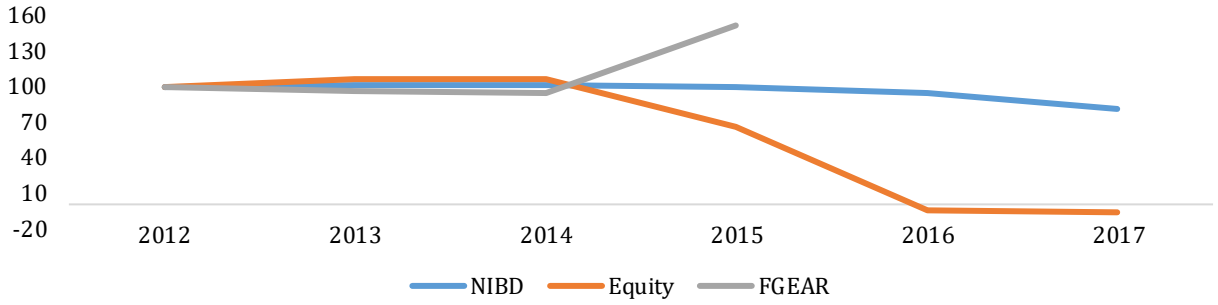
To investigate Havila's development in financial leverage, it has been dissected into its components. A summarisation can be found in table 2.3. In addition, the pattern have been illustrated in figure 4.0. Both can be found below.

Table 2.3: Financial leverage

	2012	2013	2014	2015	2016	2017
NIBD (average)	5.558.998	5.666.128	5.601.322	5.564.239	5.271.374	4.465.454
Equity (average)	1.908.743	2.014.885	2.021.854	1.262.254	-98.767	-138.401
FGEAR	2,9	2,8	2,8	4,4	N/A	N/A

Source: Compiled by the authors

Figure 4.0: NIBD, equity and FGEAR



Source: Compiled by the authors

By looking at the graph, the trend that has been detected throughout the whole Du-Pont analysis is once again seen. The items keep in line until 2014 and then deviate vastly due to the fall in day rates and utilisation rates following the drop in demand for OSV services. The growth in FGEAR cannot be explained by higher debt in absolute number but to a sharp decline in equity. The increase in financial leverage together with an expanding negative spread have triggered the huge fall in ROE.

As was mentioned, NIBD is found by subtracting the financial assets from the interest-bearing debt. Desiccating the debt side, it is almost only made up of borrowings, which is in turn consisting of secured and unsecured bond-loans and debt to credit institutions. Moreover, financial assets are virtually only made up of bank deposits. The development of the components have already been discussed in the spread-section.

4.4 Du Pont summery

The aim of the above section is to answer the following sub-question "*Which key drivers have affected Havila's historical financial performance?*". The summarised findings can be found in Appendix 8, and the drivers marked in red, namely, *oil price, E&P investments, oil rig activity, new buildings, fleet size and freight revenue/rates* are deemed the most influential thus creating the basis for the forecast in the subsequent section.

5 Forecasting

The forecasting section will be divided into several part, which will be covered in the following way; *forecast period and terminal growth, design of the pro forma statements, day rates* (AHTS, PSV & Subsea segment), *income statement* and *balance sheet*. All parts will be outlined below and followed by an assessment of the estimates that supports the pro forma statement.

5.1 Forecast period and terminal growth

As already been described in the methodology section, the thesis will apply the two-stage DCF and EVA models, creating the need for determining a proper forecasting period. The forecasting period cannot be too long, since the longer into the future one tries to predict the cash flow, the less certain the assumptions become. However, the period must cover a typical business cycle for the industry and be of a length that reaches the steady growth of the company. Consequently, the company is forecasted to grow by this steady growth rate in infinity during the terminal period. This do not mean that the rate will be the same in every

year, yet the chosen rate should represent the average (Petersen & Plenborg, 2012). With this in mind, the period has been set to six years, since it is believed to cover a typical market cycle of the OSV industry. Also, the market Havila operates in are in its nature quite cyclical, where the fluctuations in E&P spending following changes in the oil price creates an environment with huge swings between peaks and troughs. Thus, the period chosen are believed to cover these swings and the markets is estimated experience steady growth in 2023.

The idea with the terminal period is that it should represent the long-term growth rate prospects of the company and of the economy of which the firm operates in. Hence, it is not likely for any firm to grow more than the GDP in the long-term perspective. Many firms including Havila operate in several geographical areas, where the growth- and inflation rates often differ. The long-term growth rate of the global economy could thus be used in order to reflect the terminal growth rate. However, the most reasonable rate to use is the domestic one since the local economy is likely to affect Havila the most. Hence, the thesis will use the latest estimated growth rate of the Norwegian economy. The central bank of Norway (Norges Bank) estimates the long-long term growth rate to be 2.5%, which is the same as their inflation target (Norges-bank.no, 2018). Further, the risk-free rate can be used as a proxy for the nominal growth rate of the economy, which have been suggested by professor Damodaran (Damodaran, n.d.). In order to avoid the issue of inflation and since the currency which the valuation is denominated in is NOK, the Norwegian government bond should be applied (Ibid). Further, most of Havlia's revenues are in NOK. The risk free rate is estimated to 1.98% (Norges-bank.no, 2018). Taking the average of the two numbers results in an estimated growth rate of 2.2%, which will be used in the forecast and valuation.

5.2 Design of the pro forma statement

There are two different ways of designing a pro forma statement. First, one could use the 'line-item' approach where every accounting item is forecasted without taking the level of activity into consideration. Second, the so-called sales-driven approach where investments and operating expenses follows the sales growth. The later approach ensure the strongest link between the firm's different activities as well as being the most common method (Petersen & Plenborg, 2012). However, when considering the industry characteristics, it becomes obvious that this approach is not optimal when for example forecasting the future CAPEX of an OSV firm. This stems from fact that OSV companies' investments and revenues are not perfectly correlated. Moreover, the same vessel can from on year to another double its revenue due to higher day rates, even though no new features have been added. This could be compared to pure commodity

businesses, which is heavily influenced by the market factors as demand and supply. Hence, some items will use a line-item approach, which will be explained in their own sections.

5.3 Day rates

Havila operates in all three segment that constitutes the OSV industry and therefore the AHTS, PSV and Subsea segment all have to be forecasted, which will be conducted separately. Furthermore, as the operations are located in several different areas, one have do differentiate among those, which are the North Sea, Brazil, Asia Pacific and West Africa. Furthermore, segmentation in respect to the size of the vessels and if they are operating on term- (contract) or spot rates is needed. A forecast of each vessel segment, size and region will be outlined below.

5.3.1 ATHS day rates

Due to most OSV day rates being available in GDP and USD, the AHTS rates have been forecasted in USD. The forecast have been based on data from 2001–2012 of the primary drivers behind the rates, which were found in the external analysis. As previously discussed, the lack of available data has influenced the years, which the regression has been based on. However, it is believed that the range is both sufficient in lengths and it covers a whole business cycle. The fact that the industry haven't seen any real technological changes since 2012 further supports the appropriateness of the older data range.

In order to assure that the drivers had statistical influence, they were first regressed against the rates. Therefore, the dependent variable ATHS rates have been forecasted by using the explanatory variables of oil price, number of AHTS vessels and number of rigs and the regression output can be seen in Appendix 2.1.1. The North Sea rates for high-end AHTS are seen as dominant and are used as a leading indicator for other geographical areas (Pareto, 2015). Hence, the regression is based on oil price, number of high-end AHTS vessels as well as rig count in the North Sea in order to forecast the rates for high-end AHTS in the North Sea.

The thesis do not project the oil price itself but uses the average of two different sources in order to estimate the future prices which the forecast relies on. The sources that have been used are the World Bank and IMF. By using more than one different source, the risk of forecast biases decreases and it becomes more reliable. In addition, the price of futures have been used, since it adds a market perspective to the forecast. The

market is far more complex in regards to considered variables and hence it adds a holistic view, which cannot be incorporated in economic forecasts. Table 2.4 below shows the forecasted number of the oil price.

Table 2.4: Average oil price

Estimated Future Oil Price (USD)				
2018	**2019**	**2020**	**2021**	**2022**
56.4	56.8	57.0	57.5	58.3

Source: Compiled by authors

The next explanatory variable, number of AHTS have been derived from an annual growth rate of 19 vessels per year from 2002–2014. However, the growth rate cannot be used without adjustment since the crisis have led to a total stop of new orders and many deliveries have been delayed or cancelled since 2015 (DBS, 2017; Lloyd's List, 2015). Therefore, the high growth rate of 19 vessels per year have not been the case and there are no signs of a pick-up in orders in the years to come. A summarisation of the development in number of newbuildings in the high-end AHTS segment can be seen in table 2.5 below and explicit calculation can be founded in Appendix 2.1.1.1.

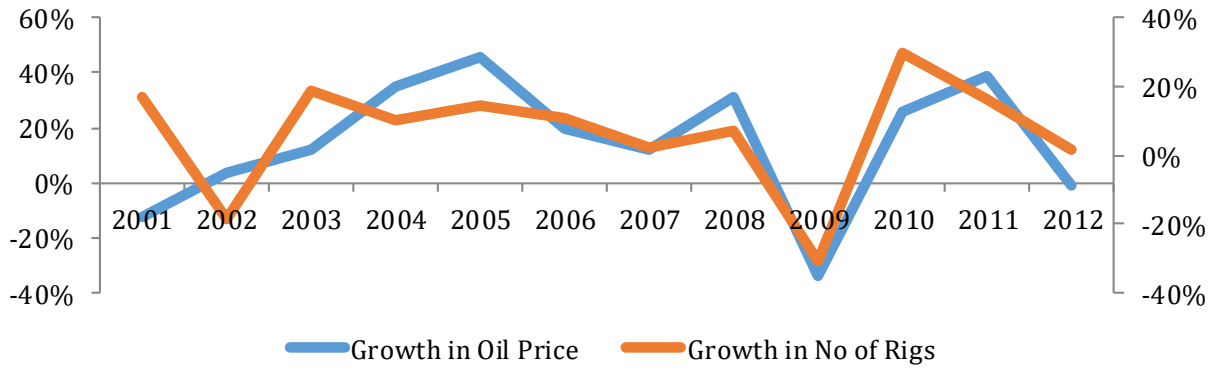
Table 2.5: New AHTS

Estimated Number of Newbuildings and High-End AHTS in the North Sea					
	2018	**2019**	**2020**	**2021**	**2022**
Number of Newbuildings	4	3	2	2	3
Total Number of High-End AHTS	357	360	362	364	367

Source: Compiled by the authors

As have already been outlined in the strategic analysis, there is a very high correlation between the price of oil and number of rigs and the oil price is almost solely the determinant variable. The relationship is illustrated in figure 4.1 down below. Since no forecast have been found regarding the future rig count, this have had to be done by creating a model. Therefore, the oil price have been regressed against the number of rigs using historical data between 2001–2012, which consequently will be used in the forecast of the AHTS rates. The regression output can be seen in Appendix 2.1.1.

Figure 4.1: Oil price vs. number of rigs



Source: Bloomberg, Baker Hughes, Compiled by the authors

The equation below is a result of the performed regression and will be used in order to predict the future number of rigs in the North Sea.

$$\ln growth\ rig\ count = -0{,}0120 + 0{,}5454 \times \ln growth\ in\ oil\ price$$

The equations contains the intercept of -0,0120 and the coefficient in the growth in oil price which is 0,5454. To make use of the formula, all number need to be converted into natural logarithm growth to then be converted back again. By doing so, the formula for calculating the number of rigs for one year becomes:

$$Rig\ count_t = Rig\ count_{t-1} \times e^{LN\ growth\ rig\ count}$$

The forecasted number of rigs can be found in table 2.6 below.

Table 2.6: Estimated number of rigs in the North Sea

Estimated number of rigs in the North Sea					
	2018	**2019**	**2020**	**2021**	**2022**
Number of Rigs	86	86	88	90	93

Source: Compiled by the authors

Finally, the day rates for the high-end AHTSs segment in the North Sea can be found from the multiple regression analysis. The formula contains the four variables which have been explained above and the final equation is therefore:

$$\ln growth\ in\ spot\ rates = 0{,}0822 + 1{,}8706 \times \ln growth\ in\ oil\ price + 1{,}6195 \times \ln gowth\ in\ number\ of\ rigs - 3{,}2102 \times \ln growth\ in\ number\ of\ AHTS$$

Explanation of the formula:

- 0,0822 = intercept or constant
- 1,8706 = coefficient for growth in oil price
- 1,69195 = coefficient for growth in number of rigs
- -3,2102 = coefficient for growth in number of AHTS

As been explained in the external analysis, an increase in number of vessels will increase the total supply and hence put downward pressure on the day rates and naturally, the coefficient for the number of AHTS becomes negative. As in the previous formula for the rig count, the number need to be converted into LN growth before being converted back again. After the conversion the equation is:

$$Spot\ rate_t = Spot\ rate_{t-1} \times e^{\ln growth\ spot\ rate}$$

Finally, the spot rate for high-end AHTS in the North Sea has been determined and a summary can be seen in table 2.7 below. Year 2018 have been adjusted downward, since the statistical model yielded a result of 14%, which seemed too optimistic according to the strategic analysis. Furthermore, the adjustment for 2018 naturally led to an adjustment of 2017, which became more optimistic, since the market is really expected to pick up speed.

Table 2.7: Estimated future day rates

Projected spot rates high-end AHTS in the North Sea (USD)					
	2018	**2019**	**2020**	**2021**	**2022**
Spot rate	23,000	27,000	28,499	30,544	32,875
Growth Y-o-Y	8%	17%	6%	7%	8%

Source: Compiled by the authors

The rates are expected to growth by 8% in 2018, which seems reasonable taking into account the slight forecasted increase in rig activity and a rebound in the oil price. This is also in line with the external analysis and the majority of the industry experts and analysts (Fairplay.ihs.com, 2017). Moreover, the number of AHTS are projected to stay flat, which also seems reasonable since there have not been any new order is the

later years (DBS, 2017). As have been mentioned in the external analysis, the scrapping rate will pick-up but not in the speed that is needed in order to create balance between supply and demand. Further, the low average fleet age in the North Sea make the vessel owners reluctant to scrapping which contributes to the oversupply (Pico, 2018). The segment will continue to be tough in the years to come and rates will stay quite low in terms of historical absolute numbers. There should however be a stabilisation between supply and demand when we approach 2020, thus more healthy rates in the longer-term.

5.3.1.1 Geographical & segment conversion

The above forecasted rates for the high-end AHTS segment in the North Sea have been used as leading rates when calculating spot rates for other regions. Historical data have been used in order to determine the relationship between the rates and have later been used in order to convert the North Sea rates into rates of other regions. For example, high-end AHTSs vessels in the North Sea have been priced 34% below the same vessels in Asia Pacific when using data from 2007–2012. Hence, the North Sea daily price of USD 23.000 in 2018 will result in a price of USD 34.846 in Asia Pacific. The same logic have been applied between different quality segments where the historical variations have been averaged. The relationship between high- and low-end have then been used in order to calculate the low-end AHTS rates from the high-end ones.

The rationale behind forecasting other segments and areas based on the high-end North Sea rates are because there is a high correlation and that the North Sea rates are dominant and can thus be seen as a leading indicator for rates in other areas (Pareto, 2015). A summarisation of the rates in the areas of Asia Pacific and Brazil can be found in table 2.8 below.

Table 2.8: Projected AHTS rates by region

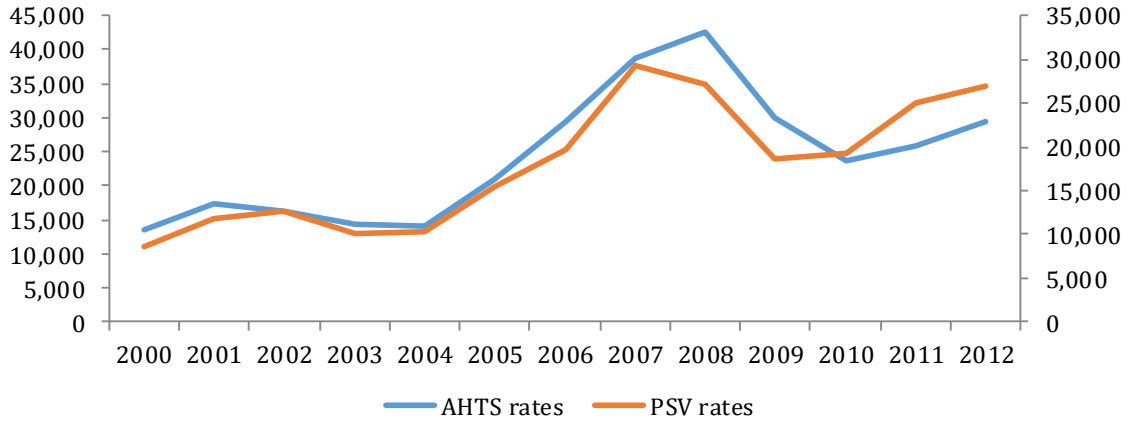
Projected AHTS dayrates by region (USD)					
	2018	**2019**	**2020**	**2021**	**2022**
Asia Pacific					
High-End AHTS	34,846	40,906	43,177	46,275	49,807
Low-End AHTS	25,393	29,809	31,464	33,722	36,296
Brazil					
High-End AHTS	35,131	41,240	43,530	46,654	50,214
Low-End AHTS	25,601	30,053	31,722	33,998	36,593

Source: Compiled by authors

5.3.2 PSV day rates

The PSV day rates will also be founded upon the North Sea high-end AHTS rates. Before this approach was decided, a multiple regression analysis was performed where the dependent variable was PSV day rates and the explanatory variables were the oil price, number of PSV vessels and the number of rigs. The data range was identical to the AHTS forecast, meaning the years between 2001–2012. The result was not satisfying and hence a second regression was performed. The second multiple regression contained the same dependent and independent variables, except the number of rigs, in order to investigate if the number of rigs might not be as influent for PSV as for AHTS. However, this regression did not yield an adequate result either. This led to the test of the current method, meaning that the forecast of future rates will be founded on the historical relationship between PSV and AHTS rates. The choice of approach stems from the fact that there is a high correlation between AHTS and PSV rates which has been illustrated in figure 4.2, as can be seen below. In addition to the illustration, the r-square yields a high value of 0.84 and in accordance with the description above, it can be assumed that the AHTS rates could be used in order to forecast PSV rates.

Figure 4.2: Relationship between average PSV and AHTS global rates



Source: Compiled by the authors

In order to outline the various geographical rates, the same approach have been used as in the above section, meaning that the North Sea rates for AHTS have been used as an indicator. The historical relationship between the high-end North Sea AHTS rates and PSV rates for different regions and segment have been forecasted. A summary can be found in table 2.9 below.

Table 2.9: PSV rates by region

Projected PSV Dayrates by Region (USD)					
	2018	**2019**	**2020**	**2021**	**2022**
Asia Pacific					
High-End PSV	22,929	26,917	28,411	30,450	32,774
Low-End PSV	9,725	11,416	12,050	12,914	13,900
Brazil					
High-End PSV	23,014	27,017	28,517	30,563	32,895

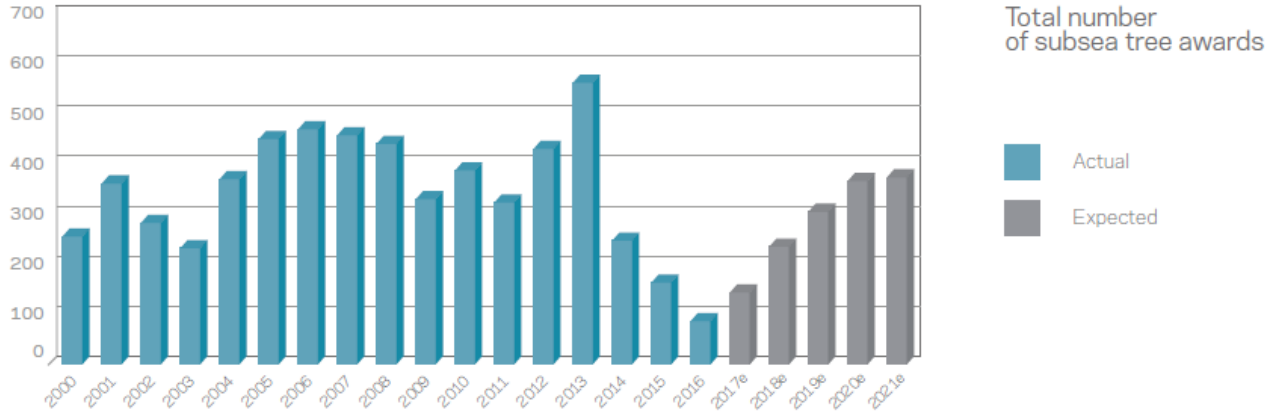
Source: Compiled by the authors

As can be seen from the table, the Brazilian market only contains High-end PSV, since Havila has historically only operated that kind of vessel in the region. Furthermore, the rates will have the same development as those in the high-end AHTS segment in the North Sea.

5.3.3 Subsea day rates

Compared to the AHTS and PSV segment, there is shortage of historical information regarding the development of the rates and other variables needed in order to forecast the Subsea segment by the statistical methods applied above. In addition, the segment is highly diversified and it is rather foolish to treat the whole segment as one. The projection will be based in high-end vessels since Havila's Subsea fleet are only of that kind. In order to forecast the future day rates, one has to rely on the facts presented in the strategical section. The segment has been characterised by depressed rates and low utilisation rates due to the instalments of deep-water exploration projects from the oil extracting companies in later years (DBS, 2017). However, as can be seen from figure 4.3 below, the number of tree awards have turned and are forecasted to increase in the foreseeable future. However, the rates will only recover slowly since the huge number of vessels ordered before the crisis have now been delivered and hence the segment is oversupplied.

Figure 4.3: Subsea tree awards



Source: Clarkson Platou, 2017

The rates have traditionally been less volatile compared to the PSV and AHTS segment, due to most vessels being under long-term contracts. Further, the same rates are usually applied across all geographical areas (Pareto, 2015). The last available data of Subsea term rates are from 2016, where the rates were at its low at USD 45.000 (Havila ASA, 2017). The rates have then climbed slightly and the 2017 average rates have been estimated to USD 55.000 (Ibid). A forecast of the future rates can be found in the table 3.0 below. The rates are recovering throughout the forecasting period and are stabilising around USD 75.000, which is below the crisis level, but just above the vessels' operating costs (Dvbbank.com, 2017). In order for the segment to survive, the operating cost must exceeded in the long-term and hence it is a valid assumption.

Table 3.0: Subsea term rates

Projected rates subsea segment (USD)					
	2018	**2019**	**2020**	**2021**	**2022**
Rates	55,000	60,000	65,000	70,000	75,000
Growth Y-o-Y	0%	9%	8%	8%	7%

Source: Compiled by the authors

5.4 Utilisation

Utilisation is the measure of how efficient the current fleet of an OSV operator is used. Simply put, an utilisation rate of 100% means that every vessel of the fleet is operating at full capacity and a 50% utilisation rate means that the fleet is operating at half capacity (on average). Whilst day rates are solely determined by market forces, the utilisation rate can be affected by the company, either by keeping a high contract coverage or manage the fleet according to the current demand. Since the industry is very asset heavy, the utilisation rate becomes very important due since the capex expenditures are not affected by increased

usage of the boats. Thus, increased utilisation will affect the operating margin substantially due to the industry cost structure, as long as the day rates are above the operating costs.

Havila have suffered from falling utilisation in later years and 2017 was the worst year in their history. The average utilisation was 58% in 2017 a slight drop from 65% in 2016. However, the average utilisation in 2015 was 90%, meaning that in two years, the utilisation have dropped by 32 percentage points (Havila ASA, 2017). This mainly stems from a sharp decline in contract coverage, which was as high as 79% in 2015 and only 30% in 2017 (see section 2.4.6), since vessels under contract are operating on a 100% utility rate since they are paid the day rates even though their services are not used by its contractor. The drop in the contract factor is not the only factor but the depressed utilisation rate is also amplified by lower rates in the spot market. Havila do not disclose the utilisation for spot market separately, however, a calculation have been made in order to reveal the efficiency of the spot market vessels and can be found in Appendix 2.3. The estimation shows a result of an utilisation rate of only 36% for the vessels operating in the spot market. These are forecasted to increase during 2018, due to lower vessel-to-rig ratios and an overall demand increase (DBS, 2017). Nevertheless, the increase will only be modest when looking at absolute numbers and Havila's utilisation rate in the spot market is forecasted to 45%. It will then increase slightly from year to year until it reaches its long-term rate of 80%. This is quite low from a historical perspective and it could be argued that the industry must experience even higher efficiency in order to survive. The forecasted numbers have been summarized in table 3.1 below.

Table 3.1: Utilisation rates

Utilisation rates spot market					
	2018	**2019**	**2020**	**2021**	**2022**
Utilisation	45%	55%	60%	75%	80%

Source: Compiled by the authors

In order for the analysis to be even more precise, one should forecast the efficiency for each segment in isolation. Havila does not disclose utilisation rates per segment, yet it could be done by looking at analysts' consensus view on the development for AHTS, PSV and Subsea respectively. Anyhow, basing rates for a specific company on average global rates seems too speculative and hence it has been deemed more accurate to apply the average on all segments.

5.5 Contract coverage

As mentioned, Havila operates a substantial part of their fleet on contracted terms. The current contract coverage is estimated to be modest 22% according to the annual report of 2016. However, new information reveal that the actual contract rate are close to 35% (Appendix 2.3). Subsequently, 35% of the total 21 vessels will operate on fixed rates and an utilisation rate of 100% in 2018. In 2019, three of the vessels operating under contract will enter the spot market. This is will probably not happen in practise since all contracts come with an option and in an upward market trend, one could count on at least some of them being exercised. Further, the customer usually prefers to stick with already proven suppliers of OSV services, Havila are considered to be in the top bracket due to its long time in the industry as well as possessing a modern fleet (Havila ASA, 2017; Marketline, 2017). It is however problematic to forecast the rate of option exercise with accuracy, and thus the vessels will be considered as spot market operators.

Since most contract values are confidential, there is not enough information needed to calculate the term rates of each contract. Thus, the contract day rates have been estimated through using the current spot market rates when the contract were signed as well as looking into management summaries in the annual reports.

Havila's ability to renew and win new contracts will be crucial to its future utilisation rate and therefore the profitability. Keeping most of the fleet under long-term contracts have become even more important after the crisis since the spot market have been characterised by weak utilisation- as well as day rates.

5.6 Newbuildings

Havila have no new vessel on order and due to the current oversupply in the market, no new vessels are expected to be ordered for any of the peers. Moreover, the global order book highlighted the fact that that the whole industry have totally frozen its capex investments (DBS, 2017). An illustration of the order pace can be found below in figure 4.4 and 4.5. The forecasted increase in demand are more likely to be met by increased utilisation rates as well as vessels returning from lay-ups rather than a pick-up in orders. With the above-mentioned facts, it is a reasonable assumption that Havila will not make any investments in new vessels throughout the budgeting period.

Figure 4.4: New orders for PSVs

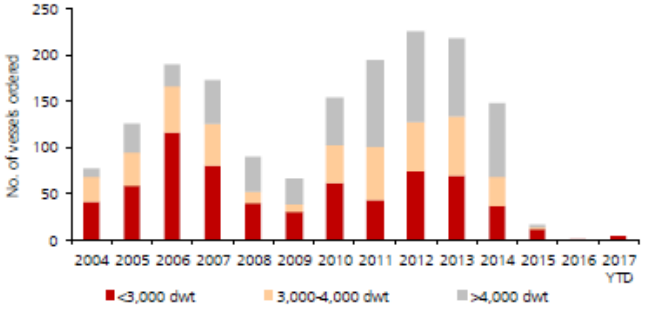
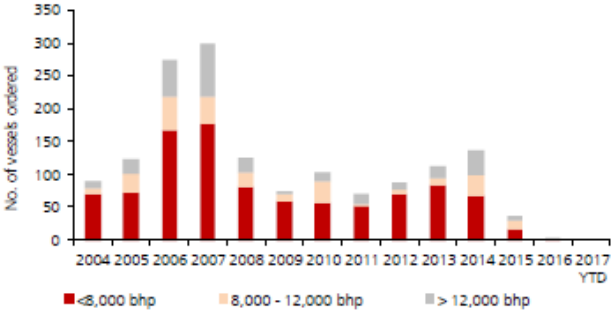


Figure 4.5: New orders for AHTS Vessels



Source: DBS, 2017

5.7 Income statement

The following section will try to project the most important items in the income statement. A sales-driven approach will be applied, except for some selected items. The sales driven approach have been chosen since it is performed under the assumption that operating expenses and investments are typically driven by the anticipated level of activity (Petersen & Plenborg, 2012).

5.7.1 Revenue forecast

Havila's revenue is divided into three parts; freight income, other income and profit of sale on fixed asset. All three will be discussed down below in order to forecast the total revenue. A summarisation of the revenue drivers can be found in table 3.2 below.

Table 3.2: Growth drivers

Forecasting	Average	2018e	2019e	2020e	2021e	2022e	TV
Growth Driver							
Freight income growth	-12%	11%	15%	8%	10%	12%	2%
Other income/Freight income	2.3%	2%	2%	2%	2%	2%	2%
Sale of boats/freight income	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%

Source: Compiled by the authors

5.7.1.1 Freight income

The finding from earlier in this section will work as a foundation for the freight income forecast. The revenue have been estimated though the measures of; day rates, utilisation rates as well as the expected future contract coverage. In addition, the revenue have then been projected based on each vessel characteristics regarding size, vessel segment and the vessels geographical location. The isolated calculations per vessel are then summed up to constitute the total freight income for Havila.

As can be seen from the table above, Havila's freight income is forecasted to increase by 11% in first year of the budget period. This is far more than the average; however, it is skewed by the last years' dramatic decrease. The revenue will then increase quite securely every year until it reaches the steady state of 2.3%. The increase in percentage might be beheld as high at first sight; nonetheless, the revenue will only increase modestly in absolute numbers, which is in line with the finding in the strategic section, where 2017 was seen as the absolute bottom for the industry. Havila's revenue is only forecasted to increase with the recovery of the day rates and utilisation rates and the vessels currently unemployed have all been excluded from the future approximations.

5.7.1.2 Other income

The other income have been fluctuating close to 2% of freight income in the historical period, with a little increase in 2017, however only in percentage of freight income. Havila do not disclose any information regarding any trend shifts in other income, meaning that there is no evidence of any trend shift. Thus, the best guess when forecasting the discussed item is to use the historical average of 2.3%.

5.7.1.3 Profit on sale of fixed assets

The item have been recurring in Havila's history, however, there have been no record of profit since 2013. As was discussed in the strategic section, the last years' secondary market have been weak and hence the boats have rather been sold with a loss than a gain. However, in the same section it is argued that the market will now turn, which should lead to increased sales prices of used vessels. There is no available information in from Havila regarding this item, yet they must continue to buy and sell boats if they are to stay in business. Moreover, it is hard to predict when the sales will take place and at what price. The average in the historical period is only 0.04%, meaning that it constitutes a minor part of total revenue. Therefore, most appropriate is to apply the average.

5.7.2 OPEX forecast

This section will outline the main operating cost driver, which are crew expenses and vessel expenses. Vessel expenses is in turn made up of bunkers & lubricating oil and maintenance & other expenses.

5.7.2.1 Crew expenses

The expenses for the crew is the most significant cost factor for the firms in the OSV sector in general and Havila in particular. In 2017, it accounted for 72% of total operating expenses and just over 51% in relation to freight revenue. As have been explained, 2017 is an outlier compared to earlier year, which is the case for all peers. This was discussed in the Du Pont analysis and stems from Havila not being able to cut the work force in the same rate as the revenue drop. Implementations have been made in order to decrease the cost of employees, which should have effect in 2018 and onwards (Havila ASA, 2017). The revenue is projected to increase by improved rates rather than new investments in vessels, implying that that it will be made without increased crew expenses. Thus, using a line-item approach seems more correct. As can be seen from table 2.0, the cost will be above average 2018–2020. This is since the absolute number have been used rather than the relation to freight income. Using the average in the beginning years would mean either higher crew intensity per vessel or higher wages. Subsequently, using the average throughout the whole period would yield crewing cost above what is reasonable. Hence, the program of cutting crew cost in combination with a stabilised market results in the assumption that the crewing cost will recover close to the average excluding 2017, which is roughly a third of freight income.

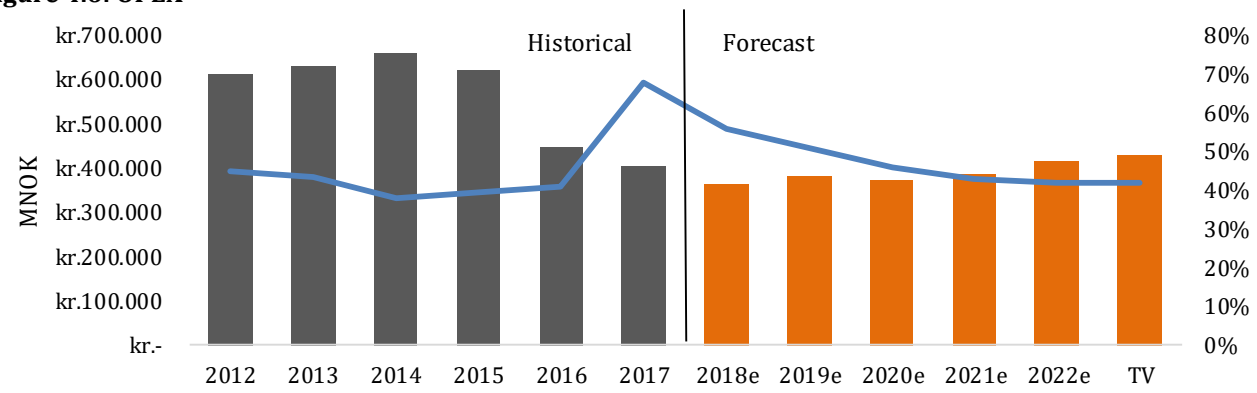
5.7.2.2 Vessel expenses

Bunkers and lubricating oil comprises of 1.3% of freight income between 2012–2016 (no information regarding the ratio against maintenance and other expenses in 2017). The only driver, which could be identified, is the level of activity. There is no further information available and hence the average will be applied. Moving on to the maintenance and other expenses, it has been averaging 9% in the measurement period. Since there is no available information on the ratio concerning the vessel expenses in 2017, it has been forecasted in total. Again, there is no information from the company about any projections of future estimates. Thus, it seems most suitable to use the average in the forecast. This will shift the ratio between the crew expenses and vessel expenses in the long-run. The assumption that the vessel expenses will increase compare to 2012–2016 seems valid due the slowdown in investments in new vessels and hence higher maintenance costs. Nevertheless, this will first be seen in the last part of the budgeting period. In 2018 and 2019, the cost will be relatively low in absolute numbers as a result of the decrease in the asset base resulted from sold vessels (Havila ASA, 2017).

5.7.2.3 Summary of OPEX forecast

As could be seen from figure 4.6 below, the OPEX have been falling substantially since the market turned in 2014. Before the sharp increase in relation to freight income in 2017, it was fluctuating around 40%. Havila could not deal with the extreme decline in income, yet the thesis assumes that the OPEX will slowly recover and return to the levels before 2017. This seems reasonable since they are now working on their efficiency and in combination with a turn in the market, which have been explained in the strategic section, the revenue can increase without a corresponding growth in OPEX.

Figure 4.6: OPEX



Source: Compiled by the authors

5.7.3 Selling, general & administrative expenses

This category of expenses consists of hire expenses, other payroll expenses and other fixed costs. Furthermore, result from joint venture companies have been characterised as a recurring expense since it has been present thought-out the period. Once more, no information about future trends have been explicitly clarified in Havila's management report. Cuts have been done in the central administrative workforce; however, the average will be used. The undersupply of skilled crew workers outlined in the strategic and financial section means that the OSV firms need to operate an extensive HR department in order to stay competitive. The historical loss from joint venture companies have average negative 1.6% of freight income, which will be used in the forecast. As joint ventures are expected to continue as a loss, Havila's investors would be better off with the management not investing in these types of ventures. However, there is no information regarding future divestures and hence it becomes more appropriate to forecast a continued loss.

5.7.3.1 Depreciation

The average historical rate of depreciation have been 4.7%. Here one can see detect a clear trend of increasing cost in relation to non-current operating assets. It is not clearly stated in any annual report, yet the best conclusion that can be drawn is that it can be explained by decreasing residual value of the vessels. The thesis is however under the conviction that the vessels with the largest drop in value are the smaller AHTS, which are now in cold lay-up, as well as the older PSVs. Two out of the three PSVs, which have been marked for sale, have already been sold in the beginning of 2018 (Havila.no, 2018). Havila depreciates using the straight line-method over 15 years for new vessels. Nonetheless, the vessels are assumed to have a technical/economic useful life of 30 years. The vessels lifetime are therefore reassessed after 15 years, where factors as contracts and market conditions can affect the decision. (Havila ASA, 2017). In conclusion, depreciation will be forecasted by the sales-driven approach using the average of 4.7%.

5.7.3.2 Tax

The corporate tax rate in Norway is 24% and have been decreasing steadily in later years (Havila ASA, 2017). However, the OSV firms are not paying any corporate tax but are under the so-called tonnage tax regime, where the companies pay tax on new vessels, instead of income (Sdir.no, 2012). Bearing in mind that Havila have not invested in any new vessels lately, in addition to having no vessels on order as well as not being expected to place any during the budgeting period, the tax will be calculated based on foreign income. The average tax rate on foreign income was 3.4%, where the two last years were excluded. Explicit calculations can be found in Appendix 2.2.2. This tax rate will not be applied on the financial tax rate since Havila have been using the Norwegian corporate tax, which will therefore be used in order to forecast that item.

5.8 Balance sheet

The pro forma balance sheet and its most relevant items will be outlined in this section. As with the pro forma income statement, the basis will be a sales-driven approach. Some items must however be analysed without too much focus on the sales development, since they are not directly driven by fluctuations in revenue. In table 3.3 underneath, a summary of the most significant driver can be found.

Table 3.3: Balance sheet drivers

Forecasting	Average	2018e	2019e	2020e	2021e	2022e	TV
Investement drivers							
Total fixed assets/freight income	515%	520%	410%	400%	365%	325%	325%
Total other non-current assets/freig	6%	6%	6%	6%	6%	6%	6%
Net working capital/freight income	6%	6%	6%	6%	6%	6%	6%
Financing drivers							
Total non-interest bearing debt/Inv	2%	2%	2%	2%	2%	2%	2%
NIBD/Invested capital	86%	90%	89%	88%	85%	82%	82%
NBC	-4%	-4 %	-4 %	-4 %	-4 %	-4 %	-4 %

Source: Compiled by the authors

5.8.1 Assets

The balance sheet analysis will start by examining the items on the left side, namely the asset one. The items, which will be further studied, are: total fixed assets, total other non-current assets and net working capital.

5.8.1.1 Fixed assets

Total fixed items is made up of vessels and buildings, movables & fixtures. Vessels make up almost a 100% of the total fixed assets in 2017 and hence the focus will naturally be made on that item. There are several ways to forecast the future fixed assets of a firm. One common way is to look on the historical development of CAPEX. This method is however not deemed suitable since there is vague information of from the management regarding any future investment or newbuilding program at the moment. The only real information can be found in the restructuring prospectus where they are not seeing any new investments in the near future. Moreover, some of their loan agreements have covenants, which explicitly prohibits any investments in new vessels until November 2020 (Havila ASA, 2017). As have been discussed, there are no newbuildings in pipeline and we do not at all expect Havila to make any new orders during the forecasted period. Another reason for projecting capital expenditures as of revenue is that sales fluctuations can result in unintentional movements in the capital turnover (Koller et., 2010). Due to the above reasons, this thesis will instead forecast the total fixed asset by a fraction of revenue, where new investments are included, resulting in it becoming a sales-driven approach (Petersen & Plenborg, 2012). Since there is no information regarding when investments will be done, this method is more suitable since it will be distribute the new investments equally over the whole period, rather than when they are actually done. The fact that no new investments have been forecasted further increases the validity of using this technique.

As was discussed in the revenue section, the freight income is expected to increase due to higher market demand followed by increasing rates, meaning that this increase do not need to be supported by new vessels. Furthermore, the vessels in lay-up are expected to be sold since they do not provide sufficient operating margins. For example, the three low-end AHTS vessels in cold lay-up must be sold since the segment is currently not profitable and smaller AHTS are barely used in the North Sea, where Havila have most of its operations. Additionally, Havila will continue to recognize depreciation expenses, further decreasing the asset base. Thus, the revenue-asset relation will decrease over time, until it reaches 325% of revenue in perpetuity. This is far below the average of 515% or 470% when excluding 2017, meaning that it could be too optimistic. This should however be manageable since Havila have a strong focus on efficiency and the average of the peers were as low as 307% in 2014, when the balance between demand and supply was more healthy (see Appendix 8). The rationale is that Havila invested heavily after the financial crisis in order to meet the increased demand driven by E&P spending. The investments could not be harvested due to the strident drop in oil prices and in turn for OSV services, meaning that they were far from reaching their capacity. The revenue increase is only based on increased rates, meaning that every vessel will have a larger revenue contribution.

5.8.1.2 Other non-current assets

Other non-current assets have historically been consisting of deferred tax assets, investment in joint venture companies and long-term receivables. They have been fluctuating throughout the period; however, these changes are small in absolute values and it is hard to find any driver behind the changes. Thus, the average will be used in the forecasting period resulting in a relation to revenue of 5.8%.

5.8.1.3 Net working capital

The net working capital (NWC) can be expressed as *current operating assets – current non-interest bearing liabilities*. Havila's current operating assets consist of the items fuel & other stock and trade receivables and other receivables. On the debt side, one can find the items trade payables, tax payables, other current liabilities and liabilities to joint venture companies. The NWC will be forecasted on a total basis because of two reasons. Firstly, the information about the items is scarce. Secondly, the purpose of the forecast is to predict long-term earning, where more aggregated value setup is more appropriate (Petersen & Plenborg, 2012). It will use the sales-driven approach since Havila's NWC is connected to its operating activities and hence driven by its development in freight revenue.

Havila have had quite a substantial NWC of 6.0% of its revenue. Excluding the negative year in 2016, the number increase and becomes 11.2%. The average of 6% will be used which seems fair due to it being the historical average of all the peers (see Appendix 1.2.5.2.1).

5.8.2 Liabilities – NIBD & NBC

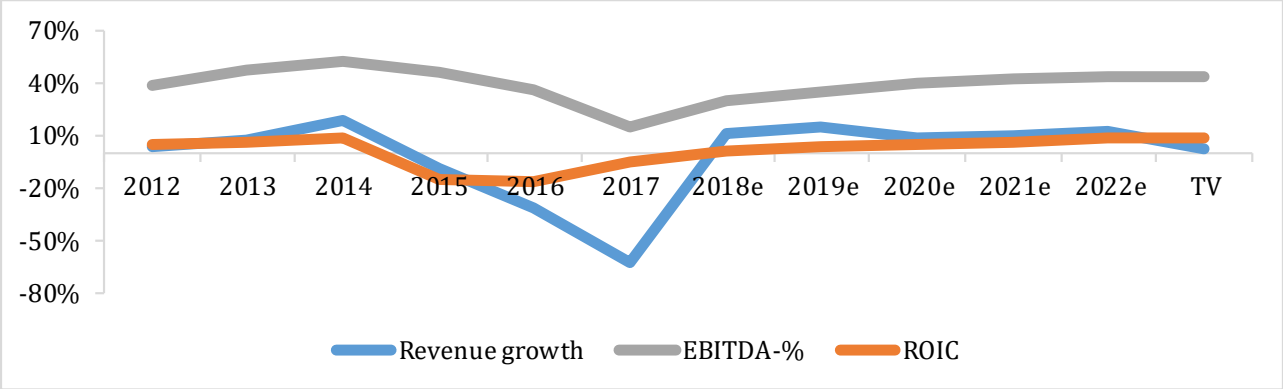
When forecasting the net interest bearing debt or NIBD, it will be in relation to invested capital. When estimating the future NIBD ratio, it will not be based at the historical average, since the capital structure used in the applied WACC have used the industry average. Moreover, this post will also use a line item approach, because using the industry average of 81.8% in all years would mean a considering capital injection of over NOKm 300 in 2018. Even though Havila have been able to raise fresh capital throughout the times of distress, we do not believe that the owners are willing to put up with that kind of money. Hence, it is more likely that Havila will balance their leverage over time, which is also the scenario that have been forecasted. In the forecast, Havila will slightly force their ratio from year to year until they reach the long-term target of 81.8% in 2022.

The net borrowing cost will use a sales-driven approach, however not the average. Taking the average would result in a NBC of negative 2.7%, since it would be skewed by the redemption on debt item in 2017. By removing that item, one get a NBC of negative 4.0%, which will be use in the forecast. Including the historical numbers would result in a figure, which was too high, stemming from the knowledge that Havila have renegotiated its loan in the current restructuring process (Havila ASA, 2017).

5.9 Evaluation of the estimates in the pro forma statement

There are several way in order to evaluate the quality of the estimates that support the pro forma statement. One way is to compare the historical profitability, usually by looking at ROIC, with the forecasted. The idea is that the ROIC tend to revert into the interval, which it were fluctuating inside before the forecasting period (Petersen & Plenborg, 2012). In order to illustrate this comparison, a graph have been created and can be found in figure 4.7 below.

Figure 4.7: Historical and forecasted numbers



Source: Compiled by the authors

As can be seen from the illustration, the revenue growth declined sharply during 2015 to 2017 due to low demand, oversupply and hence low rates. However, the growth is expected to revert, however slowly. The EBITDA margin did also take a toll during the market downturn, yet it stayed positive. As with revenue growth, we believe that it will return to the average historical figures around 40%. Lastly, the ROIC is expected to recover in line with the overall market improvement. It will, as with the other lines improve year by year until it slightly surpasses the ROIC in 2014, when the downturn started. Thus is can be seen as being realistic and hence the forecast is valid.

As was discussed earlier, the projection of the ROIC being at the above bracket of historical figures is supported by the idea that the asset turnover will improve above historical numbers and convert against the peer group. There is no historical evidence of this, yet we believe that this will be the case based on several reasons. Firstly, Havila was investing heavily before the crisis believing that the market would continue to rise and was about to harvest from these investments just when the crisis started. Secondly, the crisis have caused many small players to leave the industry, turning it less fragmented and hence lower competition for contracts. Overall, the belief can be summarised as this, the firms who comes out on the right side of the crisis will have a less competitive landscape.

6 Cost of capital

Both equity and debt investors require a compensation or return for the associated risk when investing capital into a company. This required rate of return demanded by the investors is the company's cost of capital, also known as WACC (weighted average cost of capital), and it mirrors the alternative return investors expect from a different investment with equal risk. The cost of capital is thus the weighted average

of the required rate of return from both equity and debt investors, and it is used to discount the forecasted future cash flows (ibid). The formula for the WACC is as follows:

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

The formula shows that the WACC is comprised of three components namely, cost of debt (r_d), cost of equity (r_e) and industry average capital structure. This thesis will apply the industry average capital structure since Havila has not disclosed their targeted capital structure. These components will be further desiccated in the following sections.

6.1 The cost of equity (r_e)

There are several viable approaches to determine the cost of equity. However, the most commonly accepted method is the Capital Asset Pricing Model (CAPM), consequently the CAPM will be applied in this thesis. As illustrated in the equation below the CAPM suggests that the equity holders' requited rate of return is comprised of four components: the risk-free rate (r_f), systematic risk (β), the market risk premium ((return of the market (r_m)) and then finally an alpha factor is added due to the illiquidity of the Havila stock. The liquidity premium is added since investors demand higher returns from less liquid assets due to the added risk of not being able to convert the security into cash for its fair market value (ibid).

$$r_e = r_f + \beta \times (r_m - r_f) + liquidity\ premium$$

Each cost of equity component will be determined in the following sections.

6.1.1 The risk-free rate (rf)

The risk-free rate is an expression of the return an investor can expect when investing in a risk-free asset, implicating no risk of default or reinvestment risk. A zero-coupon government bond with maturity corresponding to the forecasting horizon is frequently suggested as a proxy for the risk-free rate. Since this thesis will apply the DCF and EVA model with an infinite time horizon, a 30-year government bond would seem to be most suitable proxy for the cash flows. However, since such a bond suffers from illiquidity, which will in turn affect the yield, a 10-year zero-coupon bond is preferred. Furthermore, it is suggested to apply local government bond to account for inflation issues (Ibid).

Since Havila is listed on the Oslo Stock Exchange, this thesis will apply a 10-year Norwegian governmental bond to account for the time horizon as well as illiquidity and inflation issues. At 26/02/2018, the 10-year Norwegian governmental bond had a yield of 1.98%, which will be applied in the CAPM as the risk-free rate (Norges Bank, 2018)

6.1.2 Systematic risk – Beta

The systematic risk measure in the CAPM, also known as Beta, β, can be explained as the covariation between the return of the individual stock and the return of the market portfolio. A beta of one means that the share price fluctuates in full tandem with the market portfolio, consequently a high beta indicates that the investment is more volatile than the market portfolio. Investors in high beta assets does therefore require a greater rate of return due to the additional risk. Also, systematic risk cannot be eliminated by adding the asset to a diversified portfolio since it affects the overall market not just a specific industry or stock (Peterson & Plenborg, 2012; Koller, Goedhart & Wessels, 2010). There are multiple approaches to determine the beta of a stock, all with its own limitations. The following sections will shed light on the most frequently used approaches to determine the beta of an asset: using regression, industry beta, beta from comparable traded companies and beta from fundamental factors. This thesis will later apply the average of the four estimated betas, mitigating any potential measurement errors of each approach (Peterson & Plenborg, 2012; Damodaran, 1999). The unlevered betas will then be relevered with the industry average leverage, this is mainly done since Havila is not disclosing their target capital structure. Moreover, Damodaran argues that the safest place for any company is to have a capital structure close to the industry average. He further argues that, most companies pick their target capital structure based on the industry average debt ratios since the company subsequently is more or less exposed to the same risk as their peers. Another reason is that rating agencies and equity researcher often look at industry averages (Damodaran, 2006).

6.1.2.1 Beta – regression Method

One common way of measuring a company's beta is by regressing its excess returns (return minus risk free rate) against the excess return of the market or a certain index (Damodaran, 1999). Even though this approach is the most applied one when estimating beta, it contains several flaws, which can cause biases in the beta estimation. Firstly, when a stock is illiquid and has low volatility (often stemming from low trading volume), the underlying risk might not be truly reflected in the regressed beta. Secondly, the choice of time

horizon and intervals will affect the beta value. One could choose to use daily, monthly quarterly or yearly intervals and by doing so, the beta will change, sometimes quite substantially. Additionally, the time horizon can be everything from the time a firm goes public to seven, five or even one year, which will all yield different result. Thirdly, the CAPM formula estimates future values for beta whilst a regression model is always based on ex post data, meaning that the model assumes the company risk being stable over time. With this assumption, it seems valid to use historical number in order to predict the future beta. However, both operational as well as financial risk are likely to differ, since companies commonly change their strategies and acquires new businesses over time (Petersen & Plenborg, 2012).

As Havila is listed on the Oslo Stock Exchange, the *Oslo Børs Benchmark Index* (OSEBX) will be used when regressing Havila's return. However, the OSEBX is heavily dominated by oil and oil related firms, resulting in the index being much correlated with the oil price. As was explained in section 3.1.2.1.1.2, the oil price is also *the* determinant factor of the demand in the OSV industry. Since Havila and OSE tend to move in tandem, it will give a more representative view of the total risk by including a more diversified index. The MCSI All Country World Index (ACWI) includes 23 developed markets and 24 emerging markets, which makes it a good indicator for the development of the world economy and equity markets (MCSI Inc., 2018). Further, Havila's operations are based in several parts of the world, thus the usage of the ACWI in combination with the OSEBX will better represent the firm specific risk. The time horizon has been set to five years and the regression is based on monthly returns. This is chosen because it is the most common practice among professionals and using annual or quarterly returns will provide too few observations. In addition, Havila's has not change their operations or business mix noteworthy during this time and hence the period represents their current strategy. This resulted in an averaged leveraged beta of 0.88 and by using the six-year average capital structure; the beta has then been unlevered. This yielded an unlevered beta of 0.073. Since the company is exposed to a huge financial risk, a beta below one seems unreasonable. As been mentioned, this could stem from low trading volume leading to low volatility and low liquidity of the stock. This becomes obvious when examining the trading volume. The volume have only exceeded NOK 1 million during one day in the last five years and this was only related to the restructuring event happening in beginning of 2017 (Havila ASA, 2017). Actually, 97% of the trading days, the stock has a volume of less than NOK 100.000, meaning that the stock should be considered very illiquid and a liquidity premium must be applied, which will be discussed in a separate section. In order to proceed, the unlevered beta of 0.073 will be levered against Havila's capital structure, which results in a 0.84 beta estimation. Calculations of a more detailed nature can be found in Appendix 3.1.1.

6.1.2.2 Estimation of beta from industry average

Another process of estimating beta is to look at the industry average. By applying this approach, one avoids the problem of sourcing and measurement errors, which could be the case when using the regression method. This advantage stems from the beta being based on a large number of firms, creating an extensive data set (Brealey, Myers & Allen, 2006). This data set are gathered yearly by professor Damodaran at NYU. The industry most fitted to OSV is "Oilfield Svcs/Equip." and is made up of 69 companies in Europe and 246 emerging market companies. The unlevered industry beta is 1.13 for emerging markets and 1.21 for Europe (Damodaran, 2018). One could just estimate the beta by taking the average of the two markets; however, it is believed that weighing the two betas against the share of Havila's income by geographical market is more appropriate. This result in a levered beta of 6.51 and more detailed calculations can be found in Appendix 3.1.2.

6.1.2.3 Estimation of beta from comparable companies

The third approach applied for calculating beta is to take the average of the peer group, which was founded in section 2.7. This method can be used in order to get rid of the liquidity and observation problem in the regression method. This is however under the assumption that markets are efficient and that the shares in the peer group are trading with sufficient volume (Petersen & Plenborg, 2012). The criteria of efficient market is met but the shares of all peers must be considered as illiquid, even though they all exhibit a higher volume than Havila (Oslobors.no, 2018). Although, it is argued that the method still contributes in order to find the most proper beta. This method also relies on the assumption that all companies included in the analysis have the same operational risks, meaning that they should have the same beta (Ibid). The comparable companies' equity beta have been taken from Bloomberg's database and have then been unlevered in order to remove the impact of different capital structures. Further, the peers' average beta asset have been levered against Havila's target capital structure (peer average), which gives a beta of 0.61 (Ibid). Exact calculations can be found in Appendix 3.1.3.

6.1.2.4 Estimation of beta from fundamental factors

The last method of measuring beta according to Petersen & Plenborg (2012) framework is based on fundamental/strategic factors of the case company's operating and financial risk profile. According to the same framework, one should consider three factors when analysing the firm's risks regarding volatility in

operating earnings, which are external-, strategic- and operational risk factors. The finding in the strategic analysis will naturally work as a foundation for accessing these risks. Proceeding to the financial risks, it is composed by the firm's financial leverage and loan characteristics. Here the analysis will instead be based on the financial analysis above. Quite obviously, both the operational and financial risk are determined as high, implying a beta of 1.4 or above (Ibid). As can be seen in Appendix 3.1.4, the internal part of the fundamental factors have been deemed as low/medium. Thus, an equal weighted average between the three factors would have led to an overall medium/high assessment. Nonetheless, when looking into the fundamental analysis, it becomes obvious that the external and industry factors are more important. Hence, operating risk is considered as high. Moreover, the general financial risk is estimated to be high, due to all factors being assessed as high except the currency risk. Weighing in the arguments from the risk assessment, the beta have been set to 1.5.

6.1.2.5 Final beta

The combined beta value from the four different beta have been summarized in table 3.4 below and it gives an averaged beta of 2.36.

Table 3.4: Average beta

Average beta	
Industry beta	6.51
Peer group	0.61
Fundamental	1.5
Regression	0.84
Applied levered beta	**2.36**

Source: Compiled by the authors

6.1.3 Market portfolio risk premium

The market portfolio's risk premium is calculated by subtracting the risk-free rate from the market returns. There are two common ways of estimating the risk premium, either by an ex-post (historical data) or and ex-ante (forward-looking) approach (Petersen & Plenborg, 2012). The ex-ante approach is found to be most proper in this case, since it basis its estimate on analysts' consensus earnings forecast. Once again, the very much-respected professor Damodaran's estimate of the equity risk premium will be used. These numbers are the most updated ones, since he performs the estimation every year and publishes it in January. In 2018, Damodaran estimates the Norwegian equity risk premium to exceed the risk-free rate by 5.08% (Damodaran, 2018).

6.1.4 Liquidity premium

When a stock is illiquid, it means that it could imply problems and costs when converting it into cash. Empirical evidence show that equity traders demand a certain risk premium when dealing with illiquid stocks (Petersen & Plenborg, 2012). Petersen, Plenborg and Scholer (2006) find that investors usually demand a 3–5 percentage point added on the required return on equity, which has then already been derived from the CAPM-formula. As has been mentioned, the trading volume in Havila's stock is utterly low, both compared to the overall market as well as to its peers (Oslobors.no, 2018). Due to the above facts, it is believed that a premium of 5% is sufficient. This is further enhanced by the current state of the industry, where events can cause sharp changes in stock prices, increasing the value of liquidity.

6.1.5 Cost of equity

The above sections have been aiming at dissecting the components that together create the cost of equity. After every part have been estimated, the CAPM-formula gives a cost of equity of 19.0%. A summarisation can be found in table 3.5 below.

Table 3.5: Cost of equity

Cost of equity CAPM	
Rf	2.0%
Beta	2.4
Market risk premium	5.1%
Liquidity premium	5.0%
Return on equity	**19.0%**

Source: Compiled by the authors

6.2 Cost of debt

The cost of debt or the interest rate on debt can be derived from the formula:

$$r_d = (r_f + r_s) \times (1 - t)$$

Where the r_d = required rate of return on net interest-bearing debt (NIBD), and the three determinant variables are as follows (Petersen & Plenborg, 2012):

r_f = Risk-free interest rate → 1.98%

r_s = Credit spread (risk premium on debt, average) → 5.18%

t = Corporate tax rate → 24%

Bonds as of 26/02/2018		
	HAVI04	**HAVI07**
Rate	4,85%	5,50%
rf	1,98%	1,98%
Effective	6,83%	7,48%
Average		**7,16%**

The risk-free rate have already been estimated in the above sections. When determining a company's credit spread, one looks at both the credit rating but also on the current outstanding bonds of the firm. Since Havila have not credit rating from the bigger firms as Moody's, Standard & Poor or Fitch. To deal with this problem, one could conduct a credit spread on one's own, however, this method will not be used by the thesis. Havila do not disclose the interest rate on their separate loans but they have two bonds outstanding. The bonds were not issued recently but since they were renegotiated in beginning of 2017, they could be used as a proxy for what investors are demanding as a spread. Havila's current two bonds (tickers: HAVI04 & HAVI07) both matures in November 2020. This is a consequence of the restructuring, since HAVI04 had its original maturity in 2016 and HAVI07 in 2017 (Havila ASA, 2017). HAVI04 has a quoted spread of 4.5% exceeding the 6 months NIBOR whilst HAVI07 has a quoted spread of 3.75% above the 3 months NIBOR (Oslobors.no, 2018).

6.2.1 Tax rate

For firms with operations in more than its domestic country, their operations are under several tax regimes and thus it is necessary to examine the local corporate tax rates and then apply them to the associated portions of loan in each subsidiary. However, this would require insight in each and every loan for the Havila Group, information which the authors do not possess. Due to the complexity of calculating different tax rates for different regions, one could just apply the historical effective tax rate since it is a weighted average of the group's different corporate tax rates. Nonetheless, this relies on the assumption that Havila's earnings are distributed in the same way as its borrowings, something that seems unreasonable (Petersen & Plenborg, 2012). Due to the above-mentioned facts, it seems most sufficient to use the current Norwegian corporate tax rate of 24% when forecasting.

6.2.2 Capital structure

There are two main approaches when estimating and forecasting a company's capital structure. First, one could apply the mean capital structure of the peer group of the case company, by using the market values

of debt and equity (Petersen & Plenborg, 2012). The second approach is an iterative process, where forecasted numbers is used in order calculate the debt and equity ratio by using the forecasted cash flow calculations for estimating the enterprise value (Larkin, 2011). In order to find the optimal capital structure, it is recommended that both methods should be used (Petersen & Plenborg, 2012). After performing the iteration process, the result was deemed unappropriated since it suggested a structure of 58% debt and 42% equity (Appendix 3.2.1). This is far from realistic and hence the thesis will only use the peer average as the structure. As can be seen from the calculations in Appendix 3.2.2, the peer group's levered structure is estimated to an average of 82%, where the debt ratio of the three peers' range from 73% to 91%.

6.2.3 Cost of capital – WACC

The components are now all in place for calculating Havila's weighted average cost of capital or simply – WACC. The calculation yielded a result of 7.9%, which will be used in the forecast. A summarisation can be found in the table 3.6 below. By conducting the above analysis the sub-question *"What is the most accurate cost of capital for Havila?"* have been answered.

Table 3.6: Cost of capital

WACC	
Financial leverage	81.8%
Unlevered equity	18.2%
Rd	5.4%
Re	19.0%
WACC	**7.9%**

Source: Compiled by the authors

7 Valuation

7.1 Discounted cash flow (DCF) model

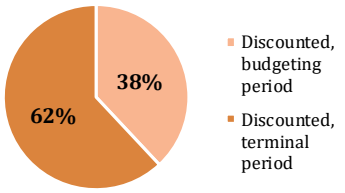
The discounted cash flow approach essentially measures Havila's ability to generate a positive cash flow. Furthermore, the model estimates the company's enterprise value (EV) through the present value of the free cash flows to firm (FCFF). The discounted cash flows are divided in two periods the budgeted (2018–2022) and the terminal (2023) period. The latter is calculated through Gordon's Growth Formula, which assumes that the terminal period mirrors all future company cash flows (Brealey, Myers and Allen, 2006). After having estimated the EV, the net interest bearing debt (NIBD) will be subtracted in order to reach the

market value of equity (MVE). And by dividing the MVE with the company's number of outstanding shares the market value per share will be determined (Petersen & Plenborg, 2012).

Based on the DCF, this thesis concluded a market value of equity for Havila of NOK 131.519.204. Thus, the theoretical share price equals NOK 7.0 at the valuation date of 31/12/2017. In order to compare the theoretical share price to the market share price as of 26/02/2018, the share price has been discounted forward using the cost of equity, resulting in a price per share of NOK 7.1. The full calculations including the cash flow statement can be found in Appendix 4.1 and a summary of the findings is shown in the table below. It is further evident that the FCFF in 2018e is noticeably higher than in the following budgeted years, which is a result of the expected divestment of vessels and an empty order book.

Table 3.7: DCF valuation

DCF-model	Budgeting period					Terminal period	Growth
Reference case	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2.2 %**
Free cash flow to the firm	950,724	396,991	-18,873	187,100	260,872	205,720	
WACC	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	
Discount factor	0.93	0.86	0.80	0.74	0.68		
Discounted FCFF	881,048	340,935	-15,020	137,992	178,301		
Discounted, budgeting period	1,523,256						
Discounted, terminal period	2,480,573						
Enterprise Value	**4,003,829**						
NIBD	3,872,310						
Market value of equity	**131,519,204**	*Number of shares*	*18,907,622*				
Market value per share	**7.0**						



Source: Compiled by authors

7.2 Economic value added (EVA) model

The model suggests that the enterprise value of the company equals the initial invested capital in 2017 plus the capital value of all future EVA's. Moreover, the model applies the same input as the DCF model, however the calculation of the enterprise value is influenced by how the company creates value for its owners (Petersen & Plenborg, 2012). By subtracting the NIBD from the theoretical EV, the model suggests the same MVE as in the DCF approach. Consequently, resulting in the same share price of NOK 7.0.

Furthermore, the EVA model should yield identical values as the DCF, which is evident when comparing table 3.7 and table 3.8. Moreover, it is worth mentioning that Havila's EVA's are negative throughout the budgeting period except in 2022, this means that the company is actually destroying value for its owner during those years and that Havila is trading below its book value of equity (Ibid).

Table 3.8: EVA valuation

EVA-model	Budgeting period					Terminal period	Growth
Reference case	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2.2 %**
NOPAT	31,724	108,557	159,540	215,106	273,672	279,802	
Invested capital, primo	4,295,447	3,376,447	3,088,013	3,266,424	3,294,432	3,307,231	
WACC	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	
Capital costs	339,696	267,019	244,208	258,318	260,533	261,545	
EVA	-307,972	-158,461	-84,669	-43,212	13,139	18,257	
Discount factor	0.93	0.86	0.80	0.74	0.68		
Capital value EVA	-285,402	-136,086	-67,384	-31,870	8,980		
Invested capital, primo	4,295,447						
Capital value EVA budgeting period	-511,762						
Capital value EVA terminal period	220,144						
Enterprise value	**4,003,829**						
NIBD	3,872,310						
Market value of equity	**131,518,780**	*Number of shares*	*18,907,622*				
Market value per share	**7.0**						

Source: Compiled by authors

7.3 Multiple valuation

To ensure validity of the value estimations derived from the above models this thesis will conduct a relative valuation approach. The exercise will also assist in creating a share price range between the estimated share price from the DCF and EVA model and the implied value based on the multiples. Moreover, this thesis will use forward looking multiples since they are deemed more precise than trailing multiples (Koller et al., 2010). The multiples for Havila are calculated based on this thesis's projections, which will be measured against the peers multiples collected from Bloomberg and Thomson Reuters. In addition, Havila's implied valued will be estimated by using the harmonic mean of the collected peers multiples together with this thesis forecasted numbers.

It is important that the peer group holds the same qualitative and quantitative characteristic as Havila. The chosen peer group all have the same products, suppliers, consumers, operating areas, tax rates, accounting policies and they are all based in Norway. Moreover, the peer group should have the same growth, profitability, size, cost of capital and depreciation rate (Petersen & Plenborg, 2012). Despite not being entirely identical, this thesis deems the peers as the most relevant comparable companies, this is further backed by the very fact that analysts apply the same peers in their industry reports (Pareto, 2015).

The main multiple for determining the enterprise value in this relative valuation will be the EV/EBITDA ratio. The reason being that, the ratio is unaffected by different capital structures, depreciations and amortizations. Also it is commonly used as a cash flow proxy. Moreover, the EV/EBIT ratio is excluded due

to negative operating profit projections. As a supplement, this thesis will apply the EV/Sales ratio, since it is valuable when earnings are volatile and not fully representative in the long-run. One equity value multiple is also included, in this thesis the P/B ratio is used, the more frequently used P/E ratio was excluded due to negative earnings forecasts. And since book value of equity usually is positive even though the P/E multiple is negative, the P/B ratio can be applied when the P/E ratio is fruitless. As mentioned above, this thesis will use the harmonic mean of the peers multiples since simply applying an average will include extreme outliers thus screwing the outcome (Petersen & Plenborg, 2012).

Table 3.9: Multiple valuation

Multiples						
	EV/EBITDA		EV/Sales		P/B	
Company	**2018e**	**2019e**	**2018e**	**2019e**	**2018e**	**2019e**
Siem Offshore	10.7	22.5	3.6	3.1	0.6	0.6
SolstadFarstad	22.6	9.4	5.5	5.0	0.4	0.4
DOF ASA	9.8	17.1	3.1	2.8	0.3	0.3
Harmonic mean	12.5	14.3	3.8	3.4	0.4	0.4
Havila Shipping	21.3	15.8	6.3	5.5	0.3	0.4
Havila (Bloomberg)	29.0	22.5	6.2	5.2		
Difference %	*41%*	*9%*	*39%*	*38%*	*-24%*	*-2%*

Source: Compiled by authors

Concerning the EV/EBITDA, it is evident that Havila's calculated ratio is 41% higher than the harmonic mean of the peers in 2018e and 9% higher in 2019e. The higher ratios are also true for the EV/Sales multiple, it could therefore be argued that Havila is more valuable that its peers. However, the high valuation could either be a product of optimistic projections, the risk of the company or that the company has a brighter outlook compared to the peer group (Petersen & Plenborg. 2012). This thesis argues that the reason for the higher multiples is a result of the latter, since Havila have been operating at the brink of bankruptcy a mere stabilization to historical values will embody a higher growth compared to the peer group. The high multiples are further supported by analysts as seen in table 3.9. In addition, due to the company's high leverage the multiples are not likely to be influenced by lower risk than compared to the peer group. Furthermore, Havila's calculated P/B ratio is 24% lower than the harmonic mean in 2018e and 2% lower in 2019e, the intuition states that Havila is either undervalued since multiple implies that the company is traded below its book value of equity or that some fundaments are being overlooked (Petersen & Plenborg. 2012). However, this thesis argues that the difference in the P/B ratio between Havila and the

peers can partially be explained by Havila's high financial leverage. The relationship holds, since Havila has a higher leverage than Siem, and more similar capital structure to that of DOF and Solstad Farstad.

7.3.1 Implied value

Estimating the implied value and its corresponding estimated share price from the multiples indicates a valuation of the company based on how the industry is valued. The exercise mitigates distortions caused by either optimism or conservatism in regards to the projections of the company's cash flows (Valuation University, 2018).

When estimating the implied share price, the harmonic mean multiple of the peer group is being multiplied with the corresponding forecasted value to calculate the projected enterprise value. Subsequently, the forecasted NIBD is subtracted from the forecasted EV resulting in the MVE, which is later divided by the outstanding shares resulting in the implied share value. Moreover, the P/B harmonic mean multiple of the peer group is being multiplied with the forecasted book value of equity, resulting in the MVE, which is divided with the outstanding shares the implied price per share (Ibid). The implied share prices based on market consensus are depicted in the table below.

Table 4.0: Implied share price

Multiples						
	EV/EBITDA		EV/Sales		P/B	
	2018e	2019e	2018e	2019e	2018e	2019e
Price per share	**-36.10**	**46.81**	**-28.81**	**-10.77**	**6.88**	**6.83**

Source: Compiled by authors

As shown in the table above the relative multiple valuation generates enormous discrepancy between the lowest and the highest share price, from NOK -36.1 to NOK 46.8. The wide trading range can be explained by the distress cursing the whole industry, since extraordinary levels will screw the valuation, thus it is likely that the estimate implied values becomes unusable in the quest of determining an absolute value. The unreliableness is further supported by the low tradability of the assets in the peer group and also the small amount of comparable companies constituting the peer group (Damodaran, 2009). By conducting the above valuation analysis the sub-question *"What is the trading range of Havila?"* have been answered.

7.4 Valuation summary

The DCF and EVA valuation suggested a share price of NOK 7.0 at valuation date, and when discounted forward to 26/02/2018 the share priced amounted to NOK 7.1. When comparing it to the traded share price of NOK 10.4 at the same date, one can conclude a prospective downside of 31%. The downside will be further analysed in relation to the supplementary valuation approaches.

In conclusion, from the EVA valuation it is evident that Havila is producing negative EVA values from 2018e to 2021e, this implies that the company is destroying value in the better part of the budgeting period. It is further evident from both the DCF and the EVA valuation that Havila is traded below its book value. Furthermore, when looking at the equity multiple in the relative multiple valuation the negative trend is supported by negative P/B multiples in both years. This is also true for the whole industry which is characterised by high leverage, partially due to debt financing of the companies vessels. Havila and DOF have slightly higher leverage ratios than Solstad Farstad and substantially higher leverage than Siem which is reflected in the P/B ratios.

Concerning the EV multiples, the multiples suggest that Havila is overvalued compared to the market consensus. However, as previously argued the company propose superior growth prospects to that of its peers. The growth prospect is amplified by the company's poor historical performance, since a recovery to market levels would impose a significant growth rate for Havila. Also, the company is expected to make efforts to pay down its debt in the near future, which will in turn decrease their leverage to more sustainable levels, thus lowering the risk. Moreover, the high enterprise multiples are supported by Bloomberg estimations which functions as a sanity check, thus increases the reliability of the valuation.

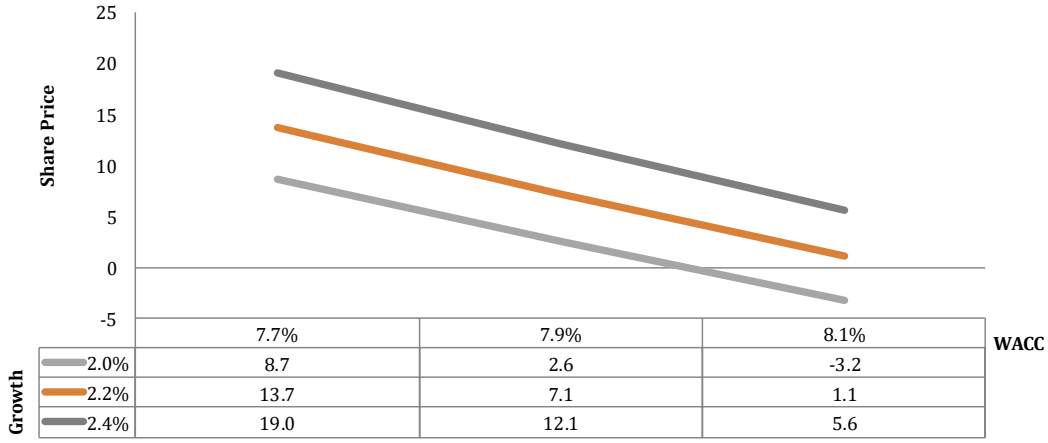
As mentioned above, this thesis will exclude the trading range as an indicator where Havila's stock price is heading by virtue of the large discrepancies between share prices. All in all, based on the DCF- and EVA valuation and on the stock price of NOK 10.4 on 26/02/2018 this thesis concludes a downside of 31%.

8 Sensitivity analysis

The purpose of the sensitivity analysis is to investigate to what degree movements in the estimated inputs used to calculate the share price is affecting the share price derived from the DCF- and EVA-model. In other words, this exercise will establish how sensitive the share price is to fluctuations in the inputs. Due to the

nature of these inputs, some will probably change in the future and some may been assumed imperfectly, hence it is beneficial to perform a sensitivity analysis to add credibility to the valuation. Firstly, as seen in the figure below, the effect by changes in WACC and growth rate will be analysed.

Figure 4.8: WACC / Growth rate

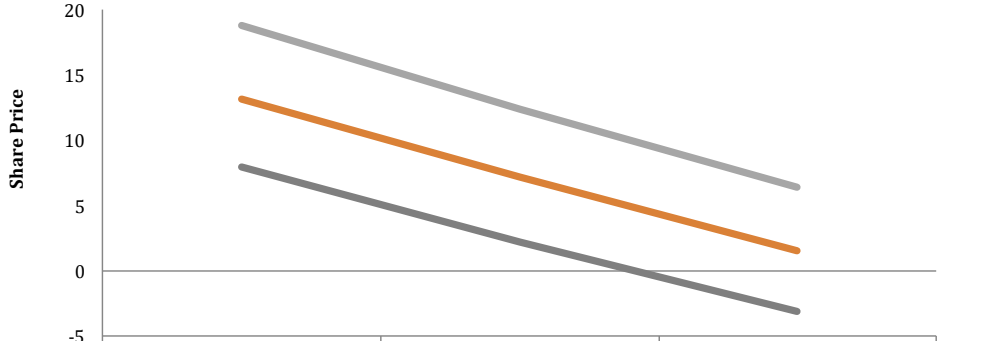


Growth \ WACC	7.7%	7.9%	8.1%
2.0%	8.7	2.6	-3.2
2.2%	13.7	7.1	1.1
2.4%	19.0	12.1	5.6

Source: Compiled by authors

From the figure one can conclude that the share price is extremely sensitive to changes in terminal growth and WACC. At the applied WACC rate of 7.9% a slight decrease in growth to 2.0% or increase to 2.4% would decrease the share price by 64% to NOK 2.6 or increase it by 69% to NOK 12.1, respectively. Moreover, at the applied growth rate of 2.2% fluctuations in WACC will affect the share price even more, decreasing the WACC to 7.7% would result in a 91% increase in share price to NOK 13.7.

Figure 4.9: Beta / risk-free rate

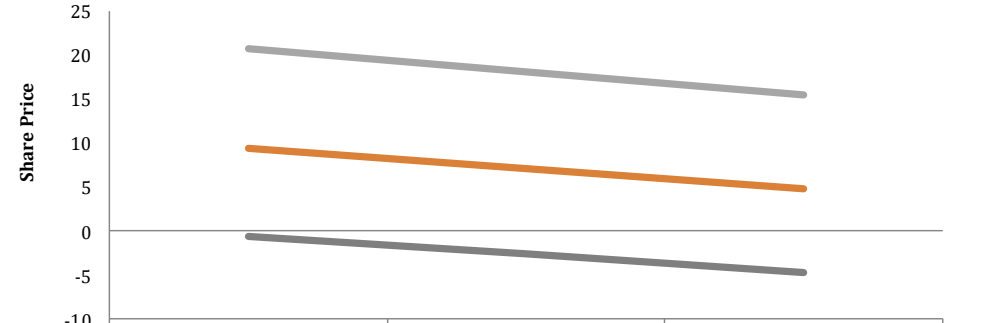


Rf \ Beta	2.2	2.4	2.6
1.78%	18.8	12.4	6.4
1.98%	13.2	7.1	1.5
2.18%	7.9	2.2	-3.1

Source: Compiled by authors

Figure 4.9 depicts how changes in the WACC components of the risk-free rate and the beta affects the calculated share price. Just like the two previous analysed inputs, changes in these components have a substantial effect on the share price. At the applied beta value of 2.4 a decrease in rf to 1.78% or an increase to 2.18% would imply a share price increase by 73% to NOK 12.4 or a decrease by 69% to NOK 2.2, respectively. And if the beta changes but the rf remains on the applied level of 1.98% similar results are evident. By increasing the beta to 2.6 the share price would decrease by 79% to NOK 1.5, and a decreased beta to 2.2 would result in an increased share price of 84% to NOK 13.2.

Figure 5.0: Cost of equity / cost of debt

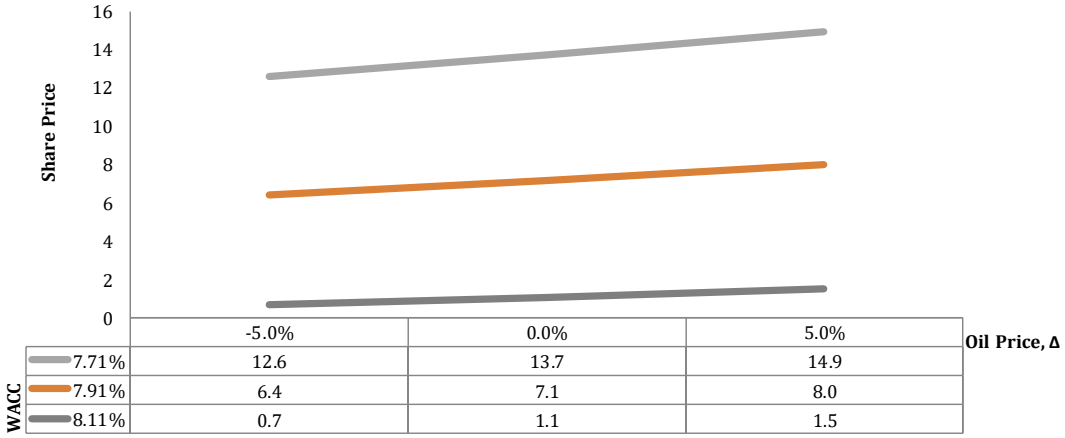


Rd \ Re	18.6%	19.0%	19.4%
5.04%	20.7	18.1	15.5
5.44%	9.5	7.1	4.9
5.84%	-0.5	-2.6	-4.6

Source: Compiled by authors

A sensitivity analysis based on cost of debt and cost of equity can be seen in the figure above. As illustrated changes in cost of debt seem to have larger impact on the share price than changes in cost of equity, the reason for this is due to Havila's capital structure. At the applied cost of debt a small increase in cost of equity to 19.4% or decrease to 18.6% would result in a decrease in share price by 32% to NOK 4.9 or increase by 33% to NOK 9.5 respectively. When keeping the applied cost of equity constant and changing the cost of debt one can conclude even larger fluctuations in the share price, this is explained by the applied financial leverage of 81.8%. Changing the cost of debt to 5.04% while keeping a constant cost of equity would result in a 153% increase in share price totalling NOK 18.1, and by increasing the cost of debt to 5.84% the share price would decrease by 136% resulting in a negative share price of NOK 2.6.

Figure 5.1: Change in oil price / WACC



WACC	-5.0%	0.0%	5.0%
7.71%	12.6	13.7	14.9
7.91%	6.4	7.1	8.0
8.11%	0.7	1.1	1.5

Oil Price, Δ

Source: Compiled by authors

As mentioned both in the external analysis and in the forecasting section, the oil price is paramount factor of the identified key drivers. As a consequence, changes in oil in relation to the share price will be analysed and is further depicted in the figure above. The analysis is based on the forecasted oil prices applied in the forecasting section. At the applied WACC of 7.91% an up- and downside of 5% in oil price would imply a rise in the share price of 11% to NOK 8.0 or a drop of 10% to NOK 6.4. A more comprehensive sensitivity analysis of the above factors can be found in Appendix 5.

All in all, based on the above it is evident that the share price is highly sensitive to changes in both company and market factors. Moreover, the share price is particularly sensitive to changes in cost of debt, WACC and beta. For example, given a constant cost of equity changes in cost of debt would lead to an up- and downside of the share price well above 100%. By conducting the above sensitivity analysis the sub-question *"How sensitive is the estimated share price to fluctuations in the different company and market factors?"* have been answered.

9 Discussion

Since the relative valuation approach produced an extremely large trading range reaching from negative NOK 36.1 to positive NOK 46.8, this thesis have chosen to exclude the range of values when determining the final value. The calculated share prices implies that the market consensus suggests that Havila should either be traded at a substantial premium or that the company should be liquidated, thus making the analysis unreliable. The large discrepancies can be explained by the overall distress in the market, the limited peer group, and the low tradability which in turn reduces the control mechanism by the market since the analyst

coverage is next to none. However, this thesis further argues that even though the trading range is inapplicable the explicit multiples produced by Bloomberg still can be used as a sanity check due to the lack of supplementary market indicators such as comparable transaction multiples. Further, as seen in the pro forma forecast, this paper argues that Havila will adapt to the market rather than fight the decline and slim down its asset base and further pay down its debt thus becoming a healthier company with a more sustainable business model and achieve long-term stable growth, implying going concern. This is further supported by the implemented restructuring plan. However, it is also true that the forecast is somewhat conservative and that the market seem to believe in higher future spot rates and a quicker streamlining process, this thesis more conservative approach is based on the markets continuously optimism concerning turnaround cases. It is also worth commenting on Havila's poor historical performance in comparison to the peer group, which reduces the trustworthiness of the management and its ability to satisfy its shareholders going forward.

The intrinsic valuation approaches of this thesis conclude a final share price of NOK 7.0 at valuation date, and when discounted forward to 26/02/2018 the share priced amounted to NOK 7.1. When comparing that to the traded share price of NOK 10.4 at 26/02/2018, a potential downside of 31% is evident. However, as shown in the sensitivity analysis small changes of certain inputs in the valuation models affects the share price substantially, and since the inputs often are based on subjective thoughts, one cannot dismiss other possible outcomes.

10 Conclusion

The main purpose of this thesis is to estimate the fair value of Havila Shipping ASA as of 26/02/2018.

From the macro analysis i.e. the Shipping Market Model, we can conclude that the demand side looks more promising than in years, with expected higher oil prices and increased E&P spending, the supply side however is still infected by oversupply, thus resulting in an increased need for scrapping or the depressed utilisation and freight rates will continue. This in combination with high industry-wide debt burdens conclude a rather weak market outlook however with signs of market recovery.

Moreover, to assess the attractiveness of the OSV industry, Porter's Five Forces were applied. Based on that industry analysis, this thesis conclude that the forces are medium strong on average with high bargaining

power of buyers and rivalry among existing firms. The high characteristic of these forces impedes the possibility to earn abnormal returns thus contribute to the gloomy industry outlook.

From the VRIO analysis it can be concluded that all the internal drivers except internal financial resources are valuable resources for Havila, however in comparison to the peer group no sustainable competitive advantage could be determined. Concerning the financial drivers, it can be further be concluded that in the foreseen future the leverage, depreciation and invested capital in relation to newbuilds will not increase due to Havila's empty order book.

Due to the nature of the OSV-industry this thesis applied a modified revenue driven approach. This stems from fact that OSV companies' investments and revenues are not perfectly correlated. Furthermore, the key historical performance drivers identified from the financial statement analysis have been used to forecast the rates for the vessels since they are also expected to be the main source for future performance.

To answer the research question of this thesis "What *is the fair value of Havila per 26/02/2018, and is the future outlook of the company mirrored in the current share price?"* The intrinsic valuation approaches conclude a share price of NOK 7.1 as of 26/02/2018. When comparing that to the traded share price of NOK 10.4 at 26/02/2018, a potential downside of 31% is evident. Even if the applicable enterprise multiples suggests that Havila have a brighter future to that of its peers, this thesis argues that the market have over appreciated the industry's outlook and the company's ability to adjust to the decline. . Based on the above this thesis conclude a SELL investment recommendation for Havila shares.

11 Thesis in perspective

With an extended scope one could include additional methods to analyse the company and estimate the fair value of Havila. This thesis suggests the following:

1. Since the EVA valuation concluded that the company would destroy value for its owners during the better part of the forecasting period. And also, due to the rather gloomy outlook for the whole OSV industry it could be interesting to evaluate a prospective merger with another company. Especially since the recent merger of Deep Sea Supply, Farstad Shipping and Solstad Offshore could be used for benchmarking purposes. This exercise is however deemed out of scope due to the required additional analysis of target companies and evaluation of potential synergies.
2. The additional multiple of P/NAV could be included in the relative valuation approach. This could be done by estimating the second hand value of the vessels which in turn requires additional information about the market value of the assets.
3. Given the distressed characteristics of Havila it could be interesting to conduct a liquidation valuation approach.
4. Adding probabilities in the sensitivity analysis, could provide the reader with a better indication of where the share price of Havila is heading.
5. Since no information after the valuation date of 31/12/2017 have been taken into account it could be possible that more recent information would have affected the valuation. Thus by considering more recent information the reliability of the valuation would increase.

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13 Appendix

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1 Financial statement analysis

1.1 Reformulation of income statement and balance sheet

1.1.1 Analytical income statement

Analytical income statement	2012	2013	2014	2015	2016	2017
NOK 1000						
Operating income and profit on sale						
Freight income	1,332,158	1,436,108	1,698,716	1,543,699	1,061,320	571,599
Other income	23,723	19,077	29,423	30,681	23,646	26,162
Profit sale of boats	1,738	1,606	0	0	0	0
Total operating income	**1,357,619**	**1,456,791**	**1,728,139**	**1,574,380**	**1,084,966**	**597,761**
Operating expenses ships						
Crew expenses	456,064	466,877	476,948	480,979	340,382	292,805
Vessel expenses						
Bunkers and lubricating oil	*18,825*	*10,945*	*22,644*	*17,725*	*20,964*	
Maintenance and other expenses	*139,074*	*155,075*	*161,087*	*126,469*	*85,987*	
Total operating expenses ship	157,899	166,020	183,731	144,194	106,951	113,404
Gross profit	**743,656**	**823,894**	**1,067,460**	**949,207**	**637,633**	**191,552**
Hire expenses	120,803	38,883	73,111	94,938	83,650	45,410
Other payroll expenses	34,763	37,241	47,626	48,350		
Other fixed costs	50,592	51,117	54,877	49,925	88,126	64,867
EBITDA before result from joint venture companies	**537,498**	**696,653**	**891,846**	**755,994**	**465,857**	**81,275**
Result from joint venture companies	-14,479	-6,683	3,278	-30,632	-82,033	7,135
EBITDA after result from joint venture companies	**523,019**	**689,970**	**895,124**	**725,362**	**383,824**	**88,410**
Depreciations	161,063	187,716	268,689	327,129	320,223	327,672
Impairment of fixed assets		0	0	1,388,300	900,500	0
EBIT	**361,956**	**502,254**	**626,435**	**-990,067**	**-836,899**	**-239,262**
Tax on operations	-100,544	-190,346	-194,464	-157,823	-95,986	173,371
NOPAT	**261,412**	**311,908**	**431,971**	**-1,147,890**	**-932,885**	**-65,891**
Profit of Sale and leaseback	0	0	0	0	0	0
Tax on Sale and leaseback	0	0	0	0	0	0
Result after extraordinary posts	**261,412**	**311,908**	**431,971**	**-1,147,890**	**-932,885**	**-65,891**
Financial items						
Financial income	26,335	19,467	7,251	13,143	13,466	893,521
Financial expenses	425,616	413,299	397,275	360,440	395,595	242,512
Net financial items before currency loss/profit	**-399,281**	**-393,832**	**-390,024**	**-347,297**	**-382,129**	**651,009**
Net currency loss/profit	55,095	-14,973	-196,794	-171,569	22,895	30,839
Net financial items before tax	**-344,186**	**-408,805**	**-586,818**	**-518,866**	**-359,234**	**681,848**
Tax shield	92,930	110,377	158,441	140,094	89,809	-163,644
Net financial items after tax	**-251,256**	**-298,428**	**-428,377**	**-378,772**	**-269,426**	**518,204**
Result after tax	**10,156**	**13,480**	**3,594**	**-1,526,662**	**-1,202,310**	**452,313**

1.1.2 Analytical balance sheet

Analytical Balance Sheet	2011	2012	2013	2014	2015	2016	2017
NOK 1000							
Invested capital							
Operating							
Vessels	6,939,116	7,654,302	7,516,823	7,467,143	5,837,000	4,597,100	4,216,600
Contracts new buildings	0	0	0	0	0	0	0
Building, movables and fixtures	8,469	5,540	4,953	4,594	5,851	4,779	2,275
Deferred tax assets	26,289	11,942	8,557	6,404	2,448	0	0
Invetments in joint venture	22,927	57,392	59,856	63,278	63,079	22,072	29,990
Long term receivables	147,814	84,803	10,786	10,966	9,422	5,495	262
Goodwill	0	0	0	0	0	0	0
Total non-current operating assets	**7,144,615**	**7,813,979**	**7,600,975**	**7,552,385**	**5,917,800**	**4,629,446**	**4,249,127**
Other non-current liabilities	110,279	85,900	6,481	12,333	10,630	6,495	14
Deferred tax	20,493	1,173	104,624	83,625	63,681	50,238	36,644
Allocation liability in joint ventures	60,443	78,026	0	0	32,978	0	0
Other liabilites	0	0	0	0	4,788	3,810	5,410
Non-current non-interest bearing debt	**191,215**	**165,099**	**111,105**	**95,958**	**112,077**	**60,543**	**42,068**
Net working capital							
Fuel and other stocks	15,852	17,610	22,140	18,564	16,459	17,993	19,716
Trade receivables and other	393,934	347,085	315,019	446,649	393,994	267,338	276,188
Total current operating assets	**409,786**	**364,695**	**337,159**	**465,213**	**410,453**	**285,331**	**295,904**
Trade payable	49,127	60,061	70,688	77,038	65,034	18,326	35,635
Tax payable	45,305	32,619	48,027	34,481	25,909	16,085	12,967
Other current liabilities	115,376	138,792	128,393	143,690	138,677	386,662	87,421
Liabilites to joint venture company	0	0	0	0	0	74,504	71,495
Current non-Interest bearing debt	**209,808**	**231,472**	**247,108**	**255,209**	**229,620**	**495,577**	**207,518**
Net-working capital	**199,978**	**133,223**	**90,051**	**210,004**	**180,833**	**-210,246**	**88,386**
INVESTED CAPITAL	**7,153,378**	**7,782,103**	**7,579,921**	**7,666,431**	**5,986,556**	**4,358,657**	**4,295,445**

Financial							
Equity							
Share capital	267,626	371,793	377,245	377,245	377,245	15,090	18,908
Own shares	0	0	0	0	0	0	0
Share premium	249,186	339,937	344,351	344,351	344,351	344,351	701,873
Other equity	0	0	0	0	0	0	0
Anti-Dilution Proctection Loan	0	0	0	0	0	0	40,411
Convertible sharesloan	0	0	0	0	0	0	15,025
Total paid-in equity	516,812	711,730	721,596	721,596	721,596	359,441	776,217
Uncovered loss	0	0	0	0	-219,191	-1,059,380	-353,080
Retained earnings	1,292,510	1,296,434	1,300,009	1,300,507	-219,191	-1,059,380	-353,080
Total equity	**1,809,322**	**2,008,164**	**2,021,605**	**2,022,103**	**502,405**	**-699,939**	**423,137**
Interest bearing debt							
Pension liabilities	230	0	4,076	10,002	4,407	2,422	2,831
Borrowings	5,308,716	5,525,128	4,827,133	5,011,592	0	0	4,087,792
Derivatives, non-current	14,020	16,939	15,530	22,827	15,258	4,195	0
Derivatives, current	12,645	2,034	10,484	50,001	29,113	11,081	0
Current liabilities of long term debt	398,769	736,334	1,106,353	898,759	5,640,366	5,596,585	32,164
Other liabilities	0	0	0	7,302	981	979	979
Interest bearing debt	**5,734,380**	**6,280,435**	**5,963,576**	**6,000,483**	**5,690,125**	**5,615,262**	**4,123,766**
Interest bearing assets							
Derivatives, non-current	15,852	0	184	0	0	0	0
Shares	441	383	403	5,205	1,326	1,850	1,850
Net pension assets	0	683	0	0	0	0	0
Derivatives, current	14,667	4,533	1,977	139	0	349	370
Trading portfolio	3,556	3,556	0	0	0	0	0
Bank deposit	355,808	497,341	402,696	350,812	204,649	554,466	249,236
Interest bearing assets	**390,324**	**506,496**	**405,260**	**356,156**	**205,975**	**556,665**	**251,456**
Net-interest bearing debt (NIBID)	**5,344,056**	**5,773,939**	**5,558,316**	**5,644,327**	**5,484,150**	**5,058,597**	**3,872,310**
INVESTED CAPITAL	**7,153,378**	**7,782,103**	**7,579,921**	**7,666,431**	**5,986,556**	**4,358,657**	**4,295,445**

1.2 Du Pont

1.2.1 Havila Shipping

Key ratios	Havila Shipping					
	2012	2013	2014	2015	2016	2017
ROIC						
EBIT	361,956	502,254	626,435	-990,067	-836,899	-239,262
NOPAT	261,412	311,908	431,971	-1,147,890	-932,885	-65,891
Invested capital average	7,467,741	7,681,012	7,623,176	6,826,494	5,172,607	4,327,051
ROIC (before tax)	**4.85%**	**6.54%**	**8.22%**	**-14.50%**	**-16.18%**	**-5.53%**
ROIC (after tax)	**3.50%**	**4.06%**	**5.67%**	**-16.82%**	**-18.04%**	**-1.52%**
Profit margin						
EBIT	361,956	502254	626435	-990067	-836899	-239262
NOPAT	261,412	311,908	431,971	-1,147,890	-932,885	-65,891
Revenue	1,357,619	1,456,791	1,728,139	1,574,380	1,084,966	597,761
Profit margin before tax	**26.66%**	**34.48%**	**36.25%**	**-62.89%**	**-77.14%**	**-40.03%**
Profit margin after tax	**19.26%**	**21.41%**	**25.00%**	**-72.91%**	**-85.98%**	**-11.02%**
Operational turnover speed						
Revenue	1,357,619	1,456,791	1728139	1574380	1084966	597761
Invested capital average	7,467,741	7,681,012	7,623,176	6,826,494	5,172,607	4,327,051
Invested capital turnover rat	**0.18**	**0.19**	**0.23**	**0.23**	**0.21**	**0.14**
Vessels/Invested capital	93%	100%	99%	109%	113%	106%
Vessels primo	6,939,116	7,654,302	7,516,823	7,467,143	5,837,000	4,597,100
Invested capital average	7,467,741	7,681,012	7,623,176	6,826,494	5,172,607	4,327,051
Revenue/vessels	0.20	0.19	0.23	0.21	0.19	0.13
Net interest costs						
Net financial items after tax	-251,256	-298,428	-428,377	-378,772	-269,426	518,204
Net financial items before tax	-344,186	-408,805	-586,818	-518,866	-359,234	681,848
Net interest bearing debt (NIBID) average	5,558,998	5,666,128	5,601,322	5,564,239	5,271,374	4,465,454
Net interest costs before tax	**6.19%**	**7.21%**	**10.48%**	**9.33%**	**6.81%**	**-15.27%**
Net interest costs after tax	**4.52%**	**5.27%**	**7.65%**	**6.81%**	**5.11%**	**-11.60%**
Spread (before tax)	-1.34%	-0.68%	-2.26%	-23.83%	-22.99%	9.74%
Spread (after tax)	-1.02%	-1.21%	-1.98%	-23.62%	-23.15%	10.08%
FGEAR						
Total equity	1,908,743	2,014,885	2,021,854	1,262,254	-98,767	-138,401
Net interest bearing debt (NIBID) average	5,558,998	5,666,128	5,601,322	5,564,239	5,271,374	4,465,454
FGEAR	2.9	2.8	2.8	4.4	-53.4	-32.3
ROE (before tax)	0.93%	4.64%	1.96%	-119.5 %	1211.1 %	-319.8 %
ROE (after tax)	0.53%	0.67%	0.2 %	-120.9 %	1217.3 %	-326.8 %

1.2.2 Siem Offshore

Key ratios	Siem Offshore					
	2012	2013	2014	2015	2016	2017
ROIC						
EBIT	42,004	78,695	88,779	-139,890	-60,454	-99,807
NOPAT	30,789	65,274	81,908	-158,610	-83,847	-127,170
Invested capital average	1,506,685	1,542,284	1,796,877	1,796,308	1,839,248	1,879,828
ROIC (before tax)	**2.79%**	**5.10%**	**4.94%**	**-7.79%**	**-3.29%**	**-5.31%**
ROIC (after tax)	**2.04%**	**4.23%**	**4.56%**	**-8.83%**	**-4.56%**	**-6.76%**
Profit margin						
EBIT	42,004	78,695	88,779	-139,890	-60,454	-99,807
NOPAT	30,789	65,274	81,908	-158,610	-83,847	-127,170
Revenue	381,905	393,782	510,040	438,766	468,700	415,355
Profit margin before tax	**11.00%**	**19.98%**	**17.41%**	**-31.88%**	**-12.90%**	**-24.03%**
Profit margin after tax	**8.06%**	**16.58%**	**16.06%**	**-36.15%**	**-17.89%**	**-30.62%**
Operational turnover speed						
Revenue	381,905	393,782	510040	438766	468,700	415355
Invested capital average	1,506,685	1,542,284	1,796,877	1,796,308	1,839,248	1,879,828
Invested capital turnover rat	**0.25**	**0.26**	**0.28**	**0.24**	**0.25**	**0.22**
Vessels/Invested capital	94%	82%	80%	97%	76%	105%
Vessels primo	1,414,548	1,260,118	1,440,332	1,743,693	1,391,695	1,980,228
Invested capital average	1,506,685	1,542,284	1,796,877	1,796,308	1,839,248	1,879,828
Revenue/vessels	0.27	0.31	0.35	0.25	0.34	0.21
Net interest costs						
Net financial items after tax	-16,112	-43,731	-11,198	-37,807	-85,792	-57,874
Net financial items before tax	-22,378	-60,737	-15,340	-51,790	-114,389	-76,150
Net interest bearing debt (NIBID) average	728,609	752,140	988,109	1,051,729	1,182,501	1,309,530
Net interest costs before tax	**3.07%**	**8.08%**	**1.55%**	**4.92%**	**9.67%**	**5.82%**
Net interest costs after tax	**2.21%**	**5.81%**	**1.13%**	**3.59%**	**7.26%**	**4.42%**
Spread (before tax)	-0.28%	-2.97%	3.39%	-12.71%	-12.96%	-11.12%
Spread (after tax)	-0.17%	-1.58%	3.43%	-12.42%	-11.81%	-11.18%
FGEAR						
Total equity	778,074	790,143	808,768	744,578	656,747	570,299
Net interest bearing debt (NIBID) average	728,609	752,140	988,109	1,051,729	1,182,501	1,309,530
FGEAR	0.9	1.0	1.2	1.4	1.8	2.3
ROE (before tax)	2.52%	2.27%	9.08%	-25.7 %	-26.6 %	-30.9 %
ROE (after tax)	1.89%	2.73%	8.7 %	-26.4 %	-25.8 %	-32.4 %

1.2.3 Solstad Farstad

Key ratios	SolstadFarstad					
	2012	2013	2014	2015	2016	2017
ROIC						
EBIT	1,991,284	2,471,799	2,836,890	-1,992,560	-5,097,917	-814,529
NOPAT	1,711,256	2,005,226	2,170,177	-2,895,775	-5,353,042	-712,716
Invested capital average	34,023,675	35,304,085	39,959,038	42,419,815	39,327,614	34,709,394
ROIC (before tax)	**5.85%**	**7.00%**	**7.10%**	**-4.70%**	**-12.96%**	**-2.35%**
ROIC (after tax)	**5.03%**	**5.68%**	**5.43%**	**-6.83%**	**-13.61%**	**-2.05%**
Profit margin						
EBIT	1,991,284	2471799.426	2836889.645	-1,992,560	-5,097,917	-814529
NOPAT	1,711,256	2,005,226	2,170,177	-2,895,775	-5,353,042	-712,716
Revenue	8,573,651	8,968,227	10,268,951	9,534,757	5,435,747	3,783,911
Profit margin before tax	**23.23%**	**27.56%**	**27.63%**	**-20.90%**	**-93.79%**	**-21.53%**
Profit margin after tax	**19.96%**	**22.36%**	**21.13%**	**-30.37%**	**-98.48%**	**-18.84%**
Operational turnover speed						
Revenue	8,573,651	8,968,227	10,268,951	9,534,757	5,435,747	3,783,911
Invested capital average	34,023,675	35,304,085	39,959,038	42,419,815	39,327,614	34,709,394
Invested capital turnover rat	**0.25**	**0.25**	**0.26**	**0.22**	**0.14**	**0.11**
Vessels/Invested capital	99%	95%	88%	101%	104%	104%
Vessels primo	33,710,296	33,662,261	35,190,357	42,760,607	40,825,265	36,188,596
Invested capital average	34,023,675	35,304,085	39,959,038	42,419,815	39,327,614	34,709,394
Revenue/vessels	0.25	0.27	0.29	0.22	0.13	0.10
Net interest costs						
Net financial items after tax	-790,619	-1,028,438	-1,700,051	-2,230,241	-485,762	-802,169
Net financial items before tax	-1,090,583	-1,417,315	-2,329,991	-3,021,629	-648,449	-1,055,486
Net interest bearing debt (NIBID) average	20,054,946	20,511,437	23,889,689	27,730,855	30,273,683	29,462,418
Net interest costs before tax	**5.44%**	**6.91%**	**9.75%**	**10.90%**	**2.14%**	**3.58%**
Net interest costs after tax	**3.94%**	**5.01%**	**7.12%**	**8.04%**	**1.60%**	**2.72%**
Spread (before tax)	0.41%	0.09%	-2.65%	-15.59%	-15.10%	-5.93%
Spread (after tax)	1.09%	0.67%	-1.69%	-14.87%	-15.22%	-4.78%
FGEAR						
Total equity	13,968,730	14,792,643	16,069,340	14,688,962	9,053,930	5,246,975
Net interest bearing debt (NIBID) average	20,054,946	20,511,437	23,889,689	27,730,855	30,273,683	29,462,418
FGEAR	1.4	1.4	1.5	1.9	3.3	5.6
ROE (before tax)	6.45%	7.13%	3.15%	-34.1 %	-63.5 %	-35.6 %
ROE (after tax)	6.59%	6.60%	2.9 %	-34.9 %	-64.5 %	-28.9 %

1.2.4 DOF ASA

Key ratios	DOF ASA					
	2012	2013	2014	2015	2016	2017
ROIC						
EBIT	1,896	1,750	2,450	1,822	-204	-358
NOPAT	1,525	1,257	1,980	1,306	-221	-776
Invested capital average	27,289	27,560	27,406	27,506	26,537	25,163
ROIC (before tax)	**6.95%**	**6.35%**	**8.94%**	**6.62%**	**-0.77%**	**-1.42%**
ROIC (after tax)	**5.59%**	**4.56%**	**7.23%**	**4.75%**	**-0.83%**	**-3.08%**
Profit margin						
EBIT	1,896	1,750	2,450	1,822	-204	-358
NOPAT	1,525	1,257	1,980	1,306	-221	-776
Revenue	8,346	9,423	10,664	10,623	8,305	6,667
Profit margin before tax	**22.72%**	**18.57%**	**22.97%**	**17.15%**	**-2.46%**	**-5.37%**
Profit margin after tax	**18.27%**	**13.34%**	**18.57%**	**12.30%**	**-2.66%**	**-11.64%**
Operational turnover speed						
Revenue	8,346	9,423	10,664	10,623	8,305	6667
Invested capital average	27,289	27,560	27,406	27,506	26,537	25,163
Invested capital turnover rat	**0.31**	**0.34**	**0.39**	**0.39**	**0.31**	**0.26**
Vessels/Invested capital	81.8 %	90%	83.9 %	83%	83%	84%
Vessels primo	22,312	24,794	23,004	22,889	21,988	21,122
Invested capital average	27,289	27,560	27,406	27,506	26,537	25,163
Revenue/vessels	0.37	0.38	0.46	0.46	0.38	0.32
Net interest costs						
Net financial items after tax	-1,174	-1,310	-1,481	-1,629	422	-579
Net financial items before tax	-1,630	-1,820	-2,029	-2,232	563	-762
Net interest bearing debt (NIBID) average	20,594	21,027	20,800	21,486	19,878	17,418
Net interest costs before tax	**7.92%**	**8.66%**	**9.76%**	**10.39%**	**-2.83%**	**4.37%**
Net interest costs after tax	**5.70%**	**6.23%**	**7.12%**	**7.58%**	**-2.12%**	**3.32%**
Spread (before tax)	-0.97%	-2.31%	-0.82%	-3.76%	2.06%	-5.80%
Spread (after tax)	-0.11%	-1.67%	0.10%	-2.83%	1.29%	-6.41%
FGEAR						
Total equity	6,695	6,533	6,607	6,020	6,659	7,744
Net interest bearing debt (NIBID) average	20,594	21,027	20,800	21,486	19,878	17,418
FGEAR	3.1	3.2	3.1	3.6	3.0	2.2
ROE (before tax)	3.97%	-1.07%	6.37%	-6.8 %	5.4 %	-14.5 %
ROE (after tax)	5.24%	-0.81%	7.6 %	-5.4 %	3.0 %	-17.5 %

1.2.5 Common size analysis

1.2.5.1 Common size analysis analytical income statement

1.2.5.1.1 Havila Shipping common size

Havila Shipping						
Common size	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating income and profit on sale						
Freight income	98%	99%	98%	98%	98%	96%
Other income	2%	1%	2%	2%	2%	4%
Profit sale of boats	0%	0%	0%	0%	0%	0%
Total operating income	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Operating expenses ships						
Crew expenses	34%	32%	28%	31%	31%	49%
Vessel expenses	0%	0%	0%	0%	0%	0%
Bunkers and lubricating oil	*1%*	*1%*	*1%*	*1%*	*2%*	*0%*
Maintenance and other expenses	*10%*	*11%*	*9%*	*8%*	*8%*	*0%*
Total operating expenses ship	12%	11%	11%	9%	10%	19%
Gross profit	**55%**	**57%**	**62%**	**60%**	**59%**	**32%**
Hire expenses	9%	3%	4%	6%	8%	8%
Other payroll expenses	3%	3%	3%	3%	0%	0%
Other fixed costs	4%	4%	3%	3%	8%	11%
Total administrative costs	15%	9%	10%	12%	16%	18%
EBITDA before result from joint venture companies	**40%**	**48%**	**52%**	**48%**	**43%**	**14%**
Result from joint venture companies	-1%	0%	0%	-2%	-8%	1%
EBITDA after result from joint venture companies	**39%**	**47%**	**52%**	**46%**	**35%**	**15%**
Depreciations	12%	13%	16%	21%	30%	55%
Impairments	0%	0%	0%	88%	83%	0%
EBIT	**27%**	**34%**	**36%**	**-63%**	**-77%**	**-40%**
Tax on operations	-7%	-13%	-11%	-10%	-9%	29%
NOPAT	**19%**	**21%**	**25%**	**-73%**	**-86%**	**-11%**
Gain from business combinations	0%	0%	0%	0%	0%	0%
Profit of Sale and leaseback	0%	0%	0%	0%	0%	0%
Tax on Sale and leaseback	0%	0%	0%	0%	0%	0%
Result after extraordinary posts	**19%**	**21%**	**25%**	**-73%**	**-86%**	**-11%**
Financial items						
Financial income	2%	1%	0%	1%	1%	149%
Financial expenses	31%	28%	23%	23%	36%	41%
Net financial items before currency loss/profit	**-29%**	**-27%**	**-23%**	**-22%**	**-35%**	**109%**
Net currency loss/profit	4%	-1%	-11%	-11%	2%	5%
Net financial items before tax	**-25%**	**-28%**	**-34%**	**-33%**	**-33%**	**114%**
Tax shield	7%	8%	9%	9%	8%	-27%
Net financial items after tax	**-19%**	**-20%**	**-25%**	**-24%**	**-25%**	**87%**
Result after tax	**1%**	**1%**	**0%**	**-97%**	**-111%**	**76%**

1.2.5.1.2 Siem Offshore common size

Siem Offshore						
Common size	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating income and profit on sale						
Freight income	96%	92%	96%	96%	100%	100%
Other income	0%	0%	0%	0%	0%	0%
Profit sale of boats	4%	8%	4%	4%	0%	0%
Total operating income	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Operating expenses ships						
Crew expenses	36%	29%	24%	24%	22%	55%
Vessel expenses	19%	12%	7%	15%	14%	0%
Bunkers and lubricating oil	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Maintenance and other expenses	*12%*	*21%*	*27%*	*31%*	*37%*	*8%*
Total operating expenses ship	32%	32%	34%	45%	51%	8%
Gross profit	**33%**	**39%**	**42%**	**31%**	**27%**	**37%**
Hire expenses	0%	0%	0%	0%	0%	0%
Other payroll expenses	0%	0%	0%	0%	0%	0%
Other fixed costs	0%	0%	0%	0%	0%	0%
Total administrative costs	0%	0%	0%	0%	0%	0%
EBITDA before result from joint venture companies	**33%**	**39%**	**42%**	**31%**	**27%**	**37%**
Result from joint venture compa	0%	1%	0%	0%	0%	0%
EBITDA after result from joint venture companies	**33%**	**39%**	**42%**	**30%**	**27%**	**37%**
Depreciations	-22%	-19%	-19%	-24%	-24%	-30%
Imairments	0%	0%	-6%	-38%	-16%	-31%
EBIT	**11%**	**20%**	**17%**	**-32%**	**-13%**	**-24%**
Tax on operations	-3%	-3%	-1%	-4%	-5%	-7%
NOPAT	**8%**	**17%**	**16%**	**-36%**	**-18%**	**-31%**
Profit of Sale and leaseback	0%	0%	0%	0%	4%	0%
Tax on Sale and leaseback	0%	0%	0%	0%	-1%	0%
Result after extraordinary po	**8%**	**17%**	**16%**	**-36%**	**-15%**	**-31%**
Financial items						
Financial income	4%	1%	2%	3%	3%	2%
Financial expenses	-11%	-11%	-12%	-19%	-13%	-17%
Net financial items before currency loss/profit	**-7%**	**-10%**	**-10%**	**-17%**	**-11%**	**-15%**
Net currency loss/profit	1%	-6%	7%	5%	-14%	-4%
Net financial items before tax	**-6%**	**-15%**	**-3%**	**-12%**	**-24%**	**-18%**
Tax shield	2%	4%	1%	3%	6%	4%
Net financial items after tax	**-4%**	**-11%**	**-2%**	**-9%**	**-18%**	**-14%**
Result after tax	**4%**	**5%**	**14%**	**-45%**	**-33%**	**-45%**

1.2.5.1.3 Solstad Farstad common size

SolstadFarstad						
Common size	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating income and profit on sale						
Freight income	98%	98%	97%	97%	100%	100%
Other income	0%	2%	2%	3%	3%	0%
Profit sale of boats	1%	0%	0%	0%	-3%	0%
Total operating income	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Operating expenses ships						
Crew expenses	-35%	-36%	-34%	-37%	-43%	-69%
Vessel expenses	-13%	-10%	-11%	-11%	-13%	-2%
Bunkers and lubricating oil	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Maintenance and other expenses	*-8%*	*-9%*	*-9%*	*-10%*	*-14%*	*0%*
Total operating expenses ship	-21%	-19%	-20%	-21%	-27%	-2%
Gross profit	**44%**	**44%**	**46%**	**42%**	**30%**	**28%**
Hire expenses	-4%	-3%	-3%	-3%	-6%	-11%
Other payroll expenses	0%	0%	0%	0%	0%	0%
Other fixed costs	0%	0%	0%	0%	0%	0%
Total administrative costs	-4%	-3%	-3%	-3%	-6%	-11%
EBITDA before result from joint venture companies	**40%**	**41%**	**43%**	**39%**	**24%**	**17%**
Result from joint venture compar	0%	1%	1%	-7%	-2%	-2%
EBITDA after result from joint venture companies	**40%**	**42%**	**44%**	**32%**	**22%**	**15%**
Depreciations	-17%	-14%	-15%	-19%	-31%	-26%
Imairments	0%	0%	-1%	-34%	-86%	-10%
EBIT	**23%**	**28%**	**28%**	**-21%**	**-94%**	**-22%**
Tax on operations	-3%	-5%	-6%	-9%	-5%	3%
NOPAT	**20%**	**22%**	**21%**	**-30%**	**-98%**	**-19%**
Gain from business combinations	0%	0%	0%	0%	0%	41%
Profit of Sale and leaseback	0%	0%	0%	0%	0%	0%
Tax on Sale and leaseback	0%	0%	0%	0%	0%	-10%
Result after extraordinary pos	**20%**	**22%**	**21%**	**-30%**	**-98%**	**12%**
Financial items						
Financial income	8%	7%	7%	9%	26%	6%
Financial expenses	-21%	-22%	-28%	-33%	-41%	-34%
Net financial items before currency loss/profit	**-13%**	**-15%**	**-20%**	**-25%**	**-15%**	**-28%**
Net currency loss/profit	0%	-1%	-2%	-7%	4%	0%
Net financial items before tax	**-13%**	**-16%**	**-23%**	**-32%**	**-12%**	**-28%**
Tax shield	3%	4%	6%	8%	3%	7%
Net financial items after tax	**-9%**	**-11%**	**-17%**	**-23%**	**-9%**	**-21%**
Result after tax	**11%**	**11%**	**5%**	**-54%**	**-107%**	**-9%**

1.2.5.1.4 DOF ASA common size

DOF ASA Common size	2012	2013	2014	2015	2016	2017
Operating income and profit on sale						
Freight income	97%	100%	96%	97%	98%	100%
Other income	0%	0%	0%	0%	0%	0%
Profit sale of boats	3%	0%	4%	3%	2%	0%
Total operating income	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Operating expenses ships						
Crew expenses	-38%	-42%	-38%	-39%	-40%	-74%
Vessel expenses	-15%	-14%	-13%	-12%	-14%	0%
Bunkers and lubricating oil	*-2%*	*-3%*	*-2%*	*-2%*	*-2%*	*0%*
Maintenance and other expenses	*-5%*	*-6%*	*-6%*	*-7%*	*-7%*	*0%*
Total operating expenses ship	-60%	-65%	-60%	-60%	-63%	-74%
Gross profit	**40%**	**35%**	**40%**	**40%**	**37%**	**26%**
Hire expenses	-4%	-5%	-8%	-9%	-4%	0%
Other payroll expenses	0%	0%	0%	0%	0%	0%
Other fixed costs	0%	0%	0%	0%	0%	0%
Total administrative costs	-4%	-5%	-8%	-9%	-4%	0%
EBITDA before result from joint venture companies	**36%**	**30%**	**32%**	**31%**	**33%**	**26%**
Result from joint venture companie	0%	1%	1%	1%	-1%	1%
EBITDA after result from joint venture companies	**36%**	**30%**	**33%**	**32%**	**32%**	**27%**
Depreciations	-13%	-12%	-10%	-10%	-13%	-15%
Imairments	0%	0%	0%	-5%	-21%	-17%
EBIT	**23%**	**19%**	**23%**	**17%**	**-2%**	**-5%**
Tax on operations	-4%	-5%	-4%	-5%	0%	-6%
NOPAT	**18%**	**13%**	**19%**	**12%**	**-3%**	**-12%**
Profit of Sale and leaseback	0%	0%	0%	0%	0%	0%
Tax on Sale and leaseback	0%	0%	0%	0%	0%	0%
Result after extraordinary posts	**18%**	**13%**	**19%**	**12%**	**-3%**	**-12%**
Financial items						
Financial income	1%	1%	1%	1%	14%	1%
Financial expenses	-17%	-14%	-15%	-11%	-11%	-14%
Net financial items before currency loss/profit	**-17%**	**-14%**	**-14%**	**-10%**	**3%**	**-12%**
Net currency loss/profit	-3%	-6%	-5%	-11%	4%	1%
Net financial items before tax	**-20%**	**-19%**	**-19%**	**-21%**	**7%**	**-11%**
Tax shield	5%	5%	5%	6%	-2%	3%
Net financial items after tax	**-14%**	**-14%**	**-14%**	**-15%**	**5%**	**-9%**
Result after tax	**4%**	**-1%**	**5%**	**-3%**	**2%**	**-20%**

1.2.5.2 Common size analysis analytical income statement

1.2.5.2.1 Havila Shipping common size

NOK 1000	Havila Shipping (NOK 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	98.4%	99.2%	97.4%	97.5%	105.5%	98.2%
Contracts new buildings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Building, movables and fixtures	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Deferred tax assets	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%
Invetments in joint venture	0.7%	0.8%	0.8%	1.1%	0.5%	0.7%
Long term receivables	1.1%	0.1%	0.1%	0.2%	0.1%	0.0%
Goodwill	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total non-current assets	**100.4%**	**100.3%**	**98.5%**	**98.9%**	**106.2%**	**98.9%**
Assets helf for sale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other non-current liabilities	1.1%	0.1%	0.2%	0.2%	0.1%	0.0%
Deferred tax	0.0%	1.4%	1.1%	1.1%	1.2%	0.9%
Allocation liability in joint ventures	1.0%	0.0%	0.0%	0.6%	0.0%	0.0%
Other liabilites	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
Non-current non-interest bearing debt	**2.1%**	**1.5%**	**1.3%**	**1.9%**	**1.4%**	**1.0%**
Net working capital						
Fuel and other stocks	0.2%	0.3%	0.2%	0.3%	0.4%	0.5%
Trade receivables and other receivables	4.5%	4.2%	5.8%	6.6%	6.1%	6.4%
Total current operating assets	**4.7%**	**4.4%**	**6.1%**	**6.9%**	**6.5%**	**6.9%**
Trade payable	0.8%	0.9%	1.0%	1.1%	0.4%	0.8%
Tax payable	0.4%	0.6%	0.4%	0.4%	0.4%	0.3%
Other current liabilities	1.8%	1.7%	1.9%	2.3%	8.9%	2.0%
Liabilites to joint venture company	0.0%	0.0%	0.0%	0.0%	1.7%	1.7%
Current non-Interest bearing debt	**3.0%**	**3.3%**	**3.3%**	**3.8%**	**11.4%**	**4.8%**
Net-working capital	**1.7%**	**1.2%**	**2.7%**	**3.0%**	**-4.8%**	**2.1%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Liabilities						
Total equity	**25.8%**	**26.7%**	**26.4%**	**8.4%**	**-16.1%**	**9.9%**
Interest bearing debt						
Pension liabilities	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Borrowings	71.0%	63.7%	65.4%	0.0%	0.0%	95.2%
Derivatives, non-current	0.2%	0.2%	0.3%	0.3%	0.1%	0.0%
Derivatives, current	0.0%	0.1%	0.7%	0.5%	0.3%	0.0%
Current liabilities of long term debt	9.5%	14.6%	11.7%	94.2%	128.4%	0.7%
Other liabilities	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Interest bearing debt	**80.7%**	**78.7%**	**78.3%**	**95.0%**	**128.8%**	**96.0%**
Interest bearing assets						
Derivatives, non-current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Shares	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Net pension assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Derivatives, current	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Trading portfolio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other financing activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bank deposit	6.4%	5.3%	4.6%	3.4%	12.7%	5.8%
Interest bearing assets	**6.5%**	**5.3%**	**4.6%**	**3.4%**	**12.8%**	**5.9%**
Net interest bearing debt (NIBID)	**74.2%**	**73.3%**	**73.6%**	**91.6%**	**116.1%**	**90.1%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

1.2.5.2.2 Siem Offshore common size

NOK 1000	Siem Offshore (NOK 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	88.0%	87.2%	89.8%	84.3%	97.7%	100.4%
Contracts new buildings	0.8%	0.7%	0.6%	0.3%	0.3%	0.4%
Building, movables and fixtures	7.6%	7.7%	6.7%	11.2%	0.4%	0.0%
Deferred tax assets	0.5%	0.7%	0.6%	0.7%	0.6%	0.6%
Invetments in joint venture	0.3%	1.3%	1.0%	1.0%	0.1%	0.0%
Long term receivables	0.5%	0.4%	1.2%	3.1%	1.5%	2.0%
Goodwill	2.1%	1.8%	1.3%	1.0%	0.8%	1.1%
Total non-current assets	**99.8%**	**99.8%**	**101.3%**	**101.7%**	**101.4%**	**104.6%**
Assets helf for sale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other non-current liabilities	1.0%	1.1%	1.4%	2.1%	2.3%	4.1%
Deferred tax	0.5%	0.4%	0.3%	0.3%	0.1%	0.0%
Allocation liability in joint ventures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other liabilites	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-current non-interest bearing debt	**1.5%**	**1.5%**	**1.7%**	**2.4%**	**2.4%**	**4.1%**
Net working capital						
Fuel and other stocks	0.5%	0.5%	0.4%	0.5%	0.4%	0.0%
Trade receivables and other receivables	5.8%	5.2%	7.1%	6.5%	8.3%	7.2%
Total current operating assets	**6.3%**	**5.7%**	**7.5%**	**6.9%**	**8.8%**	**7.2%**
Trade payable	0.4%	1.0%	0.6%	0.5%	1.0%	7.6%
Tax payable	0.6%	0.2%	0.3%	0.2%	0.1%	0.0%
Other current liabilities	3.6%	2.7%	6.3%	5.5%	6.7%	0.0%
Liabilites to joint venture company	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current non-Interest bearing debt	**4.5%**	**3.9%**	**7.2%**	**6.2%**	**7.8%**	**7.6%**
Net-working capital	**1.8%**	**1.8%**	**0.4%**	**0.7%**	**1.0%**	**-0.5%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Liabilities						
Total equity	**54.9%**	**48.1%**	**42.4%**	**40.3%**	**32.0%**	**28.4%**
Interest bearing debt						
Pension liabilities	0.1%	0.2%	0.2%	0.1%	0.1%	0.0%
Borrowings	55.6%	58.2%	62.5%	68.0%	72.5%	75.2%
Derivatives, non-current	3.9%	2.7%	1.6%	5.4%	3.8%	3.8%
Derivatives, current	0.9%	0.7%	0.9%	0.8%	0.4%	0.0%
Current liabilities of long term debt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other liabilities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest bearing debt	**60.4%**	**61.7%**	**65.2%**	**74.3%**	**76.9%**	**79.0%**
Interest bearing assets						
Derivatives, non-current	3.7%	2.5%	1.5%	5.3%	3.8%	3.8%
Shares	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net pension assets	0.4%	0.0%	0.1%	0.1%	0.0%	0.0%
Derivatives, current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trading portfolio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other financing activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bank deposit	11.2%	7.2%	6.1%	9.2%	5.1%	3.7%
Interest bearing assets	**15.3%**	**9.7%**	**7.6%**	**14.6%**	**8.8%**	**7.4%**
Net interest bearing debt (NIBID)	**45.1%**	**51.9%**	**57.6%**	**59.7%**	**68.0%**	**71.6%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

1.2.5.2.3 Solstad Farstad common size

NOK 1000	SolstadFarstad (USD 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	98.7%	96.4%	98.5%	98.5%	97.2%	97.0%
Contracts new buildings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Building, movables and fixtures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Deferred tax assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Invetments in joint venture	0.7%	0.9%	0.9%	1.0%	1.9%	1.7%
Long term receivables	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goodwill	1.0%	0.9%	0.8%	0.5%	0.3%	1.4%
Total non-current assets	**100.4%**	**98.3%**	**100.1%**	**100.0%**	**99.5%**	**100.1%**
Assets helf for sale	0.0%	0.4%	0.0%	0.4%	1.5%	0.6%
Other non-current liabilities	1.5%	1.1%	1.4%	1.3%	1.6%	1.9%
Deferred tax	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Allocation liability in joint ventures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other liabilites	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-current non-interest bearing debt	**1.5%**	**1.1%**	**1.4%**	**1.3%**	**1.6%**	**1.9%**
Net working capital						
Fuel and other stocks	0.4%	0.4%	0.4%	0.4%	0.4%	0.7%
Trade receivables and other receivables	5.6%	6.4%	6.0%	5.0%	4.3%	4.7%
Total current operating assets	**6.1%**	**6.8%**	**6.3%**	**5.4%**	**4.8%**	**5.4%**
Trade payable	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tax payable	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other current liabilities	5.0%	4.4%	5.1%	4.5%	4.2%	4.2%
Liabilites to joint venture company	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current non-Interest bearing debt	**5.0%**	**4.4%**	**5.1%**	**4.5%**	**4.2%**	**4.2%**
Net-working capital	**1.1%**	**2.5%**	**1.3%**	**1.0%**	**0.6%**	**1.2%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Liabilities						
Total equity	**41.8%**	**42.0%**	**38.7%**	**30.4%**	**14.9%**	**15.4%**
Interest bearing debt						
Pension liabilities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Borrowings	56.5%	59.4%	63.0%	65.6%	55.2%	88.0%
Derivatives, non-current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Derivatives, current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current liabilities of long term debt	11.7%	8.9%	8.8%	13.2%	28.7%	2.0%
Other liabilities	0.8%	1.0%	1.0%	1.3%	9.5%	0.7%
Interest bearing debt	**68.9%**	**69.3%**	**72.9%**	**80.1%**	**93.4%**	**90.8%**
Interest bearing assets						
Derivatives, non-current	1.0%	0.6%	0.4%	0.4%	0.2%	0.3%
Shares	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net pension assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Derivatives, current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trading portfolio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other financing activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bank deposit	9.7%	10.7%	11.1%	10.1%	8.0%	5.8%
Interest bearing assets	**10.7%**	**11.3%**	**11.6%**	**10.5%**	**8.3%**	**6.2%**
Net interest bearing debt (NIBID)	**58.2%**	**58.0%**	**61.3%**	**69.6%**	**85.1%**	**84.6%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

1.2.5.2.4 DOF ASA common size

NOK 1000	DOF ASA (NOK 1000000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	87.8%	85.6%	82.0%	81.2%	81.3%	83.0%
Contracts new buildings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Building, movables and fixtures	6.4%	3.3%	3.5%	4.4%	4.1%	1.9%
Deferred tax assets	1.0%	1.2%	2.3%	5.0%	3.7%	2.9%
Invetments in joint venture	0.3%	4.4%	4.5%	1.9%	3.1%	4.2%
Long term receivables	1.0%	0.9%	1.7%	3.3%	4.3%	4.6%
Goodwill	1.4%	1.5%	1.5%	1.6%	1.3%	1.3%
Total non-current assets	**98.0%**	**96.9%**	**95.5%**	**97.4%**	**97.7%**	**98.0%**
Assets helf for sale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other non-current liabilities	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
Deferred tax	0.6%	0.3%	0.2%	0.2%	0.0%	0.1%
Allocation liability in joint ventures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other liabilites	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-current non-interest bearing debt	**0.6%**	**0.3%**	**0.2%**	**0.2%**	**0.0%**	**0.4%**
Net working capital						
Fuel and other stocks	0.2%	0.3%	0.3%	0.3%	0.3%	0.0%
Trade receivables and other receivables	6.5%	8.7%	10.5%	9.6%	7.6%	8.1%
Total current operating assets	**6.7%**	**9.0%**	**10.8%**	**9.9%**	**7.9%**	**8.1%**
Trade payable	2.4%	3.9%	4.3%	5.3%	4.1%	3.6%
Tax payable	0.4%	0.4%	0.7%	0.6%	0.5%	0.0%
Other current liabilities	1.2%	1.3%	1.2%	1.2%	1.1%	2.2%
Liabilites to joint venture company	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current non-Interest bearing debt	**4.1%**	**5.6%**	**6.1%**	**7.1%**	**5.7%**	**5.8%**
Net-working capital	**2.6%**	**3.4%**	**4.7%**	**2.8%**	**2.3%**	**2.3%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Liabilities						
Total equity	**23.8%**	**23.6%**	**24.6%**	**19.1%**	**31.3%**	**30.2%**
Interest bearing debt						
Pension liabilities	0.1%	0.2%	0.2%	0.2%	0.1%	0.0%
Borrowings	58.8%	54.0%	46.9%	65.0%	64.4%	61.8%
Derivatives, non-current	1.3%	1.3%	1.4%	0.9%	0.5%	0.2%
Derivatives, current	0.1%	0.1%	0.7%	0.6%	0.4%	0.0%
Current liabilities of long term debt	8.0%	11.5%	20.9%	12.4%	5.0%	7.9%
Other liabilities	15.7%	17.7%	14.9%	11.3%	7.0%	9.2%
Interest bearing debt	**84.0%**	**84.8%**	**84.9%**	**90.4%**	**77.4%**	**79.0%**
Interest bearing assets						
Derivatives, non-current	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Shares	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net pension assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Derivatives, current	0.1%	0.1%	0.1%	0.0%	0.2%	0.0%
Trading portfolio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other financing activities	3.3%	2.8%	2.3%	2.0%	1.7%	1.6%
Bank deposit	4.4%	5.5%	7.1%	7.4%	6.9%	7.6%
Interest bearing assets	**7.8%**	**8.4%**	**9.5%**	**9.5%**	**8.7%**	**9.2%**
Net interest bearing debt (NIBID)	**76.2%**	**76.4%**	**75.4%**	**80.9%**	**68.7%**	**69.8%**
INVESTED CAPITAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

1.2.6 Index analysis

1.2.6.1 Index analysis analytical income statement

1.2.6.1.1 Havila Shipping

Trend analysis (indexing)	Havila Shipping					
NOK 1000						
Operating income and profit on sale	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Freight income	100	108	128	116	80	43
Other income	100	80	124	129	100	110
Profit sale of boats	100	92	0	0	0	0
Total operating income	**100**	**107**	**127**	**116**	**80**	**44**
Operating expenses ships						
Crew expenses	100	102	105	105	75	64
Vessel expenses	0	0	0	0	0	0
Bunkers and lubricating oil	100	58	120	94	111	0
Maintenance and other expenses	100	112	116	91	62	0
Total operating expenses ship	100	105	116	91	68	72
Gross profit	**100**	**111**	**144**	**128**	**86**	**26**
Administrative costs						
Hire expenses	100	32	61	79	69	38
Other payroll expenses	100	107	137	139	0	0
Other fixed costs	100	101	108	99	174	128
Total operating expenses ship	100	62	85	94	83	53
EBITDA before result from joint venture companies	**100**	**130**	**166**	**141**	**87**	**15**
Result from joint venture companies	100	46	-23	212	567	-49
EBITDA after result from joint venture companies	**100**	**132**	**171**	**139**	**73**	**17**
Depreciations	100	117	167	203	199	203
Impairments	0	0	0	100	65	0
EBIT	**100**	**139**	**173**	**-274**	**-231**	**-66**
Tax on operations	100	189	193	157	95	39
NOPAT	**100**	**119**	**165**	**-439**	**-357**	**-107**
Gain from business combinations	0	0	0	0	0	0
Profit of Sale and leaseback	0	0	0	0	0	0
Tax on Sale and leaseback	0	0	0	0	0	0
Result after extraordinary posts	**100**	**119**	**165**	**-439**	**-357**	**-107**
Financial items						
Financial income	100	97	93	85	93	57
Financial expenses	100	99	98	87	96	59
Net financial items before currency loss/profit	**100**	**99**	**98**	**87**	**96**	**59**
Net currency loss/profit	100	-27	-357	-311	42	56
Net financial items before tax	**100**	**119**	**170**	**151**	**97**	**53**
Tax shield	100	119	170	151	97	53
Net financial items after tax	**100**	**119**	**170**	**151**	**107**	**62**
Result after tax	**100**	**133**	**35**	**-15,032**	**-11,838**	**-4,286**

1.2.6.1.2 Siem Offshore

Trend analysis (indexing)	Siem Offshore					
NOK 1000						
Operating income and profit on sale	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Freight income	100	99	133	115	127	113
Other income	0	0	0	0	0	0
Profit sale of boats	100	218	137	119	-3	0
Total operating income	**100**	**103**	**134**	**0**	**123**	**109**
Operating expenses ships						
Crew expenses	100	83	91	77	75	167
Vessel expenses	100	62	48	86	88	0
Bunkers and lubricating oil	0	0	0	0	0	0
Maintenance and other expenses	100	175	293	288	368	71
Total operating expenses ship	100	106	143	165	197	28
Gross profit	**100**	**123**	**171**	**-245**	**103**	**123**
Administrative costs						
Hire expenses	0	0	0	0	0	0
Other payroll expenses	0	0	0	0	0	0
Other fixed costs	0	0	0	0	0	0
Total operating expenses ship	0	0	0	0	0	0
EBITDA before result from joint venture companies	**100**	**123**	**171**	**-245**	**103**	**123**
Result from joint venture companies	100	442	390	-337	4	125
EBITDA after result from joint venture companies	**100**	**124**	**172**	**-245**	**103**	**123**
Depreciations	100	92	117	129	135	152
Impairments	0	0	0	0	0	0
EBIT	**100**	**187**	**211**	**-1,378**	**-144**	**-238**
Tax on operations	100	120	61	167	209	244
NOPAT	**100**	**212**	**266**	**-1,940**	**-272**	**-413**
Gain from business combinations	0	0	0	0	0	0
Profit of Sale and leaseback	0	0	0	0	100	0
Tax on Sale and leaseback	0	0	0	0	100	0
Result after extraordinary posts	**100**	**212**	**266**	**-1,940**	**-228**	**-413**
Financial items						
Financial income	100	34	56	68	75	53
Financial expenses	100	104	139	202	149	165
Net financial items before currency loss/profit	**100**	**151**	**195**	**292**	**199**	**241**
Net currency loss/profit	100	-777	1,169	758	-2,200	-524
Net financial items before tax	**100**	**271**	**69**	**231**	**511**	**340**
Tax shield	100	271	66	223	456	292
Net financial items after tax	**100**	**271**	**70**	**235**	**532**	**359**
Result after tax	**100**	**147**	**482**	**-4,328**	**-1,062**	**-1,261**

1.2.6.1.3 Solstad Farstad

Trend analysis (indexing)	Solstad Farstad					
NOK 1000						
Operating income and profit on sale	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Freight income	100	104	119	110	64	45
Other income	100	479	655	674	458	0
Profit sale of boats	100	7	15	20	-155	0
Total operating income	**100**	**105**	**120**	**111**	**63**	**44**
Operating expenses ships						
Crew expenses	100	109	117	117	78	88
Vessel expenses	100	83	100	94	65	8
Bunkers and lubricating oil	0	0	0	0	0	0
Maintenance and other expenses	100	115	137	140	105	0
Total operating expenses ship	100	96	115	112	81	5
Gross profit	**100**	**105**	**124**	**106**	**44**	**28**
Administrative costs						
Hire expenses	100	80	77	84	88	110
Other payroll expenses	0	0	0	0	0	0
Other fixed costs	0	0	0	0	0	0
Total operating expenses ship	100	80	77	84	88	110
EBITDA before result from joint venture companies	**100**	**108**	**129**	**109**	**39**	**19**
Result from joint venture companies	100	264	303	-2,544	-371	-295
EBITDA after result from joint venture companies	**100**	**109**	**131**	**88**	**36**	**17**
Depreciations	100	88	106	123	115	69
Impairments	0	0	100	2,674	3,855	327
EBIT	**100**	**124**	**142**	**-100**	**-256**	**-41**
Tax on operations	100	167	238	323	91	-36
NOPAT	**100**	**117**	**127**	**-169**	**-313**	**-42**
Gain from business combinations	0	0	0	0	0	100
Profit of Sale and leaseback	0	0	0	0	0	0
Tax on Sale and leaseback	0	0	0	0	0	100
Result after extraordinary posts	**100**	**117**	**127**	**-169**	**-313**	**27**
Financial items						
Financial income	100	83	107	113	195	32
Financial expenses	100	109	159	178	125	72
Net financial items before currency loss/profit	**100**	**126**	**195**	**222**	**78**	**98**
Net currency loss/profit	100	390	1,335	3,579	-1,062	0
Net financial items before tax	**100**	**130**	**214**	**277**	**59**	**97**
Tax shield	100	130	210	264	54	84
Net financial items after tax	**100**	**130**	**215**	**282**	**61**	**101**
Result after tax	**100**	**106**	**51**	**-557**	**-634**	**-37**

1.2.6.1.4 DOF ASA

Trend analysis (indexing)	DOF ASA					
NOK 1000						
Operating income and profit on sale	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Freight income	100	116	125	126	100	82
Other income	0	0	0	0	0	0
Profit sale of boats	100	4	223	158	81	1
Total operating income	**100**	**113**	**128**	**0**	**100**	**80**
Operating expenses ships						
Crew expenses	100	124	129	131	105	156
Vessel expenses	100	111	117	103	94	0
Bunkers and lubricating oil	100	156	115	96	91	0
Maintenance and other expenses	100	135	158	179	133	0
Total operating expenses ship	100	122	126	120	103	0
Gross profit	**100**	**98**	**128**	**-191**	**92**	**52**
Administrative costs						
Hire expenses	100	137	250	282	106	0
Other payroll expenses	0	0	0	0	0	0
Other fixed costs	0	0	0	0	0	0
Total operating expenses ship	100	137	250	282	106	0
EBITDA before result from joint venture companies	**100**	**93**	**114**	**-244**	**90**	**58**
Result from joint venture companies	100	1,340	1,540	1,300	-1,700	1,240
EBITDA after result from joint venture companies	**100**	**95**	**116**	**-242**	**87**	**60**
Depreciations	100	100	93	94	96	91
Impairments	0	0	100	3,125	11,013	7,163
EBIT	**100**	**92**	**129**	**-464**	**-11**	**-19**
Tax on operations	100	133	127	139	5	113
NOPAT	**100**	**82**	**130**	**0**	**-15**	**-51**
Gain from business combinations	0	0	0	0	0	0
Profit of Sale and leaseback	0	0	0	0	0	0
Tax on Sale and leaseback	0	0	0	0	0	0
Result after extraordinary posts	**100**	**82**	**130**	**0**	**-15**	**-51**
Financial items						
Financial income	100	107	115	139	142	115
Financial expenses	100	94	108	78	61	62
Net financial items before currency loss/profit	**100**	**93**	**108**	**0**	**57**	**59**
Net currency loss/profit	100	216	218	486	-123	-24
Net financial items before tax	**100**	**112**	**124**	**74**	**29**	**47**
Tax shield	100	112	120	132	-31	40
Net financial items after tax	**100**	**112**	**126**	**51**	**53**	**49**
Result after tax	**100**	**-15**	**142**	**-170**	**-240**	**-386**

1.2.6.2 Index analysis analytical balance sheet

1.2.6.2.1 Havila Shipping common size

	Havila Shipping (NOK 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	100	98	98	76	60	55
Contracts new buildings	0	0	0	0	0	0
Building, movables and fixtures	100	89	83	106	86	41
Deferred tax assets	100	72	54	20	0	0
Invetments in joint venture	100	104	110	110	38	52
Long term receivables	100	13	13	11	6	0
Goodwill	0	0	0	0	0	0
Total non-current assets	**100**	**97**	**97**	**76**	**59**	**54**
Assets helf for sale	0	0	0	0	0	0
Other non-current liabilities	100	8	14	12	8	0
Deferred tax	100	8,919	7,129	5,429	4,283	3,124
Allocation liability in joint ventures	100	0	0	42	0	0
Other liabilites	0	0	0	0	0	0
Non-current non-interest bearing debt	**100**	**67**	**58**	**68**	**37**	**25**
Net working capital						
Fuel and other stocks	100	126	105	93	102	112
Trade receivables and other receivables	100	91	129	114	77	80
Total current operating assets	**100**	**92**	**128**	**113**	**78**	**81**
Trade payable	100	118	128	108	31	59
Tax payable	100	147	106	79	49	40
Other current liabilities	100	93	104	100	279	63
Liabilites to joint venture company	0	0	0	0	100	96
Current non-Interest bearing debt	**100**	**107**	**110**	**99**	**214**	**90**
Net-working capital	**100**	**68**	**158**	**136**	**-158**	**66**
INVESTED CAPITAL	**100**	**97**	**99**	**77**	**56**	**55**
Liabilities						
Total equity	**100**	**101**	**101**	**25**	**-35**	**21**
Interest bearing debt						
Pension liabilities	0	100	245	108	59	69
Borrowings	100	87	91	0	0	74
Derivatives, non-current	100	92	135	90	25	0
Derivatives, current	100	515	2,458	1,431	545	0
Current liabilities of long term debt	100	150	122	766	760	4
Other liabilities	0	0	100	13	13	13
Interest bearing debt	**100**	**95**	**96**	**91**	**89**	**66**
Interest bearing assets						
Derivatives, non-current	0	100	0	0	0	0
Shares	100	105	1,359	346	483	483
Net pension assets	100	0	0	0	0	0
Derivatives, current	100	44	3	0	8	8
Trading portfolio	100	0	0	0	0	0
Other financing activities	0	0	0	0	0	0
Bank deposit	100	81	71	41	111	50
Interest bearing assets	**100**	**80**	**70**	**41**	**110**	**50**
Net interest bearing debt (NIBID)	**100**	**96**	**98**	**95**	**88**	**67**
INVESTED CAPITAL	**100**	**97**	**99**	**77**	**56**	**55**

1.2.6.2.2 Siem Offshore common size

	Siem Offshore (NOK 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	100	114	138	110	157	138
Contracts new buildings	100	91	90	44	46	58
Building, movables and fixtures	100	118	120	171	8	0
Deferred tax assets	100	171	183	169	167	162
Invetments in joint venture	100	496	479	395	64	0
Long term receivables	100	93	330	726	438	485
Goodwill	100	99	86	56	57	63
Total non-current assets	**100**	**115**	**138**	**117**	**144**	**127**
Assets helf for sale	0	0	0	0	0	0
Other non-current liabilities	100	126	177	228	316	472
Deferred tax	100	98	94	81	19	0
Allocation liability in joint ventures	0	0	0	0	0	0
Other liabilites	100	0	0	0	0	0
Non-current non-interest bearing debt	**100**	**117**	**151**	**182**	**223**	**325**
Net working capital						
Fuel and other stocks	100	97	96	100	117	0
Trade receivables and other receivables	100	104	168	129	205	150
Total current operating assets	**100**	**103**	**162**	**127**	**197**	**137**
Trade payable	100	302	201	156	387	2,462
Tax payable	100	42	57	39	32	0
Other current liabilities	100	87	242	179	265	0
Liabilites to joint venture company	0	0	0	0	0	0
Current non-Interest bearing debt	**100**	**98**	**213**	**158**	**243**	**203**
Net-working capital	**100**	**116**	**29**	**46**	**78**	**-32**
INVESTED CAPITAL	**100**	**115**	**136**	**115**	**142**	**121**
Liabilities						
Total equity	**100**	**101**	**105**	**85**	**82**	**63**
Interest bearing debt						
Pension liabilities	100	374	514	296	228	0
Borrowings	100	121	152	141	185	163
Derivatives, non-current	100	79	54	160	139	117
Derivatives, current	100	90	136	105	68	0
Current liabilities of long term debt	0	0	0	0	0	0
Other liabilities	0	0	0	0	0	0
Interest bearing debt	**100**	**118**	**146**	**142**	**180**	**158**
Interest bearing assets						
Derivatives, non-current	100	78	53	165	143	123
Shares	0	0	0	0	0	0
Net pension assets	100	0	18	25	0	0
Derivatives, current	0	0	0	0	0	0
Trading portfolio	0	0	0	0	0	0
Other financing activities	0	0	0	0	0	0
Bank deposit	100	74	73	95	64	40
Interest bearing assets	**100**	**73**	**67**	**110**	**81**	**59**
Net interest bearing debt (NIBID)	**100**	**133**	**173**	**153**	**214**	**192**
INVESTED CAPITAL	**100**	**115**	**136**	**115**	**142**	**121**

1.2.6.2.3 Solstad Farstad common size

	SolstadFarstad (USD 1000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	100	104	127	121	107	93
Contracts new buildings	0	0	0	0	0	0
Building, movables and fixtures	0	0	0	0	0	0
Deferred tax assets	0	0	0	0	0	0
Invetments in joint venture	100	745	803	852	1,528	1,209
Long term receivables	0	0	0	0	0	0
Goodwill	100	112	113	64	43	153
Total non-current assets	**100**	**105**	**128**	**122**	**109**	**95**
Assets helf for sale	0	100	0	129	416	138
Other non-current liabilities	100	74	113	104	110	114
Deferred tax	0	0	0	0	0	0
Allocation liability in joint ventures	0	0	0	0	0	0
Other liabilites	0	0	0	0	0	0
Non-current non-interest bearing debt	**100**	**74**	**113**	**104**	**110**	**114**
Net working capital						
Fuel and other stocks	100	112	128	123	128	169
Trade receivables and other receivables	100	121	134	108	83	78
Total current operating assets	**100**	**120**	**133**	**109**	**86**	**84**
Trade payable	0	0	0	0	0	0
Tax payable	0	0	0	0	0	0
Other current liabilities	100	97	134	112	95	82
Liabilites to joint venture company	0	0	0	0	0	0
Current non-Interest bearing debt	**100**	**97**	**134**	**112**	**95**	**82**
Net-working capital	**100**	**212**	**130**	**95**	**53**	**90**
INVESTED CAPITAL	**100**	**108**	**128**	**122**	**110**	**95**
Liabilities						
Total equity	**100**	**112**	**123**	**92**	**40**	**36**
Interest bearing debt						
Pension liabilities	0	0	0	0	0	0
Borrowings	100	112	141	141	106	146
Derivatives, non-current	0	0	0	0	0	0
Derivatives, current	0	0	0	0	0	0
Current liabilities of long term debt	100	121	142	204	399	24
Other liabilities	100	29	36	42	282	19
Interest bearing debt	**100**	**109**	**136**	**143**	**149**	**125**
Interest bearing assets						
Derivatives, non-current	100	76	69	57	31	36
Shares	100	138	111	67	2,962	3,424
Net pension assets	0	0	0	0	0	0
Derivatives, current	0	0	0	0	0	0
Trading portfolio	0	0	0	0	0	0
Other financing activities	0	0	0	0	0	0
Bank deposit	100	142	176	153	108	68
Interest bearing assets	**100**	**142**	**176**	**153**	**108**	**68**
Net interest bearing debt (NIBID)	**100**	**136**	**166**	**144**	**102**	**66**
INVESTED CAPITAL	**100**	**108**	**128**	**122**	**110**	**95**

1.2.6.2.4 DOF ASA common size

	DOF ASA (NOK 1000000)					
Invested capital	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Operating						
Vessels	100	93	92	89	85	82
Contracts new buildings	0	0	0	0	0	0
Building, movables and fixtures	100	49	54	66	60	25
Deferred tax assets	100	111	216	455	322	242
Invetments in joint venture	100	1,627	1,707	703	1,107	1,399
Long term receivables	100	89	175	323	398	405
Goodwill	100	99	102	107	81	79
Total non-current assets	**100**	**94**	**96**	**95**	**92**	**86**
Assets helf for sale	0	0	0	0	0	0
Other non-current liabilities	0	0	0	0	0	0
Deferred tax	100	48	30	26	1	10
Allocation liability in joint ventures	0	0	0	0	0	0
Other liabilites	0	0	0	0	0	0
Non-current non-interest bearing debt	**100**	**48**	**30**	**26**	**1**	**53**
Net working capital						
Fuel and other stocks	100	125	150	141	155	0
Trade receivables and other receivables	100	128	161	141	108	108
Total current operating assets	**100**	**128**	**160**	**141**	**109**	**105**
Trade payable	100	152	175	211	155	128
Tax payable	100	88	156	124	100	0
Other current liabilities	100	100	94	94	83	154
Liabilites to joint venture company	0	0	0	0	0	0
Current non-Interest bearing debt	**100**	**130**	**148**	**166**	**128**	**122**
Net-working capital	**100**	**124**	**180**	**102**	**80**	**77**
INVESTED CAPITAL	**100**	**95**	**99**	**96**	**92**	**86**
Liabilities						
Total equity	**100**	**94**	**102**	**77**	**121**	**109**
Interest bearing debt						
Pension liabilities	100	137	151	126	86	0
Borrowings	100	88	79	106	101	91
Derivatives, non-current	100	94	102	65	36	15
Derivatives, current	100	106	572	547	294	0
Current liabilities of long term debt	100	137	260	149	58	85
Other liabilities	100	108	94	69	41	50
Interest bearing debt	**100**	**96**	**100**	**103**	**85**	**81**
Interest bearing assets						
Derivatives, non-current	0	0	0	0	0	0
Shares	100	100	100	0	0	0
Net pension assets	0	0	0	0	0	0
Derivatives, current	100	103	69	14	145	0
Trading portfolio	0	0	0	0	0	0
Other financing activities	100	82	71	60	48	43
Bank deposit	100	119	158	161	143	148
Interest bearing assets	**100**	**103**	**120**	**116**	**103**	**101**
Net interest bearing debt (NIBID)	**100**	**95**	**98**	**102**	**83**	**79**
INVESTED CAPITAL	**100**	**95**	**99**	**96**	**92**	**86**

2. Forecasting

2.1 Dayrates

2.1.1 AHTS dayrates

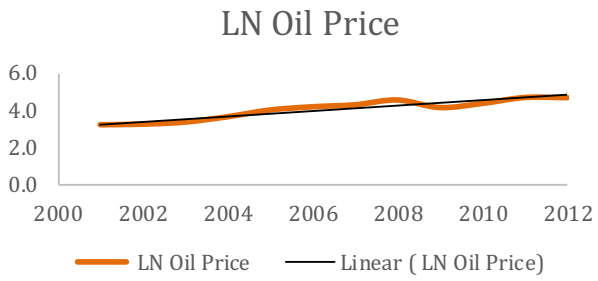
Regression input:

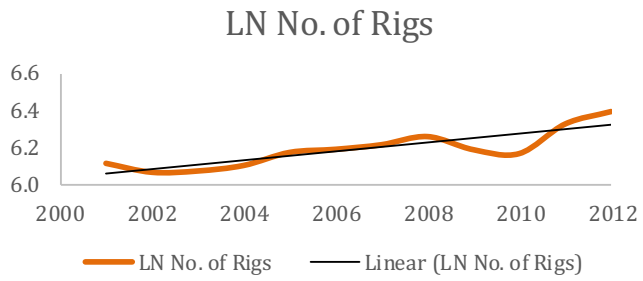
Source: Pareto Securities, Fearnley Securities, Platou Markets

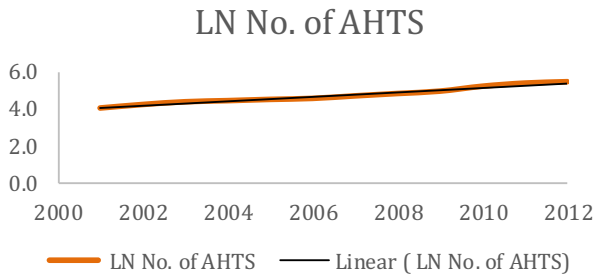
Year	Oil Price	No of rigs WW	No of AHTS	Spot rates North Sea
2001	24.5	454	58	49,907
2002	25.3	433	70	23,652
2003	28.4	436	81	16,056
2004	38.3	449	86	20,531
2005	55.8	481	92	51,868
2006	66.8	489	97	104,858
2007	74.7	501	111	112,044
2008	97.7	523	126	101,054
2009	64.1	488	143	35,500
2010	80.7	478	186	29,422
2011	112.3	559	220	51,146
2012	111.5	597	237	35,662

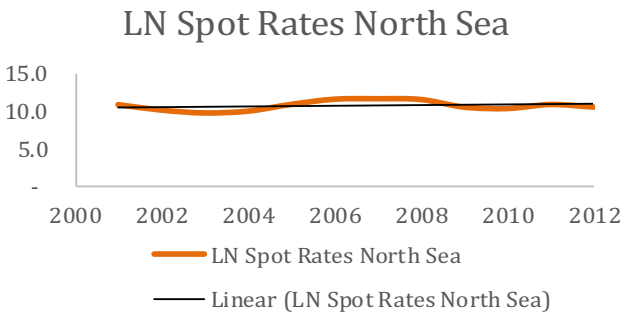
Year	LN Oil Price	LN No. of Rigs	LN No. of AHTS	LN Spot Rates North Sea
2001	3.2	6.1	4.1	10.8
2002	3.2	6.1	4.2	10.1
2003	3.3	6.1	4.4	9.7
2004	3.6	6.1	4.5	9.9
2005	4.0	6.2	4.5	10.9
2006	4.2	6.2	4.6	11.6
2007	4.3	6.2	4.7	11.6
2008	4.6	6.3	4.8	11.5
2009	4.2	6.2	5.0	10.5
2010	4.4	6.2	5.2	10.3
2011	4.7	6.3	5.4	10.8
2012	4.7	6.4	5.5	10.5

Stationarity of time series:

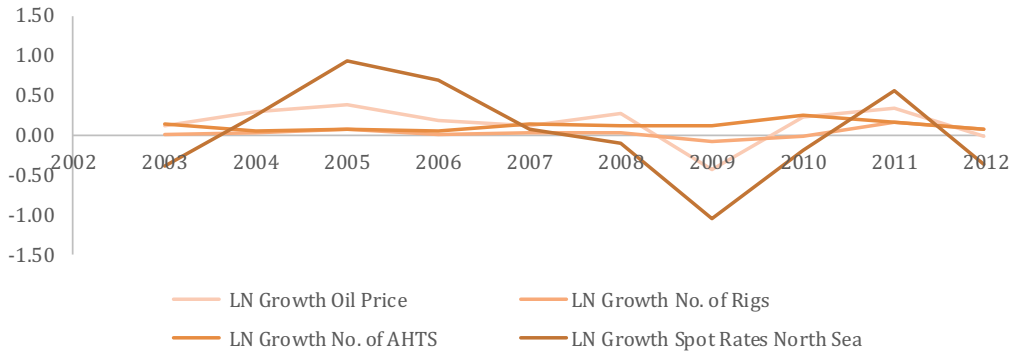








Year	LN Growth Oil Price	LN Growth No. of Rigs	LN Growth No. of AHTS	LN Growth Spot Rates North Sea
2002	0.0	0.0	0.2	-0.7
2003	0.1	0.0	0.1	-0.4
2004	0.3	0.0	0.1	0.2
2005	0.4	0.1	0.1	0.9
2006	0.2	0.0	0.1	0.7
2007	0.1	0.0	0.1	0.1
2008	0.3	0.0	0.1	-0.1
2009	-0.4	-0.1	0.1	-1.0
2010	0.2	0.0	0.3	-0.2
2011	0.3	0.2	0.2	0.6
2012	0.0	0.1	0.1	-0.4



Regression output:

Regression Statistics	
Multiple R	0.896850889
R Square	0.804341516
Adjusted R Square	0.72048788
Standard Error	0.321269456
Observations	11

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	2.970152297	0.990050766	9.592207996	0.007101177
Residual	7	0.722498445	0.103214064		
Total	10	3.692650742			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.082342903	0.245876959	0.33489475	0.747516014	-0.499063717	0.663749523
LN Growth Oil Price	1.869660561	0.611254821	3.058725261	0.018356334	0.424272588	3.315048535
LN Growth No. of Rigs	1.619652645	2.280300632	0.710280312	0.500501976	-3.77240153	7.011706819
LN Growth No. of AHTS	-3.210058649	1.670726128	-1.921355388	0.096137811	-7.160698169	0.740580872

2.1.1.1 AHTS growth rate

Year	No. of AHTS
2002	70
2003	81
2004	86
2005	92
2006	97
2007	111
2008	126
2009	143
2010	186
2011	220
2012	237
2013	286
2014	320
CAGR	13.5%
No. of vessels per year	19

Year	Number of newbuildings	Number of AHTS
2015	19	339
2016	10	349
2017	4	353
2018e	4	357
2019e	3	360
2020e	2	362
2021e	2	364
2022e	3	367

2.1.1.2 Rig count

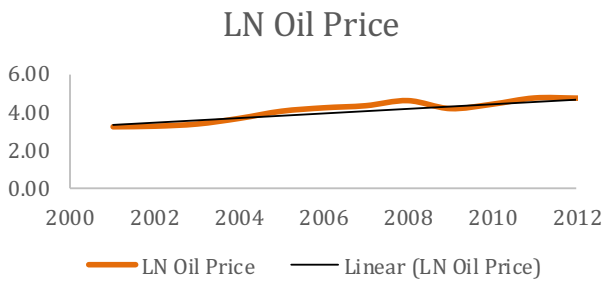
Regression input:

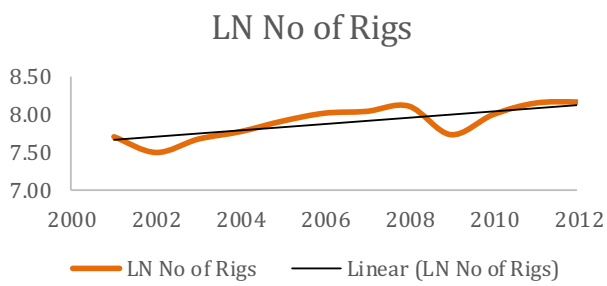
Source: Baker Hughes

Year	Oil Price	Growth in Oil Price	No of Rigs	Growth in No of Rigs
2000	28.05		1913	
2001	24.5	-13%	2242	17%
2002	25.3	3%	1829	-18%
2003	28.4	12%	2174	19%
2004	38.3	35%	2395	10%
2005	55.8	46%	2746	15%
2006	66.8	20%	3043	11%
2007	74.7	12%	3116	2%
2008	97.7	31%	3336	7%
2009	64.1	-34%	2304	-31%
2010	80.7	26%	2985	30%
2011	112.3	39%	3465	16%
2012	111.5	-1%	3518	2%

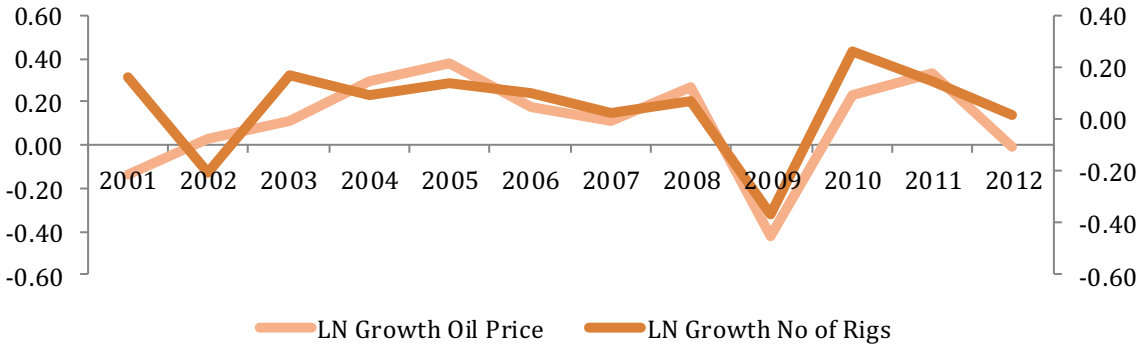
Year	LN Oil Price	LN No of Rigs
2000	3.33	7.56
2001	3.20	7.72
2002	3.23	7.51
2003	3.35	7.68
2004	3.64	7.78
2005	4.02	7.92
2006	4.20	8.02
2007	4.31	8.04
2008	4.58	8.11
2009	4.16	7.74
2010	4.39	8.00
2011	4.72	8.15
2012	4.71	8.17

Stationarity of time series:





Year	LN Growth Oil Price	LN Growth No of Rig
2001	-0.14	0.16
2002	0.03	-0.20
2003	0.12	0.17
2004	0.30	0.10
2005	0.38	0.14
2006	0.18	0.10
2007	0.11	0.02
2008	0.27	0.07
2009	-0.42	-0.37
2010	0.23	0.26
2011	0.33	0.15
2012	-0.01	0.02



Regression output:

Regression Statistics	
Multiple R	0.705596976
R Square	0.497867093
Adjusted R Square	0.447653802
Standard Error	0.129875972
Observations	12

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.167244699	0.167245	9.915046	0.010353771
Residual	10	0.168677682	0.016868		
Total	11	0.33592238			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-0.011968138	0.042457109	-0.28189	0.783777	-0.106568472	0.082632196
LN Growth Oil Price	0.545520287	0.173246128	3.148817	0.010354	0.159503858	0.931536715

2.2 Pro forma financial statements

2.2.1 Historical pro forma income statement and balance sheet

	Historical Period						
Forecasting	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Average**
Financial value drivers							
Growth Driver							
Freight income growth	4.2%	7.3%	18.6%	-8.9%	-31.1%	-62.0%	-12%
Other income/Freight income	1.8%	1.3%	1.7%	2.0%	2.2%	4.6%	2.3%
Sale of boats/freight income	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost driver							
Crew expenses/freight income	34.2%	32.5%	28.1%	31.2%	32.1%	51.2%	35%
Vessel expenses	11.9%	11.6%	10.8%	9.3%	10.1%	19.8%	12%
Bunkers and lubricating oil/freight income	1.4%	0.8%	1.3%	1.1%	2.0%	0.0%	1%
Maintainance and other expenses/freight income	10.4%	10.8%	9.5%	8.2%	8.1%	0.0%	9%
Total operating expenses ships/freight income	**46.1%**	**44.1%**	**38.9%**	**40.5%**	**42.1%**	**71.1%**	47%
Hire expenses/freight income	9.1%	2.7%	4.3%	6.2%	7.9%	7.9%	6%
Other payroll expenses/freight income	2.6%	2.6%	2.8%	3.1%	4.3%	0.0%	3%
Other fixed costs/freight income	3.8%	3.6%	3.2%	3.2%	4.0%	11.3%	5%
Result from joint venture companies/freight income	-1.1%	-0.5%	0.2%	-2.0%	-7.7%	1.2%	-1.6%
EBITDA margin	**39.3%**	**48.0%**	**52.7%**	**47.0%**	**36.2%**	**15.5%**	40%
Depreciations/Non-current operating assets	2.1%	2.5%	3.6%	5.5%	6.9%	7.7%	5%
Impairment	0.0%	0.0%	0.0%	23.5%	19.5%	0%	7%
EBIT margin	**27.2%**	**35.0%**	**36.9%**	**-64.1%**	**-78.9%**	**-41.9%**	-14%
Tax on operations	-27.8%	-37.9%	-31.0%	15.9%	11.5%	72.5%	1%
Tax on net financial items	27.0%	27.0%	27.0%	27.0%	25.0%	24.0%	26%
NOPAT margin	**19.6%**	**21.7%**	**25.4%**	**-74.4%**	**-87.9%**	**-11.5%**	**-17.8%**
ROIC before tax (primo)	4.85%	6.54%	8.22%	-14.50%	-16.18%	-5.53%	
ROIC after tax (primo)	3.50%	4.06%	5.67%	-16.82%	-18.04%	-1.52%	
Invested capital turnover (primo)	0.19	0.18	0.22	0.20	0.18	0.10	
Profit margin before tax	27.17%	34.97%	36.88%	-64.14%	-78.85%	-41.86%	
Profit margin after tax	19.62%	21.72%	25.43%	-74.36%	-87.90%	-11.53%	
Investement drivers							
Total fixed assets/freight income	575%	524%	440%	378%	434%	738%	514.8%
Total other non-current assets/freight income	12%	6%	5%	5%	3%	5%	5.8%
Net working capital/freight income	10%	6%	12%	12%	-20%	15%	6.0%
Financing drivers							
Total non-interest bearing debt/Invested capital	2%	1%	1%	2%	1%	1%	1.5%
NIBD/Invested capital	74%	73%	74%	92%	116%	90.15%	86%
NBC	-4.4 %	-5.4 %	-7.6 %	-6.9 %	-5.3 %	13.4 %	-4.0%

Pro Forma Income statement	2012	2013	2014	2015	2016	2017
Freight income	**1,332,158**	**1,436,108**	**1,698,716**	**1,543,699**	**1,061,320**	**571,599**
Other income	23,723	19,077	29,423	30,681	23,646	26,162
Profit sale on boats	1,738	1,606	-	-	-	-
Total income	**1,357,619**	**1,456,791**	**1,728,139**	**1,574,380**	**1,084,966**	**597,761**
Crew expenses	456,064	466,877	476,948	480,979	340,382	292,805
%	***34%***	***33%***	***28%***	***31%***	***32%***	***51%***
of total operating costs	***74%***	***74%***	***72%***	***77%***	***76%***	***72%***
Vessel expenses	157,899	166,020	183,731	144,194	106,951	113,404
of total operating costs	***26%***	***26%***	***28%***	***23%***	***24%***	***28%***
Bunkers and lubricating oil	*18,825*	*10,945*	*22,644*	*17,725*	*20,964*	
Maintenance and other expenses	*139,074*	*155,075*	*161,087*	*126,469*	*85,987*	
Total operating expenses ships	613,963	632,897	660,679	625,173	447,333	406,209
of total revenue	***45%***	***43%***	***38%***	***40%***	***41%***	***68%***
Gross profit	**743,656**	**823,894**	**1,067,460**	**949,207**	**637,633**	**191,552**
%	***56%***	***57%***	***63%***	***61%***	***60%***	***34%***
Hire expenses	120,803	38,883	73,111	94,938	83,650	45,410
Other payroll expenses	34,763	37,241	47,626	48,350	46,159	0
Other fixed costs	50,592	51,117	54,877	49,925	41,967	64,867
Result from joint venture companies	-14,479	-6,683	3,278	-30,632	-82,033	7,135
EBITDA	**523,019**	**689,970**	**895,124**	**725,362**	**383,824**	**88,410**
%	***39%***	***48%***	***53%***	***47%***	***36%***	***15%***
Depreciations	161,063	187,716	268,689	327,129	320,223	327,672
Impairments	0	0	0	1,388,300	900,500	0
EBIT	**361,956**	**502,254**	**626,435**	**-990,067**	**-836,899**	**-239,262**
%	***27%***	***35%***	***37%***	***-64%***	***-79%***	***-42%***
Tax on operations	-100,544	-190,346	-194,464	-157,823	-95,986	173,371
NOPAT	**261,412**	**311,908**	**431,971**	**-1,147,890**	**-932,885**	**-65,891**
%	***20%***	***22%***	***25%***	***-74%***	***-88%***	***-12%***
Profit on sale of leaseback-tax	-	-	-	-	-	-
Result after extraordinary posts	**261,412**	**311,908**	**431,971**	**-1,147,890**	**-932,885**	**-65,891**
Financial income	26,335	19,467	7,251	13,143	13,466	893,521
Financial expenses	425,616	413,299	397,275	360,440	395,595	242,512
Net currency loss/profit	55,095	-14,973	-196,794	-171,569	22,895	30,839
Net financial items before tax	-344,186	-408,805	-586,818	-518,866	-359,234	681,848
Tax on net financial items (tax shield)	92,930	110,377	158,441	140,094	89,809	-163,644
Net financial items after tax	-251,256	-298,428	-428,377	-378,772	-269,426	518,204
Net profit for the year	**10,156**	**13,480**	**3,594**	**-1,526,662**	**-1,202,310**	**452,313**

INVESTED CAPITAL - Balance sheet	2012	2013	2014	2015	2016	2017
Assets						
Vessels	7,654,302	7,516,823	7,467,143	5,837,000	4,597,100	4,216,600
Contracts new buildings	0	0	0	0	0	0
Building, movables and fixtures	5,540	4,953	4,594	5,851	4,779	2,275
Total fixed assets	**7,659,842**	**7,521,776**	**7,471,737**	**5,842,851**	**4,601,879**	**4,218,875**
Deferred tax assets	11,942	8,557	6,404	2,448	0	0
Investments in joint ventures company	57,392	59,856	63,278	63,079	22,072	29,990
Long term receivables	84,803	10,786	10,966	9,422	5,495	262
Total other non-current assets	**154,137**	**79,199**	**80,648**	**74,949**	**27,567**	**30,252**
Total non-current operating assets	**7,813,979**	**7,600,975**	**7,552,385**	**5,917,800**	**4,629,446**	**4,249,127**
Other non-current liabilities	85,900	6,481	12,333	10,630	6,495	14
Deferred tax	1,173	104,624	83,625	63,681	50,238	36,644
Allocation liability in joint ventures	78,026	0	0	32,978	0	0
Other liabilites	0	0	0	4,788	3,810	5,410
Total non-interest bearing debt	**165,099**	**111,105**	**95,958**	**112,077**	**60,543**	**42,068**
Net working capital						
Fuel and other stocks	17,610	22,140	18,564	16,459	17,993	19,716
Trade receivables and other receivables	347,085	315,019	446,649	393,994	267,338	276,188
Current assets	**364,695**	**337,159**	**465,213**	**410,453**	**285,331**	**295,904**
Total assets	**8,178,674**	**7,938,134**	**8,017,598**	**6,328,253**	**4,914,777**	**4,545,031**
Trade payable	60,061	70,688	77,038	65,034	18,326	35,635
Tax payable	32,619	48,027	34,481	25,909	16,085	12,967
Other current liabilities	138,792	128,393	143,690	138,677	386,662	87,421
Liabilites to joint venture company	0	0	0	0	74,504	71,495
Current liabilties	**231,472**	**247,108**	**255,209**	**229,620**	**495,577**	**207,518**
Net-working capital	**133,223**	**90,051**	**210,004**	**180,833**	**-210,246**	**88,386**
Invested Capital	**7,782,103**	**7,579,921**	**7,666,430**	**5,986,555**	**4,358,658**	**4,295,447**
Equity, primo						
Netto resultat						
Dividend						
Total equity	**2,008,164**	**2,021,605**	**2,022,103**	**502,405**	**-699,939**	**423,137**
Interest bearing debt						
Pension liabilities	0	4,076	10,002	4,407	2,422	2,831
Borrowings	5,525,128	4,827,133	5,011,592	0	0	4,087,792
Derivatives, non-current	16,939	15,530	22,827	15,258	4,195	0
Derivatives, current	2,034	10,484	50,001	29,113	11,081	0
Current liabilities of long term debt	736,334	1,106,353	898,759	5,640,366	5,596,585	32,164
Other liabilities	0	0	7,302	981	979	979
Total interest bearing debt	***6,280,435***	***5,963,576***	***6,000,483***	***5,690,125***	***5,615,262***	***4,123,766***
Interest bearing assets						
Derivatives, non-current	0	184	0	0	0	0
Shares	383	403	5,205	1,326	1,850	1,850
Net pension assets	683	0	0	0	0	0
Derivatives, current	4,533	1,977	139	0	349	370
Trading portfolio	3,556	0	0	0	0	0
Bank deposit	497,341	402,696	350,812	204,649	554,466	249,236
Total interest bearing assets	***506,496***	***405,260***	***356,156***	***205,975***	***556,665***	***251,456***
NIBD	**5,773,939**	**5,558,316**	**5,644,327**	**5,484,150**	**5,058,597**	**3,872,310**
INVESTED CAPITAL	**7,782,103**	**7,579,921**	**7,666,430**	**5,986,555**	**4,358,658**	**4,295,447**

2.2.2 Forecasted pro forma income statement and balance sheet

	Budgeting Period					Terminal Period
Forecasting	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**
Financial value drivers						
Growth Driver						
Freight income growth	11%	15%	8%	10%	12%	2%
Other income/Freight income	2%	2%	2%	2%	2%	2%
Sale of boats/freight income	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%
Cost driver						0%
Crew expenses/freight income	45%	40%	35%	32%	31%	31%
Vessel expenses	12%	12%	12%	12%	12%	12%
Bunkers and lubricating oil/freight income						0%
Maintainance and other expenses/freight income						0%
Total operating expenses ships/freight income	**57%**	**52%**	**47%**	**44%**	**43%**	43%
Hire expenses/freight income	6%	6%	6%	6%	6%	6%
Other payroll expenses/freight income	3%	3%	3%	3%	3%	3%
Other fixed costs/freight income	5%	5%	5%	5%	5%	5%
Result from joint venture companies/freight income	-2%	-2%	-2%	-2%	-2%	-2%
EBITDA margin	**30%**	**35%**	**40%**	**43%**	**44%**	**44%**
Depreciations/Non-current operating assets	5%	5%	5%	5%	5%	5%
Impairment	0%	0%	0%	0%	0%	0%
EBIT margin	**5%**	**15%**	**21%**	**25%**	**29%**	**29%**
Tax on operations	-3%	-3%	-3%	-3%	-3%	-3%
Tax on net financial items	24%	24%	24%	24%	24%	24%
NOPAT margin	**5.0%**	**14.8%**	**20.1%**	**24.6%**	**27.9%**	**27.9 %**
ROIC before tax (primo)	0.86%	3.48%	5.20%	6.79%	8.58%	8.66%
ROIC after tax (primo)	0.83%	3.36%	5.02%	6.56%	8.29%	8.37%
Invested capital turnover (primo)	0.15	0.22	0.26	0.27	0.30	0.30
Profit margin before tax	5%	15%	20%	25%	28%	28%
Profit margin after tax	5%	15%	20%	25%	28%	28%
Investement drivers						
Total fixed assets/freight income	520%	410%	400%	365%	325%	325%
Total other non-current assets/freight income	6%	6%	6%	6%	6%	6%
Net working capital/freight income	6%	6%	6%	6%	6%	6%
Financing drivers						
Total non-interest bearing debt/Invested capital	2%	2%	2%	2%	2%	2%
NIBD/Invested capital	90%	89%	88%	85%	82%	82%
NBC	-4.0 %	-4.0 %	-4.0 %	-4.0 %	-4.0 %	-4.0 %

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
EBIT	280,101	361,956	502,254	626,435	-990,067	-836,899	-239,262
Foreign tax	12,515	7,087	9,556	32,253	12,387	5,710	N/A
Effective tax rate	4.5%	2.0%	1.9%	5.1%	N/A	N/A	N/A
Average effective tax rate							**3.4%**

Pro Forma Income statement	2018e	2019e	2020e	2021e	2022e	TV
Freight income	**634,953**	**731,936**	**793,021**	**874,094**	**981,675**	**1,003,665**
Other income	14,428	16,632	18,020	19,862	22,306	22,806
Profit sale on boats	256	296	320	353	396	405
Total income	**649,637**	**748,863**	**811,361**	**894,309**	**1,004,378**	**1,026,876**
						-
Crew expenses	285,729	292,774	277,557	279,710	299,411	306,118
%	***45%***	***40%***	***35%***	***32%***	***31%***	***31%***
of total operating costs	***79%***	***77%***	***74%***	***72%***	***71%***	***71%***
Vessel expenses	77,768	89,646	97,128	107,057	120,234	122,927
of total operating costs	***21%***	***23%***	***26%***	***28%***	***29%***	***29%***
Bunkers and lubricating oil	-	-	-	-	-	-
Maintenance and other expenses	-	-	-	-	-	-
Total operating expenses ships	363,497	382,421	374,685	386,768	419,645	429,045
of total revenue	***56%***	***51%***	***46%***	***43%***	***42%***	***42%***
Gross profit	**286,141**	**366,443**	**436,676**	**507,541**	**584,733**	**597,831**
%	***45%***	***50%***	***55%***	***58%***	***60%***	***60%***
Hire expenses	16,390	18,893	20,470	22,563	25,340	25,907
Other payroll expenses	40,273	46,424	50,298	55,441	62,264	63,659
Other fixed costs	30,821	35,529	38,494	42,429	47,651	48,718
Result from joint venture companies	-10,397	-11,985	-12,985	-14,313	-16,074	-16,434
EBITDA	**188,260**	**253,612**	**314,428**	**372,796**	**433,404**	**443,112**
%	***30%***	***35%***	***40%***	***43%***	***44%***	***44%***
Depreciations	155,430	141,269	149,326	150,190	150,190	153,554
Impairments	-	-	-	-	-	-
EBIT	**32,830**	**112,343**	**165,102**	**222,606**	**283,214**	**289,558**
%	***5%***	***15%***	***21%***	***25%***	***29%***	***29%***
Tax on operations	-1,106	-3,785	-5,563	-7,500	-9,542	-9,756
NOPAT	**31,724**	**108,557**	**159,540**	**215,106**	**273,672**	**279,802**
%	***5%***	***15%***	***20%***	***25%***	***28%***	***28%***
Profit on sale of leaseback-tax						
Result after extraordinary posts	**31,724**	**108,557**	**159,540**	**215,106**	**273,672**	**279,802**
Financial income						
Financial expenses						
Net currency loss/profit						
Net financial items before tax	-121,552	-109,933	-114,978	-112,011	-108,213	-110,637
Tax on net financial items (tax shield)	4,095	3,704	3,874	3,774	3,646	3,728
Net financial items after tax	-117,457	-106,229	-111,104	-108,237	-104,567	-106,909
Net profit for the year	**-85,733**	**2,328**	**48,435**	**106,869**	**169,105**	**172,893**
%	***-13%***	***0%***	***6%***	***12%***	***17%***	***17%***

Cash flow statement	2018e	2019e	2020e	2021e	2022e	TV
NOPAT	31,724	108,557	159,540	215,106	273,672	279,802
Depreciations	155,430	141,269	149,326	150,190	150,190	153,554
Impairments	-	-	-	-	-	-
Changes in net working capital	50,288	-5,819	-3,665	-4,865	-6,455	-1,319
Non-interest bearing debt	42,068	-	-	-	-	-
Cash flow from operations	195,374	244,007	305,200	360,431	417,407	432,037
Investments, Vessels, Equipment and Vehicles	755,350	152,984	-324,073	-173,332	-156,535	-226,317
Free cash flow to the firm	950,724	396,991	-18,873	187,100	260,872	205,720
Changes in NIBD	-833,508	-290,471	126,121	-74,186	-94,952	60,599
Net financial expenses after tax	-117,457	-106,229	-111,104	-108,237	-104,567	-106,909
FCFE	-241	291	-3,856	4,677	61,354	159,410
Dividends	241	-291	3,856	-4,677	-61,354	-159,410
Cash surplus	-	-	-	-	-	-

INVESTED CAPITAL - Balance sheet	2018e	2019e	2020e	2021e	2022e	TV
Assets						
Vessels						
Contracts new buildings						
Building, movables and fixtures						
Total fixed assets	**3,301,755**	**3,000,937**	**3,172,082**	**3,190,444**	**3,190,445**	**3,261,911**
Deferred tax assets						
Investments in joint ventures company						
Long term receivables						
Total other non-current assets	**36,592**	**43,157**	**46,759**	**51,539**	**57,882**	**59,179**
Total non-current operating assets	**3,338,347**	**3,044,094**	**3,218,841**	**3,241,983**	**3,248,327**	**3,321,090**
Other non-current liabilities						
Deferred tax						
Allocation liability in joint ventures						
Other liabilites						
Total non-interest bearing debt						
Net working capital						
Fuel and other stocks						
Trade receivables and other receivables						
Current assets						
Total assets						
Trade payable						
Tax payable						
Other current liabilities						
Liabilites to joint venture company						
Current liabilties						
Net-working capital	**38,098**	**43,917**	**47,582**	**52,447**	**58,902**	**60,221**
Invested Capital	**3,376,447**	**3,088,013**	**3,266,424**	**3,294,432**	**3,307,231**	**3,381,313**
Equity, primo	**423,137**	**337,645**	**339,681**	**391,973**	**494,165**	**601,916**
Netto resultat	**-85,733**	**2,328**	**48,435**	**106,869**	**169,105**	**172,893**
Dividend	241	-291	3,856	-4,677	-61,354	-159,410
Total equity	337,645	339,681	391,973	494,165	601,916	615,399
Interest bearing debt						
Pension liabilities						
Borrowings						
Derivatives, non-current						
Derivatives, current						
Current liabilities of long term debt						
Other liabilities						
Total interest bearing debt						
Interest bearing assets						
Derivatives, non-current						
Shares						
Net pension assets						
Derivatives, current						
Trading portfolio						
Bank deposit						
Total interest bearing assets						
NIBD	**3,038,802**	**2,748,332**	**2,874,453**	**2,800,267**	**2,705,315**	**2,765,914**
INVESTED CAPITAL	**3,376,447**	**3,088,013**	**3,266,426**	**3,294,432**	**3,307,231**	**3,381,313**

2.3 Utilisation

Average utilization 2016	65%
Vessels	27
Total utilization 2016	1755%
Number of AHTS under full contract	
Average utilization 2017	58%
Vessels	23
Total utilization 2017	1334%
Number of AHTS under 100% contract	0
Number of AHTS under 50% contract	0%
Number of AHTS in the spot market	5
Number of PSV under 100% contract	7
Number of PSV under 50% contract	0
Number of PSV in the spot market	6
Number of Subsea under 100% contract	2
Number of Subsea under 50% contract	0
Number of Subsea in the spot market	1
Number of vessels under 100% contract	9
Total utilization rate for 100% contract	900%
	434%
Number of vessles under 50% contract	0
Total utilization rate for 50% contract	0%
	434%
Number of vessels in the spot market	12
Average utilization rate for vessels in the spot market	36%

Year	Utilization rate
2018	45%
2019	50%
2020	70%
2021	75%
2022	80%

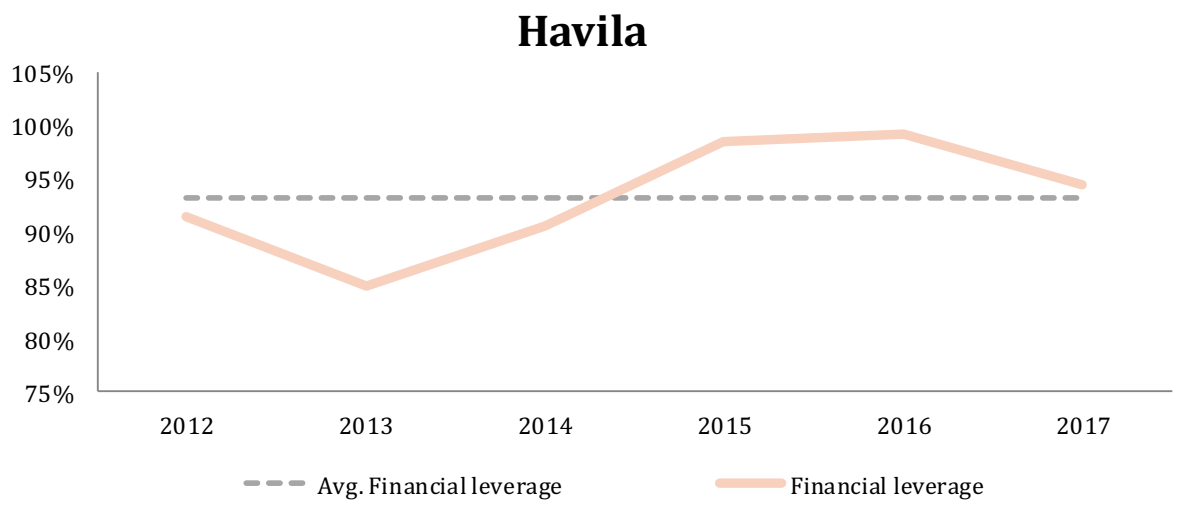
3 Cost of capital

3.1 Systematic risk – beta

The unlevered betas will be relevered with Havila's average capital structure of 93% as depicted below.

Havila Shipping				
Year	**Market value of equity**	**NIBD**	**NIBD/EQ**	**Financial leverage**
2012	535,252,500	5,773,939,000	10.79	92%
2013	980,833,750	5,558,316,000	5.67	85%
2014	585,482,300	5,644,327,000	9.64	91%
2015	78,164,905	5,484,150,000	70.16	99%
2016	40,138,735	5,058,597,000	126.03	99%
2017	226,891,464	3,872,310,000	17.07	94%
Average			**39.89**	**93%**

Source: Compiled by authors, Annual Reports 2012-2017



Source: Compiled by authors, Annual Reports 2012-2017

3.1.1 Regression beta

Date	HAV NO Equity	% Change HAV	OSEBX Index	% Change OSEBX	MSCI ACWI	% Change MSCI ACWI
31-12-2012	2520		466		44.67	
31-01-2013	2850	13.1%	473	1.6%	44.62	-0.1%
28-02-2013	2820	-1.1%	471	-0.4%	45.44	1.8%
31-03-2013	2500	-11.3%	480	1.9%	46.73	2.8%
30-04-2013	2880	15.2%	492	2.4%	46.55	-0.4%
31-05-2013	2850	-1.0%	469	-4.7%	44.77	-3.8%
30-06-2013	3000	5.3%	495	5.7%	47.41	5.9%
31-07-2013	2850	-5.0%	497	0.3%	46.32	-2.3%
31-08-2013	3400	19.3%	502	1.0%	48.89	5.5%
30-09-2013	3480	2.4%	532	6.1%	50.82	4.0%
31-10-2013	3190	-8.3%	543	2.0%	51.61	1.6%
30-11-2013	3250	1.9%	549	1.1%	52.25	1.2%
31-12-2013	3300	1.5%	536	-2.4%	50.24	-3.8%
31-01-2014	3390	2.7%	556	3.7%	52.85	5.2%
28-02-2014	3400	0.3%	562	1.1%	53.15	0.6%
31-03-2014	3460	1.8%	578	2.9%	53.78	1.2%
30-04-2014	3380	-2.3%	605	4.6%	54.86	2.0%
31-05-2014	3430	1.5%	618	2.1%	55.09	0.4%
30-06-2014	3280	-4.4%	612	-0.9%	55.05	-0.1%
31-07-2014	3190	-2.7%	610	-0.3%	56.47	2.6%
31-08-2014	2870	-10.0%	609	-0.1%	54.60	-3.3%
30-09-2014	2700	-5.9%	585	-4.0%	55.26	1.2%
31-10-2014	2520	-6.7%	566	-3.2%	56.02	1.4%
30-11-2014	1940	-23.0%	576	1.7%	54.23	-3.2%
31-12-2014	1485	-23.5%	602	4.5%	53.98	-0.5%
31-01-2015	1380	-7.1%	616	2.3%	56.95	5.5%
28-02-2015	1000	-27.5%	619	0.6%	56.12	-1.5%
31-03-2015	1030	3.0%	639	3.3%	57.73	2.9%
30-04-2015	1075	4.4%	646	1.0%	57.73	0.0%
31-05-2015	875	-18.6%	629	-2.6%	55.59	-3.7%
30-06-2015	850	-2.9%	639	1.6%	56.70	2.0%
31-07-2015	575	-32.4%	636	-0.4%	52.84	-6.8%
31-08-2015	535	-7.0%	582	-8.6%	51.03	-3.4%
30-09-2015	319	-40.4%	615	5.8%	54.93	7.7%
31-10-2015	209	-34.5%	629	2.2%	54.64	-0.5%
30-11-2015	259	23.9%	610	-2.9%	52.81	-3.4%
31-12-2015	153	-40.9%	561	-8.1%	50.65	-4.1%
31-01-2016	199	30.1%	573	2.1%	50.02	-1.2%
29-02-2016	181	-9.0%	578	0.9%	53.72	7.4%

31-03-2016	180	-0.6%	606	4.9%	54.44	1.3%
30-04-2016	176	-2.2%	617	1.8%	54.62	0.3%
31-05-2016	190	8.0%	603	-2.3%	53.88	-1.4%
30-06-2016	193	1.6%	613	1.6%	56.65	5.1%
31-07-2016	166	-14.0%	619	1.0%	56.85	0.3%
31-08-2016	161	-3.0%	623	0.6%	57.38	0.9%
30-09-2016	144	-10.6%	638	2.5%	56.28	-1.9%
31-10-2016	126	-12.5%	657	2.9%	56.87	1.0%
30-11-2016	133	5.6%	684	4.1%	57.45	1.0%
31-12-2016	202	51.9%	693	1.4%	59.67	3.9%
31-01-2017	192	-5.0%	690	-0.4%	61.17	2.5%
28-02-2017	16	-91.7%	688	-0.4%	61.99	1.3%
31-03-2017	18	12.5%	698	1.4%	62.99	1.6%
30-04-2017	18	0.0%	710	1.8%	64.38	2.2%
31-05-2017	17	-5.6%	699	-1.7%	64.17	-0.3%
30-06-2017	17	0.0%	733	4.9%	66.66	3.9%
31-07-2017	15	-11.8%	740	1.0%	66.93	0.4%
31-08-2017	15	0.0%	783	5.8%	68.19	1.9%
30-09-2017	13	-13.3%	807	3.0%	69.65	2.2%
31-10-2017	12	-7.7%	797	-1.3%	71.06	2.0%
30-11-2017	12	0.0%	814	2.2%	71.43	0.5%
31-12-2017	12	0.0%	811	-0.4%	76.20	6.7%
31-01-2018	10.74	-10.5%	788	-2.9%	72.97	-4.2%

HAVI to OSEBX	
Variance	0.0009048
Covariance	0.0006976
Beta	0.77

HAVI to MSCI ACWI	
Variance	0.0009481
Covariance	0.0009295
Beta	0.98

Average beta:	**0.88**

Regression beta	
Regression beta	0.88
D / EV	93.6 %
E / EV	6.4%
Tax rate	24%
D/E	13.78
unlevered beta	0.07
relevered beta	**0.84**

3.1.2 Estimation of beta from industry average

Damodaran	Unlevered beta	Income share	Havila income	
Europe	1.21	72%	Western world	759,085
Emerging markets	1.13	28%	Emerging markets	302,235
Weighteted average	1.19		Total	1,061,320
D/E	4.49			
Levered beta	**6.51**			

Source: Compiled by authors, Damodaran

3.1.3 Estimation of beta from comparable companies

DOF				
Year	Market value of EQ	NIBD	NIBD/EQ	Financial leverage
2012	3,065,017,205	21,512,000,000	7.02	88%
2013	3,520,327,732	20,542,000,000	5.84	85%
2014	1,660,217,653	21,057,000,000	12.68	93%
2015	497,510,039	21,915,000,000	44.05	98%
2016	1,606,413,684	17,841,000,000	11.11	92%
2017	1,582,433,757	16,994,000,000	10.74	91%
Average			**15.24**	**91%**

Siem						
Year	Market value of EQ	NIBD USD	USD/NOK	NIBD NOK	NIBD/EQ	Financial leverage
2012	3,072,613,721	646,089,000	5.82	3,760,551,979	1.22	55%
2013	3,740,256,817	858,191,000	5.88	5,045,836,109	1.35	57%
2014	3,740,256,817	1,118,026,000	6.30	7,048,165,595	1.88	65%
2015	1,178,829,932	985,431,000	8.07	7,949,854,224	6.74	87%
2016	1,557,739,553	1,379,571,000	8.41	11,595,377,029	7.44	88%
2017	1,705,058,698	1,239,489,000	8.27	10,248,492,928	6.01	86%
Average					**4.11**	**73%**

Solstad Farstad				
Year	Market value of EQ	NIBD	NIBD/EQ	Financial leverage
2012	11,365,250,106	19,854,904,126	1.75	64%
2013	12,376,817,603	21,167,969,194	1.71	63%
2014	7,394,494,039	26,611,408,059	3.60	78%
2015	2,399,410,675	28,850,300,995	12.02	92%
2016	1,554,840,952	31,697,064,690	20.39	95%
2017	1,760,098,280	27,227,772,000	15.47	94%
Average			**9.16**	**81%**

Average peer group financial leverage	**81.8%**

Source: Compiled by authors, Bloomberg, Annual Reports 2012-2017

Peers	Levered beta	R^2	NIBD/MVEK	Unlevered beta
DOF	1.004	0.078	15.24	0.06
Siem	0.915	0.077	4.11	0.18
SolstadFarstad	0.93	0.008	9.16	0.09
			Average	0.11
			Capital Structure	4.49
			Levered beta	**0.61**

Source: Compiled by authors, Bloomberg

3.1.4 Estimation of beta from fundamental factors

Risk Assessment		
Operating Risk		
Macro risk	**Risk level**	**The firms ability to handle risk**
Oil price	High	No ability
Investments in E&P	High	No ability
GDP	High	No ability
Oil rig activity	High	No ability, driven by oil price and E&P spending
Transport costs	Medium	Transport costs can be influence by redundancies and efficiency efforts
Rates	High	Influenced by oil price, E&P spending and supply and demand --> bleak oulook
Newbuilds	Medium	Supply and demand of newbuilds --> ability to influence their order book
Industry risk		
Rivalry among existing firms	High	High exit barriers
Threats of potential entrance	Medium	PSV (high), AHTS and CSV (medium)
Bargain power of buyers	High	Demand for modern fleet and professional crew --> ability to influence
Bargain power of suppliers	Low	Current market siutaion --> low power of suppliers
Internal risk		
Newbuilds	Low	Empty order book --> flexibility of ordering newbuilds
Fleet size	Medium	The possibility of disposals of assets
Region	Low	Diversified operations --> flexibilty of entering/leaving a market
High spot exposure	High	Decreased contact coverage --> increased spot exposure with low rates and excess supply --> hard to influence
Total Operating Risk	**High**	Macro and industry weights more
Financial Risk		
Financial leverage	High	As of 2017: 94.5% leverage
Loan characteristics:	High	Cash flow from operations not sufficent to serve the current amortisation scheduels
Variable interest rate	High	Mainly floating interest
Short term to maturity	High	Several debt maturtieies coming up in near future
Currency	Medium	Exposed to currency risks depending on area of operations
Total Financial Risk	**High**	

Source: Compiled by authors, Petersen & Plenborg, 2012

3.2 Capital structure – WACC

3.2.1 Iteration procedure

T	Interestbearing debt	Equity	Total	Debt	Equity	Total	WACC	FMV Equity	Equal
1	3,872,310,000	226,891,464	4,099,201,464	94.5%	5.5%	100.0%	6.2%	1,559,150,390	-1,332,258,926
2	3,872,310,000	1,559,150,390	5,431,460,390	71.3%	28.7%	100.0%	9.3%	3,343,367,671	-1,784,217,281
3	3,872,310,000	3,343,367,671	7,215,677,671	53.7%	46.3%	100.0%	11.7%	2,672,864,284	670,503,387
4	3,872,310,000	2,672,864,284	6,545,174,284	59.2%	40.8%	100.0%	11.0%	2,843,433,410	-170,569,127
5	3,872,310,000	2,843,433,410	6,715,743,410	57.7%	42.3%	100.0%	11.2%	2,794,060,177	49,373,234
6	3,872,310,000	2,794,060,177	6,666,370,177	58.1%	41.9%	100.0%	11.1%	2,807,867,246	-13,807,069
7	3,872,310,000	2,807,867,246	6,680,177,246	58.0%	42.0%	100.0%	11.1%	2,803,967,878	3,899,368
8	3,872,310,000	2,803,967,878	6,676,277,878	58.0%	42.0%	100.0%	11.1%	2,805,066,087	-1,098,209
9	3,872,310,000	2,805,066,087	6,677,376,087	58.0%	42.0%	100.0%	11.1%	2,804,756,548	309,539
10	3,872,310,000	2,804,756,548	6,677,066,548	58.0%	42.0%	100.0%	11.1%	2,804,843,775	-87,227
11	3,872,310,000	2,804,843,775	6,677,153,775	58.0%	42.0%	100.0%	11.1%	2,804,819,193	24,582
12	3,872,310,000	2,804,819,193	6,677,129,193	58.0%	42.0%	100.0%	11.1%	2,804,826,121	-6,927
13	3,872,310,000	2,804,826,121	6,677,136,121	58.0%	42.0%	100.0%	11.1%	2,804,824,168	1,952
14	3,872,310,000	2,804,824,168	6,677,134,168	58.0%	42.0%	100.0%	11.1%	2,804,824,719	-550
15	3,872,310,000	2,804,824,719	6,677,134,719	58.0%	42.0%	100.0%	11.1%	2,804,824,564	155
16	3,872,310,000	2,804,824,564	6,677,134,564	58.0%	42.0%	100.0%	11.1%	2,804,824,607	-44
17	3,872,310,000	2,804,824,607	6,677,134,607	58.0%	42.0%	100.0%	11.1%	2,804,824,595	12
18	3,872,310,000	2,804,824,595	6,677,134,595	58.0%	42.0%	100.0%	11.1%	2,804,824,598	-3
19	3,872,310,000	2,804,824,598	6,677,134,598	58.0%	42.0%	100.0%	11.1%	2,804,824,597	1
20	3,872,310,000	2,804,824,597	6,677,134,597	58.0%	42.0%	100.0%	11.1%	2,804,824,598	0

Source: Compiled by authors

3.2.2 Peer group average

DOF				
Year	**Market value of EQ**	**NIBD**	**NIBD/EQ**	**Financial leverage**
2012	3,065,017,205	21,512,000,000	7.02	88%
2013	3,520,327,732	20,542,000,000	5.84	85%
2014	1,660,217,653	21,057,000,000	12.68	93%
2015	497,510,039	21,915,000,000	44.05	98%
2016	1,606,413,684	17,841,000,000	11.11	92%
2017	1,582,433,757	16,994,000,000	10.74	91%
Average			**15.24**	**91%**

Siem						
Year	**Market value of EQ**	**NIBD USD**	**USD/NOK**	**NIBD NOK**	**NIBD/EQ**	**Financial leverage**
2012	3,072,613,721	646,089,000	5.82	3,760,551,979	1.22	55%
2013	3,740,256,817	858,191,000	5.88	5,045,836,109	1.35	57%
2014	3,740,256,817	1,118,026,000	6.30	7,048,165,595	1.88	65%
2015	1,178,829,932	985,431,000	8.07	7,949,854,224	6.74	87%
2016	1,557,739,553	1,379,571,000	8.41	11,595,377,029	7.44	88%
2017	1,705,058,698	1,239,489,000	8.27	10,248,492,928	6.01	86%
Average					**4.11**	**73%**

Solstad Farstad				
Year	**Market value of EQ**	**NIBD**	**NIBD/EQ**	**Financial leverage**
2012	11,365,250,106	19,854,904,126	1.75	64%
2013	12,376,817,603	21,167,969,194	1.71	63%
2014	7,394,494,039	26,611,408,059	3.60	78%
2015	2,399,410,675	28,850,300,995	12.02	92%
2016	1,554,840,952	31,697,064,690	20.39	95%
2017	1,760,098,280	27,227,772,000	15.47	94%
Average			**9.16**	**81%**

Average peer group financial leverage	**81.8%**

Source: Compiled by authors, Bloomberg, Annual Reports 2012-2017

4 Valuation

4.1 DCF

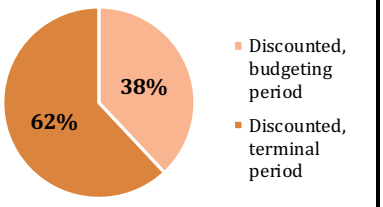
4.1.1 Cash flow statement

Cash flow statement	2018e	2019e	2020e	2021e	2022e	TV
NOPAT	31,724	108,557	159,540	215,106	273,672	279,802
Depreciations	155,430	141,269	149,326	150,190	150,190	153,554
Impairments	-	-	-	-	-	-
Changes in net working capital	50,288	-5,819	-3,665	-4,865	-6,455	-1,319
Non-interest bearing debt	42,068	-	-	-	-	-
Cash flow from operations	195,374	244,007	305,200	360,431	417,407	432,037
Investments, Vessels, Equipment and Vehicles	755,350	152,984	-324,073	-173,332	-156,535	-226,317
Free cash flow to the firm	950,724	396,991	-18,873	187,100	260,872	205,720
Changes in NIBD	-833,508	-290,471	126,121	-74,186	-94,952	60,599
Net financial expenses after tax	-117,457	-106,229	-111,104	-108,237	-104,567	-106,909
FCFE	-241	291	-3,856	4,677	61,354	159,410
Dividends	241	-291	3,856	-4,677	-61,354	-159,410
Cash surplus	-	-	-	-	-	-

Source: Compiled by authors

4.1.2 DCF model

DCF-model	Budgeting period					Terminal period	Growth
Reference case	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2.2 %**
Free cash flow to the firm	950,724	396,991	-18,873	187,100	260,872	205,720	
WACC	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	
Discount factor	0.93	0.86	0.80	0.74	0.68		
Discounted FCFF	881,048	340,935	-15,020	137,992	178,301		
Discounted, budgeting period	1,523,256						
Discounted, terminal period	2,480,573						
Enterprise Value	**4,003,829**						
NIBD	3,872,310						
Market value of equity	**131,519,204**	*Number of shares*	*18,907,622*				
Market value per share	**7.0**						



4.2 EVA

EVA-model	Budgeting period					Terminal period	Growth
Reference case	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2.2 %**
NOPAT	31,724	108,557	159,540	215,106	273,672	279,802	
Invested capital, primo	4,295,447	3,376,447	3,088,013	3,266,424	3,294,432	3,307,231	
WACC	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	
Capital costs	339,696	267,019	244,208	258,318	260,533	261,545	
EVA	-307,972	-158,461	-84,669	-43,212	13,139	18,257	
Discount factor	0.93	0.86	0.80	0.74	0.68		
Capital value EVA	-285,402	-136,086	-67,384	-31,870	8,980		
Invested capital, primo	4,295,447						
Capital value EVA budgeting period	-511,762						
Capital value EVA terminal period	220,144						
Enterprise value	**4,003,829**						
NIBD	3,872,310						
Market value of equity	**131,518,780**	*Number of shares*	*18,907,622*				
Market value per share	**7.0**						

5 Sensitivity

Growth \ WACC	7.7%	7.7%	7.7%	7.9%	8.1%	8.3%	8.5%
1.6%	-0.3	-0.3	-0.3	-5.8	-10.9	-15.8	-20.3
1.8%	4.1	4.1	4.1	-1.7	-7.2	-12.3	-17.1
2.0%	8.7	8.7	8.7	2.6	-3.2	-8.6	-13.6
2.2%	13.7	13.7	13.7	7.1	1.1	-4.6	-10.0
2.4%	19.0	19.0	19.0	12.1	5.6	-0.4	-6.1
2.6%	24.8	24.8	24.8	17.4	10.5	4.1	-1.9
2.8%	31.1	31.1	31.1	23.1	15.7	8.9	2.6

Rf \ Beta	1.8	2.0	2.2	2.4	2.6	2.8	3.0
1.4%	47.1	38.7	31.0	23.7	17.0	10.7	4.9
1.6%	39.8	32.0	24.7	17.9	11.5	5.6	0.1
1.8%	33.0	25.6	18.8	12.4	6.4	0.8	-4.5
2.0%	26.5	19.6	13.2	7.1	1.5	-3.8	-8.8
2.2%	20.5	14.0	7.9	2.2	-3.1	-8.2	-12.9
2.4%	14.8	8.7	3.0	-2.4	-7.5	-12.3	-16.8
2.6%	9.5	3.7	-1.8	-6.9	-11.7	-16.3	-20.6

Cost of debt \ Cost of equity	17.8%	18.2%	18.6%	19.0%	19.4%	19.8%	20.2%
4.2%	55.0	51.4	47.9	44.5	41.2	38.0	34.9
4.6%	39.6	36.5	33.4	30.4	27.5	24.7	22.0
5.0%	26.2	23.4	20.7	18.1	15.5	13.0	10.6
5.4%	14.3	11.9	9.5	7.1	4.9	2.7	0.5
5.8%	3.8	1.6	-0.5	-2.6	-4.6	-6.6	-8.6
6.2%	-5.6	-7.6	-9.5	-11.4	-13.2	-15.0	-16.7
6.6%	-14.1	-15.8	-17.6	-19.3	-20.9	-22.6	-24.1

WACC \ Oil Price Δ	-15%	-10%	-5%	0%	5%	10%	15%
7.3%	22.9	24.5	26.3	28.3	30.4	32.8	35.3
7.5%	16.5	17.8	19.2	20.7	22.4	24.2	26.1
7.7%	10.6	11.5	12.6	13.7	14.9	16.2	17.7
7.9%	5.1	5.7	6.4	7.1	8.0	8.8	9.8
8.1%	0.0	0.3	0.7	1.1	1.5	2.0	2.5
8.3%	-4.8	-4.8	-4.7	-4.6	-4.6	-4.5	-4.4
8.5%	-9.4	-9.5	-9.7	-10.0	-10.2	-10.5	-10.8

6 Board of Directors & Corporate Management

6.1 Board of Directors

Board of Directors

Mr. Helge Aarseth serves as a Partner and Lawyer at Advokatfirmaet Larhammer & Aarseth. Mr. Aarseth has his own private practice through a partnership in the law firm Larhammer & Aarseth since 1978. He serves as a Director of Havila Shipping ASA. He serves as a Director for number of companies in a variety of branches. He has been authorised to attend meetings at the High Court since 1986.

Mrs. Hege Sævik Rabben serves as a Director of Havyard Group ASA. Mrs. Rabben has been a Director at Havila Ariel ASA and Havila Shipping ASA since 2003. She serves as a Director of Havila group companies, including, interalia and the shipyard Havyard Leirvik AS. She is originally trained as Child Care Officer.

Ms. Nina Skage serves as Managing Director of the Norwegian School of Economics (NHH) in Bergen. From 1988 to 2013, Ms. Skage held various leading positions in the Norwegian food industry group Rieber & Søn ASA. She has been a Director of Havila Shipping ASA since 2015. Ms. Skage holds education in business administration from St. Cloud State University, Minnesota.

Mr. Jogeir Romestrand serves as an Executive Vice President at OHI ASA. Mr. Romestrand manages its sales and marketing department in recent years. He is the Founder and Chairman in the Norwegian private owned investment group Rome AS. Mr. Romestrand holds a degree in Mechanical Engineering at Møre og Romsdal Engineering College in 1983 and has taken business studies.

6.2 Corporate Management

Corporate Management

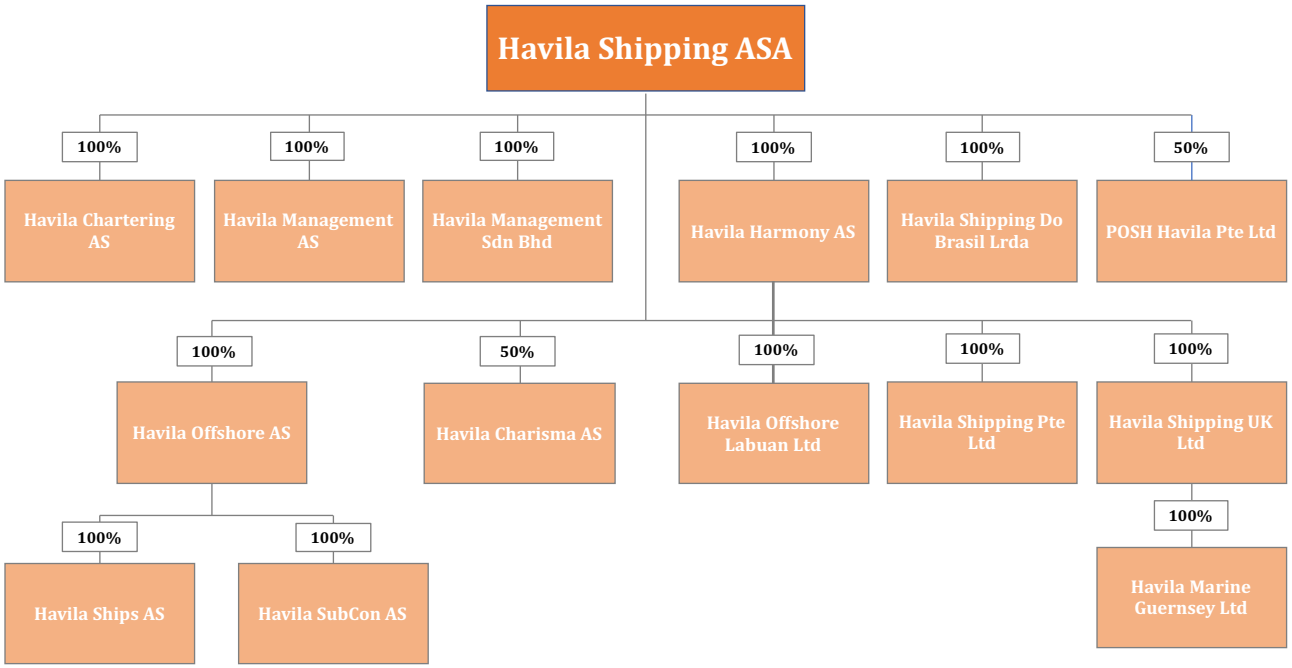
Mr. Njål Sævik has been the Chief Executive Officer at Havila Shipping ASA since 2003 and serves as its Managing Director. Mr. Sævik has been with offshore related business since 1986, first as seaman thereafter in various administrative positions.. He served as a Director of Havila Shipping ASA. He served as a Deputy Director of Fjord1 AS. Mr. Sævik is educated as captain and within Administration and Management from the Ålesund College in 1994.

Mr. Arne Johan Dale has been the Chief Financial Officer of Havila Shipping ASA since July1, 2008. Mr. Dale serves as the Chief Financial Officer of Kredittbanken ASA. He served as Finance Manager of Glitnir Bank ASA since 1992. He serves as a Director of Kredittbanken ASA.

Mr. Kjell Rabben serves as been the Chief Operating Officer of Havila Shipping ASA since 2007. Mr. Rabben serves as a Technical Director of Bourbon Offshore Norway AS (formerly Havila Supply ASA). Mr. Rabben served as Technical Director of Havila Shipping ASA since 2003. Mr. Rabben holds a degree in shipping and offshore engineering. Mr. Rabben is a trained engineer from Møre og Romsdal Engineering College, graduating in 1992

Mr. Runar Smadal serves as the Human Resource Director at Havila Shipping ASA.

7 Organisational chart



Source: Compiled by authors

8 Summary of the identified key drivers

Macro Drivers	
Demand	**Supply**
World economy	**World fleet**
Oil price	Newbuldings
E&P investments	Demand
GDP growth	Time lag
Shipping trends	Lay-ups
Oil rig activity	Scrapping
Seasonal factors	Speculative orders
Average haul	Asian shipyards
Regional enviromental and weather condition	**Fleet productivity**
Random shocks	Utilisation rates
Financial crisis	Repairs and maintenance
Geopolitical tensions	Lay-ups
Transport costs	**Shipbuilding production**
Crewing costs	Demand
Administrative costs	Time lag
Maintenance costs	Delivery cancellations and delays
Regional demand	**Scrapping and losses**
Weather conditions	4 scrapping reasons:
Type of waters	- Age
Interest rates	- Outdated technology
Exchange rates	- Scrap prices
Regulations	- Future operating profitability
Internal Drivers	Alternative use
Fleet	Lay-ups more cost efficient
Fleet size	**Freight revenue/rates**
Newbuilds	Supply and demand dynamics
Average age	Oil Price
Types of vessels	E&P investments
Crew	Geographical area
Professionalism	Types of vessels
Environmental, safe and quality	**Industry Drivers**
Geographic regions	**Contractors**
Areas	Demand for skilled workers
Financial	Demand for modern vessels
Leverage	Power of pushing rates down
Depreciation	**Workers**
Invested capital	Imbalance of supply/demand for skilled workers
	Substitute pressure
Red = Key Driver	Types of vessels

Source: Compiled by authors

9 Revenue – vessel relation

Vessels/freight revenue	2012	2013	2014	2015	2016	2017
Siem Offshore	342%	396%	355%	329%	422%	419%
Solstad Farstad	399%	383%	352%	462%	754%	956%
DOF ASA	305%	236%	215%	204%	249%	291%
Average peers	**349%**	**338%**	**307%**	**332%**	**475%**	**555%**

Source: Compiled by authors